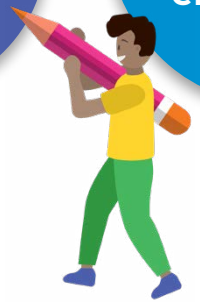
Teacher's Guide

How Project-Based Learning (PBL) can help teachers to prepare learners for a changing world

basic education
Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

The LEGO Foundation

3 ENTREPRENEURSHIP
EMPLOYABILITY
EDUCATION



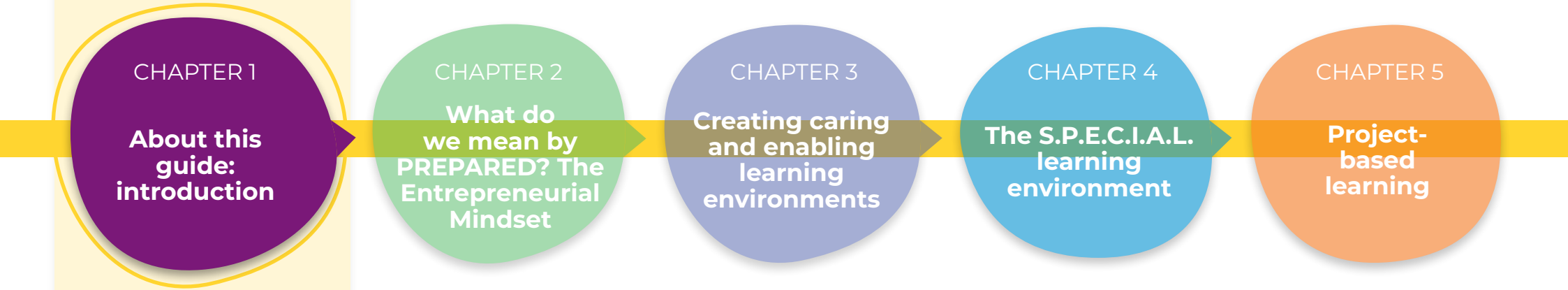
CHAPTER 1

About this guide: introduction

basic education
Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

The LEGO Foundation

3 ENTREPRENEURSHIP
EMPLOYABILITY
EDUCATION


CHAPTER 1
About this guide: introduction
CHAPTER 2
What do we mean by PREPARED? The Entrepreneurial Mindset
CHAPTER 3
Creating caring and enabling learning environments
CHAPTER 4
The S.P.E.C.I.A.L. learning environment
CHAPTER 5
Project-based learning

Welcome

Dear Teachers,

This letter is an invitation to you to join us on the journey of preparing learners to thrive in the 21st century. We know young South Africans are our national assets and we want them to feel empowered and be prepared to solve any challenges they face, as they enter an ever-changing world after school.

But first, we want to acknowledge you as the heroes who have the responsibility in your vocation of nurturing and teaching the youth of South Africa. We know this is sometimes a difficult job, so we have tried to make life easier for you. We have prepared this guide and various other tools to assist you in this journey.

For learners to be prepared with skills for a changing world, we have researched a teaching-for-learning approach that has shown to be a very successful way of preparing learners. It is called Project-based Learning (PBL).

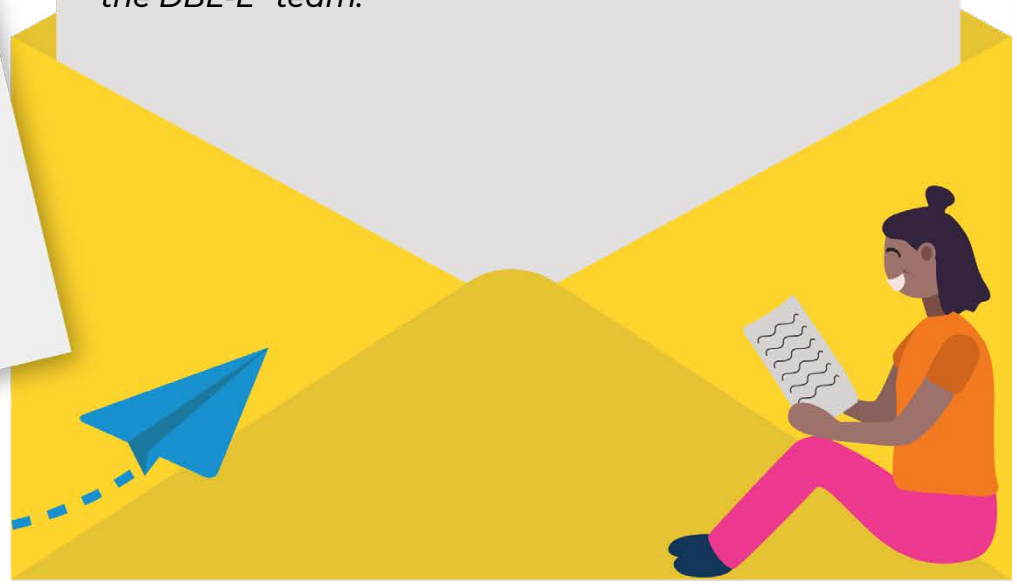
This guide will take you through the details of how to teach using this approach in your classroom. We have given you some information on how to prepare an environment that will make PBL work well - as well as what is meant by a "prepared" learner.

You will notice throughout, that a prepared learner and a learner with an entrepreneurial mindset are one and the same thing. We like to think of prepared learners as "entrepreneurials" who will solve the problems they encounter because of the practice they had in your classroom using the PBL teaching approach.

We will start by looking at the prepared entrepreneurial first and then look at the environment that is needed for learning to happen. We will then give details on how PBL is the keystone to connecting the environment with the goal of a prepared learner. You can think of this as a bridge - with PBL as the Keystone in the centre. We believe with this critical piece firmly in place, that the learners will fulfil their potential prepared to thrive in a changing world.

We hope you enjoy travelling with us on this journey.

Warm regards
the DBE-E³ team.



About this guide

Introduction

We are all concerned about the high levels of youth unemployment in South Africa, and there is no doubt that we all want to do something about this. The world is changing quickly, it is complex, and it is uncertain. Many of the jobs that exist today probably won't exist when learners finish high school.

So, the questions we must ask ourselves are:

?

How do we prepare young people for a future that we can't begin to imagine or plan for?

?

How do we prepare young people with the skills they will need not only to succeed, but to thrive, to fulfil their potential, and to be happy, healthy young adults?

The answer lies in the schooling process. Schools can create opportunities for learners to practice the skills they need for a changing world.

What does the National Curriculum Statement Grades R - 12 of the Department of Basic Education have to say about this?

A set of guidelines to answer this question already exists in the Aims, Purpose and Principles section of the Curriculum and Assessment Policy Statements (CAPS) Grades R-12, in which it advises that learners should:

These points illustrate that the central purpose of the entire National Curriculum Statement Grades R-12 is to produce learners who are prepared with skills for the 21st century. The DBE-E³ Programme's mandate is to introduce an entrepreneurial teaching-for-learning approach that will unlock these intentions.

About DBE-E³ Programme

You may be wondering who DBE-E³ is. Here is a bit of history for you.

This programme was first called Entrepreneurship in Schools (EiS) and was then renamed E³ (E-cubed).

The DBE's Entrepreneurship in Schools Sector plan 2030 was endorsed at the DBE Lekgotla in 2018. This resulted in the creation and formalisation of the E³ programme. The mandate of the DBE-E³ programme is to develop a South African Teaching-for-Learning approach that prepares learners with the skills they need to succeed in a changing world by nurturing their entrepreneurial mindsets. This is a guide to Project-based Learning (PBL). PBL is a wonderful teaching approach for providing practice opportunities to hone these 21st century skills and to activate learners' entrepreneurial mindsets.

The Sector Plan states that:

"By 2030, our goal for introducing Entrepreneurship, Social Entrepreneurship and Employability Training in the National School Curriculum is to have created an Entrepreneurial Culture in South Africa, in which all school leavers are employable, studying further, or equipped to start their own businesses in the future.

Furthermore, it is to create a culture of empathy and social responsibility, in which school leavers are actively concerned with engaging South Africa's socio-economic problems on multiple levels. The method is to systematically, year after year, acculturate the youth within South African schools to think more broadly and comprehensively and to build proactive, employment focused mind-sets."

A few notes about this guide

It is exactly that - a guide, it is not a textbook, and will not necessarily contain everything you ever needed to know about preparing young people to succeed in a changing world. We hope, rather, that through this guide you are inspired to go out and experiment, be curious, and try your own ideas.

Throughout this guide we have included teacher tips to inspire you and give you ideas. Look out for them...

We have included a small number of reflection activities to help you engage with the content, feel free to jot down notes and thoughts in this document or in a notebook.

Let's take a quick look at what is covered in this guide

Chapter one

Introduction

Here you are welcomed and given a brief introduction to DBE-E³.

Chapter two

What do we mean by prepared? The entrepreneurial mindset.

We start by unpacking what it means to be prepared for a changing world, by exploring the skills and competencies young people need. We make a bold argument that all young people need an entrepreneurial mindset to succeed in a rapidly changing world. We go further by saying that this mindset is developed from birth as infants discover and young children explore, discover and learn about their environment, and that schools have a wonderful opportunity to sustain and carry on growing these skills.

Chapter three

Inviting learners to be prepared: Creating caring and enabling learning environments.

This chapter points out that you can only practise and grow the skills you need for a changing world IF you have a learning environment that is caring - one that fosters trust and respect (between teachers and learners and between learners). It is an environment that should encourage learners to ask questions, take risks and feel safe to make mistakes so that they can learn from these mistakes.

Chapter four

Creating the environment to become prepared: The S.P.E.C.I.A.L. learning environment.

The S.P.E.C.I.A.L. Learning environment together with the caring environment, this chapter introduces and explores what it means to create enabling learning environments by bringing in seven principles that optimise or boost learning. We call these principles S.P.E.C.I.A.L. which stands for

S: Social Interaction,
P: Purpose,
E: Enjoyment,
C: Curiosity,
I: Iteration,
A: Active Engagement,
L: Learner Autonomy.

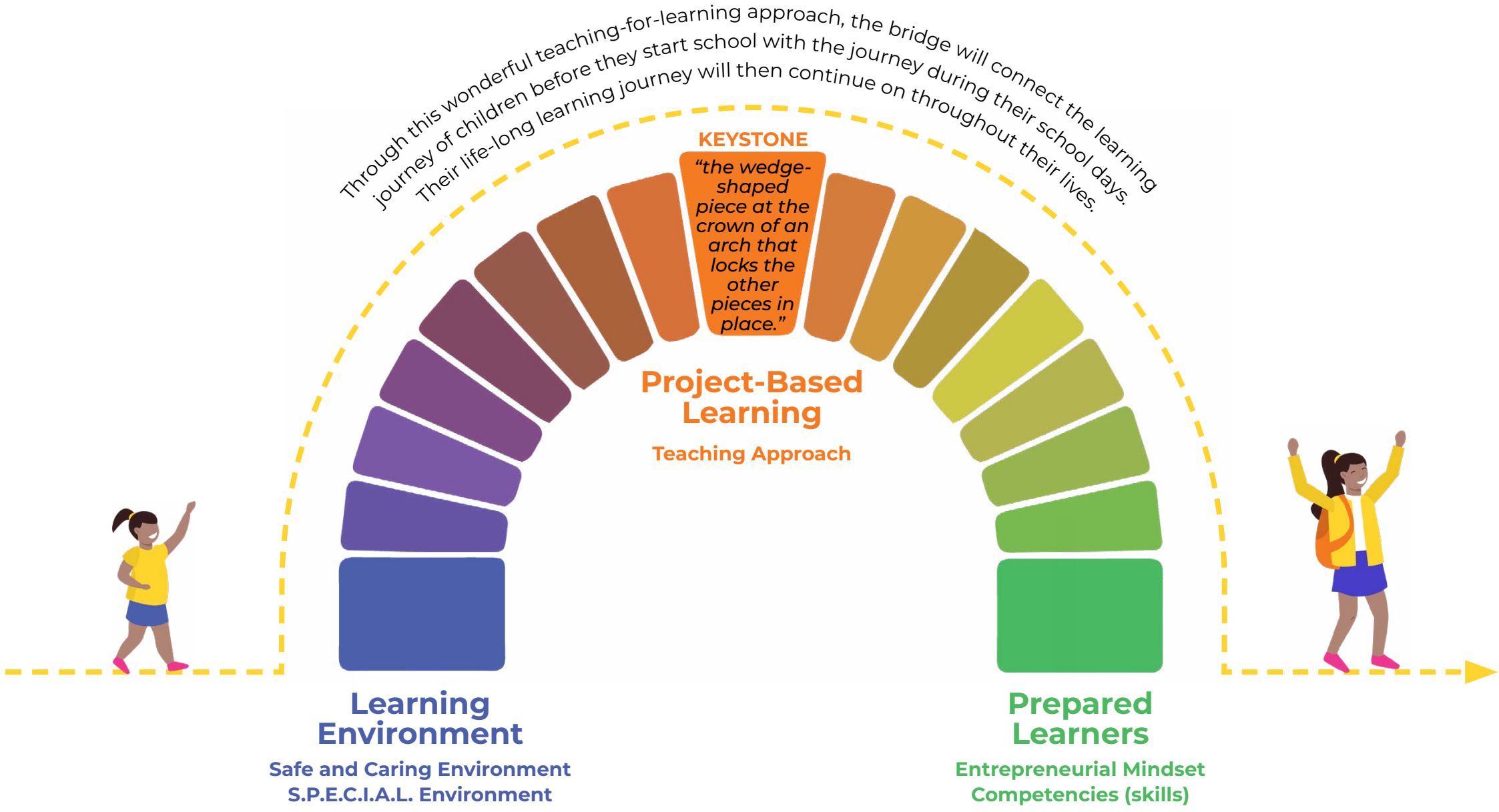
Chapter five

Becoming a prepared teacher: Using Project-based Learning in the classroom.

In the last chapter, we will look at the keystone that links the entrepreneurial mindset and the environment (a caring and enabling S.P.E.C.I.A.L. learning environment). Here we unpack an effective approach to growing learning, called Project-based Learning (PBL). This approach, when rooted in the caring and enabling environment of a S.P.E.C.I.A.L. classroom, creates opportunities for learners to practise and grow the skills that make up the entrepreneurial mindset.

Project-based learning (PBL) the keystone in the teaching

A way of seeing this graphically is by thinking of PBL as the central or middle keystone that links and supports the environment in the classroom (on the left) with the goal of the prepared learner (on the right).



In short

Being prepared means having an **entrepreneurial mindset**. Someone with an entrepreneurial mindset looks for opportunities to solve problems for other people. They are self-directed, take calculated risks and identify and solve problems.

Growing an **entrepreneurial mindset** needs...

...A **caring and emotionally safe** learning environment where learners can take risks, make mistakes and learn from these - just like entrepreneurial people.

...An **enabling** learning environment that is S.P.E.C.I.A.L. which stands for **S**ocial Interaction, **P**urpose, **E**njoyment, **C**uriosity, **I**teration, **A**ctive Engagement and **L**earner Autonomy.

...An opportunity to practice **entrepreneurial activities (Project-based Learning)**.

...Project-based Learning projects that are real and meaningful to learners and that allow them to work together and take calculated risks as they identify and solve problems.

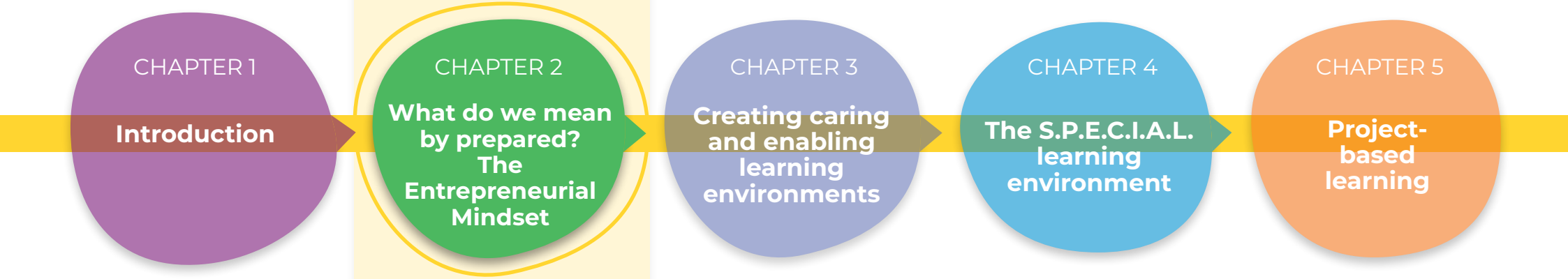
CHAPTER 2

What do we mean by prepared? The Entrepreneurial Mindset

basic education
Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

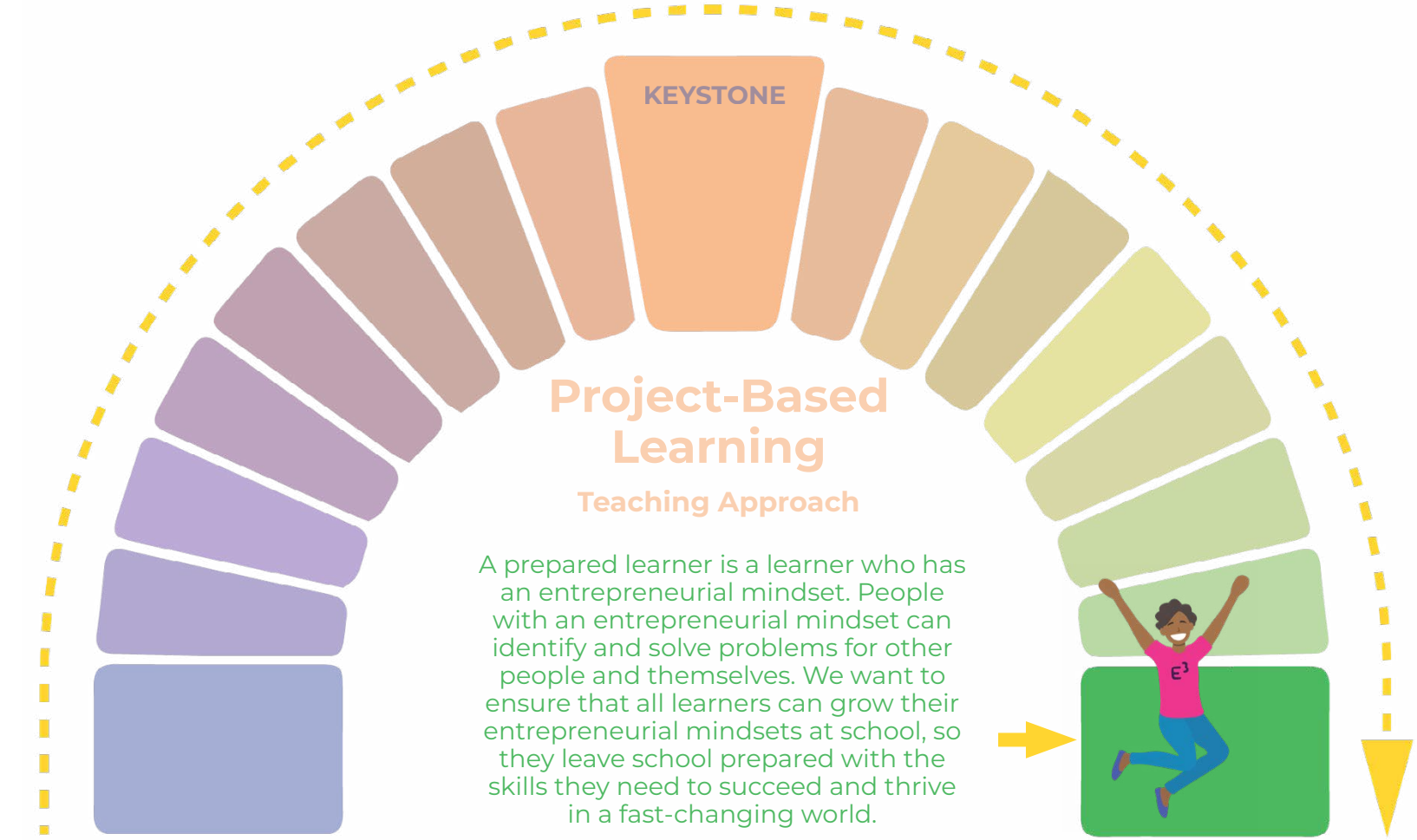
The LEGO Foundation

3 ENTREPRENEURSHIP
EMPLOYABILITY
EDUCATION


CHAPTER 1
Introduction
CHAPTER 2
What do we mean by prepared? The Entrepreneurial Mindset
CHAPTER 3
Creating caring and enabling learning environments
CHAPTER 4
The S.P.E.C.I.A.L. learning environment
CHAPTER 5
Project-based learning

Enabling, encouraging, and empowering learners for success

We all want the children and young people we teach to succeed in this fast-changing world. As you already know, success is not just about getting good grades. It is about being able to live a life that is driven by purpose, is **sustainable**, **meaningful**, and **satisfying**. This is what we mean by being prepared.


KEYSTONE
Project-Based Learning
Teaching Approach
A prepared learner is a learner who has an entrepreneurial mindset. People with an entrepreneurial mindset can identify and solve problems for other people and themselves. We want to ensure that all learners can grow their entrepreneurial mindsets at school, so they leave school prepared with the skills they need to succeed and thrive in a fast-changing world.
Learning Environment
Safe and Caring Environment
S.P.E.C.I.A.L. Environment
Prepared Learners
Entrepreneurial Mindset
Competencies (skills)

Prepared for success in a changing world

In this chapter we will answer two questions:

1. **What does it mean to be prepared for a fast-changing world?**

- Being prepared means having a discovery mindset
- Intrinsic motivation drives our desire to discover and learn
- We are born with the intrinsic motivation to learn through discovery
- This discovery mindset is also found in entrepreneurial people - we call this the entrepreneurial mindset.

2. **How do we nurture young people with an entrepreneurial mindset and success in a changing world?**

- Create opportunities to practise the entrepreneurial mindset in school using project-based learning
- Create schooling that prepares young people with the entrepreneurial mindset and success in life after school
- Use the natural learning cycle in class because it is what makes us all entrepreneurial and prepared.

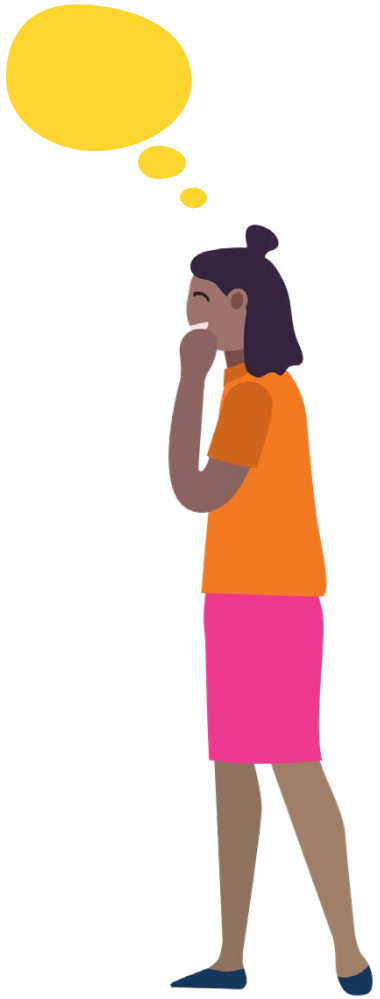
What does it mean to be prepared for a fast-changing world?

The world is changing quickly - we have seen this with pandemics and climate change. We also know that many of the jobs that exist today probably won't be around when learners finish high school.

So, the questions we should be asking are:

? ***What does 'prepared' mean in this complex and uncertain world?***

? ***How do we prepare young people for a future that we can't even begin to imagine?***

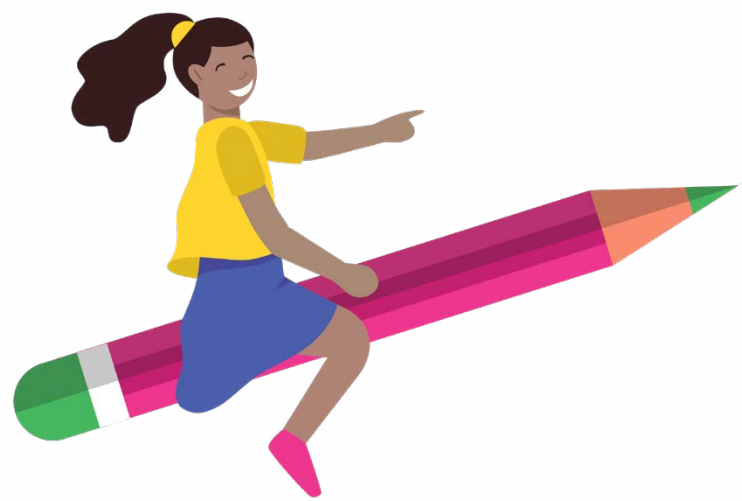


Before we answer these big questions, consider the following:

? ***Did you know that we are all born with the potential to be prepared for anything?***

? ***Did you know that as infants, we are born able to learn and discover the complex and uncertain world.***

The discovery mindset



Children learn through discovery, by trying something and seeing what happens. This process of discovery: learning by making mistakes, reflecting and trying something new, is called iteration. As children, it helps us build our skills (develop mastery). As we get better and better at these new skills, we start feeling joy. Learning in this way is motivated by a bigger ***purpose*** *- the desire to discover new things. This type of learning is also self-directed.*

Intrinsic motivation drives our desire to discover and learn

When we are young, this desire to learn is not motivated or driven by external rewards (extrinsic motivation), it is motivated by the internal desire to learn. This is called **intrinsic motivation**, and we all have this when we are born.

We are born with the intrinsic motivation to learn through discovery

Let's look at the example of a child learning to walk. Children learn to walk because they want to discover their surroundings - this is called intrinsic motivation. There is no external reward for learning to walk. In fact, it is a child's own desire to learn to walk that drives them - they are **self-directed**. They have a purpose as they want to move more efficiently. Crawling on your hands and knees is not efficient as it doesn't enable you to use your hands to do anything else, such as carrying things.

As a child takes their first steps, falls, gets up, and tries again, they slowly develop mastery at this new skill. They are using their intrinsic motivation to learn and showing many of the qualities of an entrepreneurial mindset. As we explore our world and gain new skills **we develop the confidence to make our own choices and decisions** (this is also known as agency and autonomy.)

The discovery mindset is what drives entrepreneurial people

This very learning experience that occurs when we are young, happens to be the very same learning experience used by a group of people we call Entrepreneurials - people with an entrepreneurial mindset.

Entrepreneurials keep their motivation going because they have:

PURPOSE

They feel connected to something bigger than themselves - this is known as Purpose.

MASTERY

They have the satisfaction of getting better at something that matters to them - this is known as Mastery.

AUTONOMY

They have the desire to have control over their own lives and learning paths - this is known as Autonomy.

The very same purpose, mastery and autonomy is what drives children to learn and needs to be sustained through the schooling process.

Questions for reflection

ACTIVITY: Let's see if you have an entrepreneurial mindset?

Answer the following questions with a yes or no and give an example.

Are you a curious person who asks lots of questions? Give an example of something you are curious about and want to know more about.

YES NO

Do you enjoy learning new things? Give an example of something you learnt in the last year.

YES NO

Can you think of a time when you made a mistake and learnt from it? Give an example.

YES NO

Do you solve problems often? Give an example of a problem you have solved in the last week.

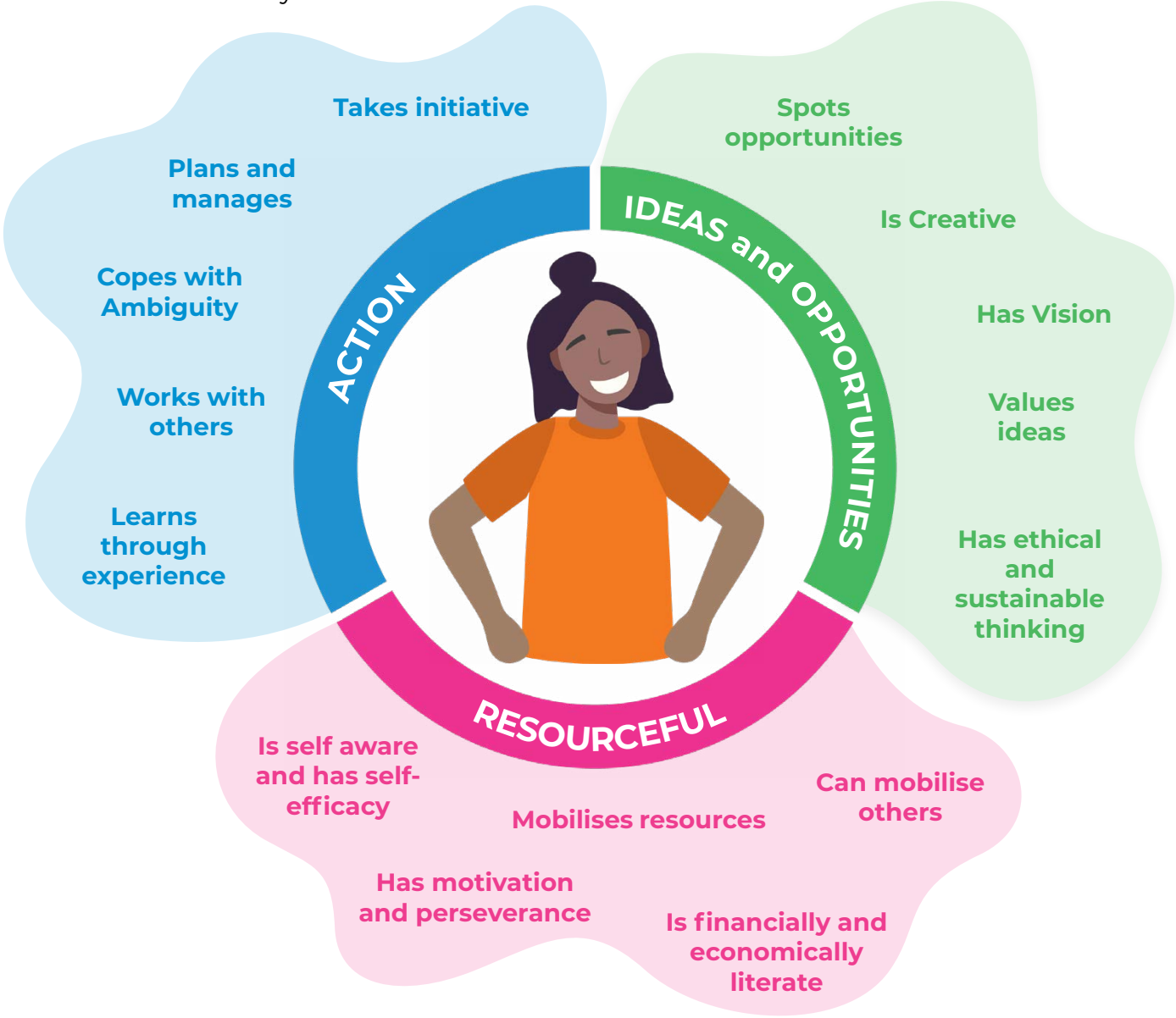
YES NO

YES If you answered yes to any of these questions, then you have some of the qualities of an entrepreneurial mindset! Did you ever consider that you, as a teacher, might also be an Entrepreneurial?!

Characteristics of Entrepreneurials

Let's go back to the question of what it means to be prepared and take a closer look at the characteristics of Entrepreneurials - the people who can successfully navigate (find direction) and solve problems in a changing world.

How many of these characteristics describe you?



21st century skills, entrepreneurial mindset, and Entrepreneurials

These skills can be summarised into THE BIG FIVE:

Collaboration which needs **Communication** which helps with **Critical Thinking** which leads to **Creative Innovation** - none of which will happen without **Curiosity**.

Entrepreneurials

These 21st century skills also happen to be the characteristics of entrepreneurial thinking, what we call "the entrepreneurial mindset" and is what we believe can increase a learner's chances of thriving in the world.

We call people with these skills and this mindset "Entrepreneurials" - not entrepreneurs - because they don't only find solutions to start businesses, they also find solutions to the problems of the world and for others.

All of us have the potential for all these skills because we developed them through our intrinsic motivation to learn, which we were born with. Intrinsic motivation is the motivation to do something without expecting a reward.

What keeps Entrepreneurials motivated is their curiosity, enthusiasm, and wonder at the world, and the possibility of finding solutions to life's challenges. This intrinsic motivation is always present in entrepreneurial people and is what keeps them 'hungry' to learn.

Schooling has the ideal opportunity to create the environment to sustain and grow the **entrepreneurial mindsets** that children already have developed during infancy and early childhood.

But how can schools do this?

How do we empower young people with an entrepreneurial mindset and success in a changing world?

Now that we understand that we are born with the intrinsic motivation to learn, and we demonstrate the qualities of an entrepreneurial mindset from early on in life, the question to ask is,

"how can we support learners to sustain their intrinsic motivation to learn and keep growing their entrepreneurial mindsets through schooling?"

The answer is that learners need environments and opportunities to do entrepreneurial activities that grow their entrepreneurial mindsets, while they are at school.

The curriculum supports this

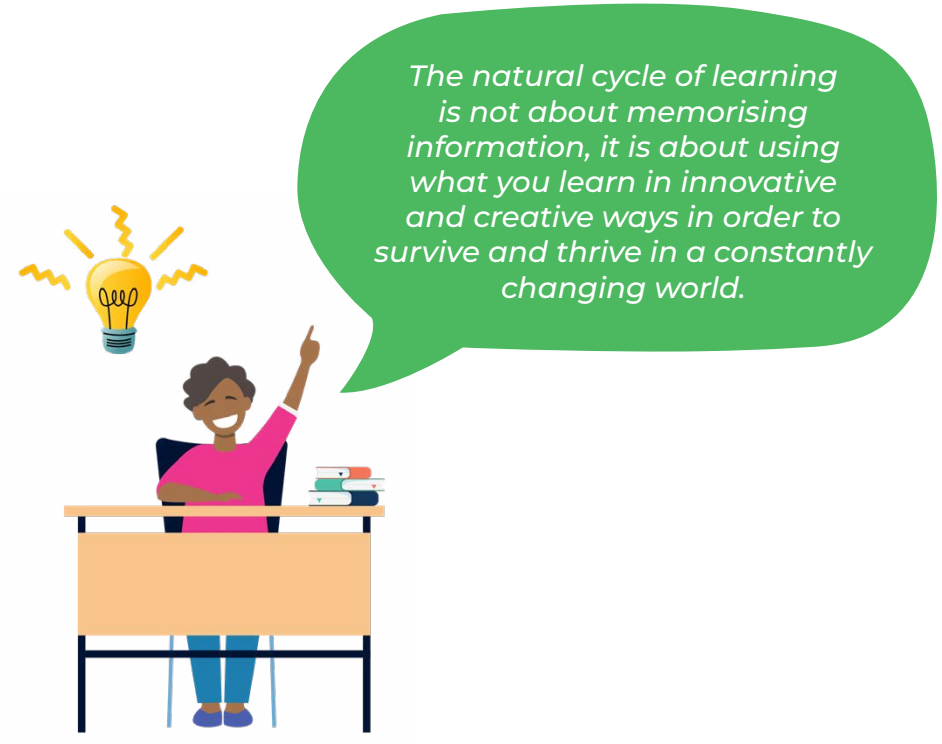
You probably already know that the Aims, Purpose and Principles of the CAPS national curriculum statement already supports the growth of an entrepreneurial mindset. CAPS intends to develop learners who can identify and solve problems and work together to create solutions.

Creating opportunities to practice the entrepreneurial mindset in school using project-based learning

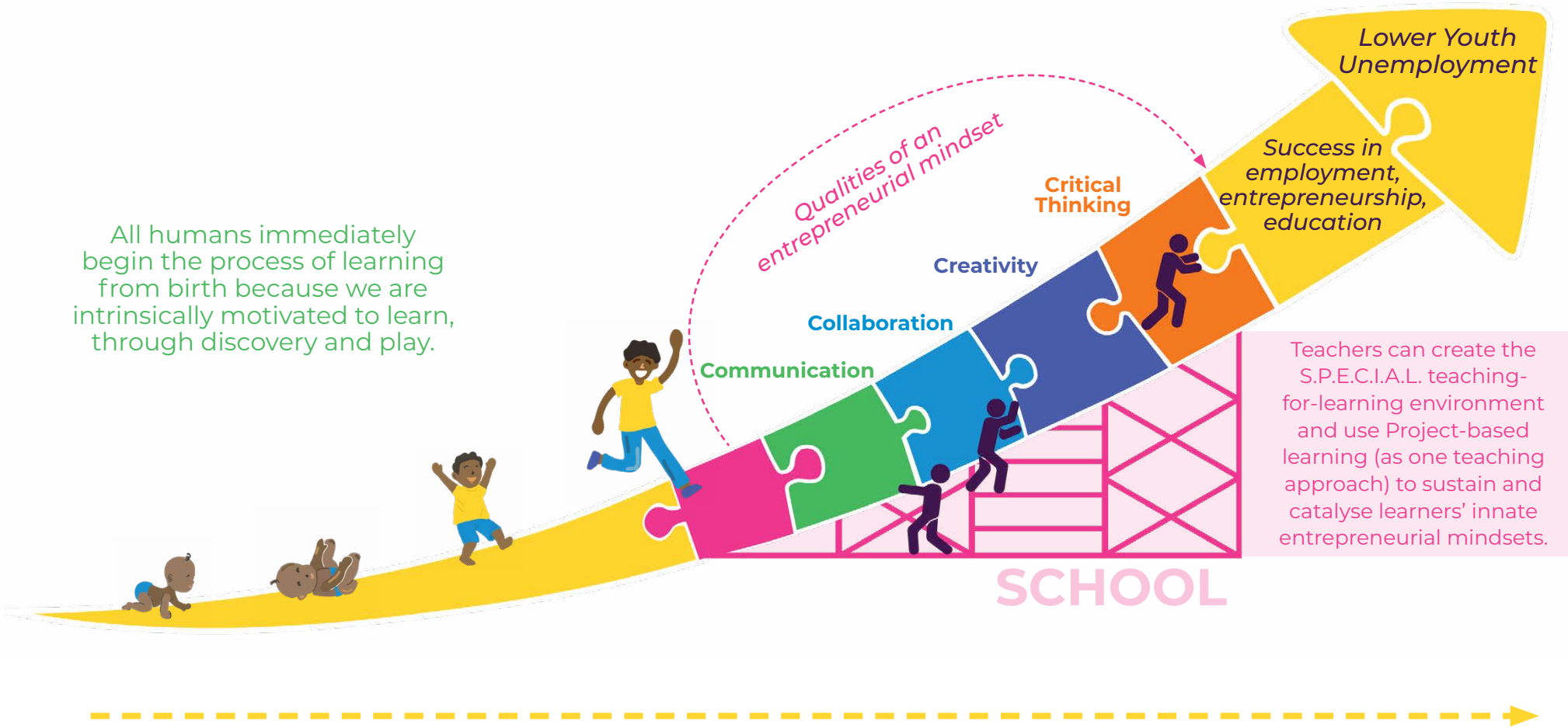
The way to create these environments and opportunities in schools is by using learner-centred teaching approaches such as **Project-based Learning (PBL).**

Project-based Learning activities are planned around the natural learning cycle (which is how children learn before they come to school), where learners plan, experiment, learn, reflect, apply feedback and plan again.

This natural learning cycle is ALSO at the heart of entrepreneurial thinking and the heart of lifelong learning. Through the cycle of learning, we learn how to learn which is something **every learner at school should also know**.

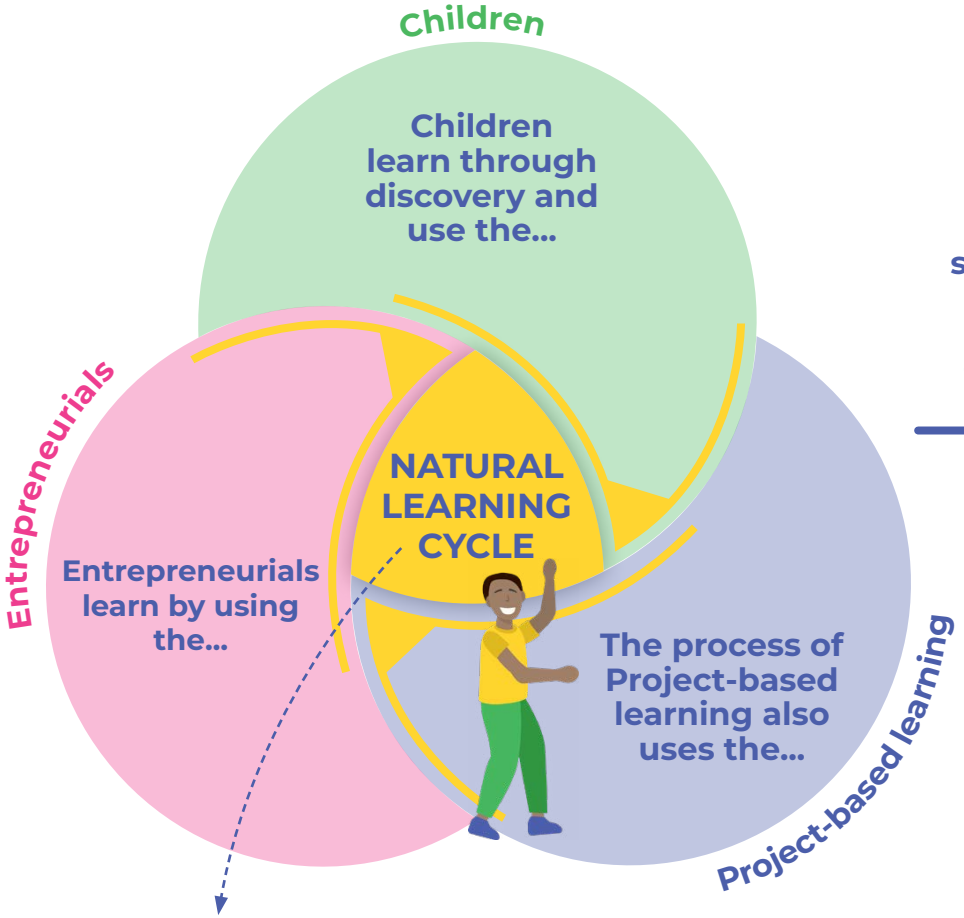


The role of schooling in preparing young people with the entrepreneurial mindset and success in life after school



We know that before children start school, they are intrinsically motivated to learn. They learn through discovery and through opportunities to explore the natural learning cycle. Schooling, therefore, has an essential role to play in maintaining and sustaining the learning that happens before school, so that young people continue to grow the entrepreneurial mindset qualities they developed as young children. If the schooling process creates the learning environment in which learners can explore, identify and solve problems, using project-based learning, then learners will continue to grow their entrepreneurial mindsets and become prepared, thriving, and successful young people when they finish school.

The natural learning cycle is what makes us all entrepreneurial and prepared!



which leads to young people at school growing their entrepreneurial mindset and continuing to learn how to learn

By "doing" Project-based Learning over and over, learners will become good at these tools of learning - and therefore knowing how to learn.

So, a prepared learner is one who knows how to learn, and who has the entrepreneurial mindset and the skills to solve problems innovatively. Project-based Learning is a great way of unlocking and growing these skills because it uses the natural learning cycle, which is the way that both young children and entrepreneurial people learn.

In summary

WE KNOW THAT

We are born intrinsically motivated to learn

AND

Entrepreneurials are also intrinsically motivated to learn and discover

WE ALSO KNOW THAT

People with an entrepreneurial mindset have the skills and qualities to be successful in a changing world.

SO THEN

The purpose of schooling needs to sustain the intrinsic motivation we are born with and help learners grow their entrepreneurial mindsets

HOW?

Schooling needs to create learning environments that allow learners to grow their entrepreneurial mindsets by participating in Project-based Learning activities.

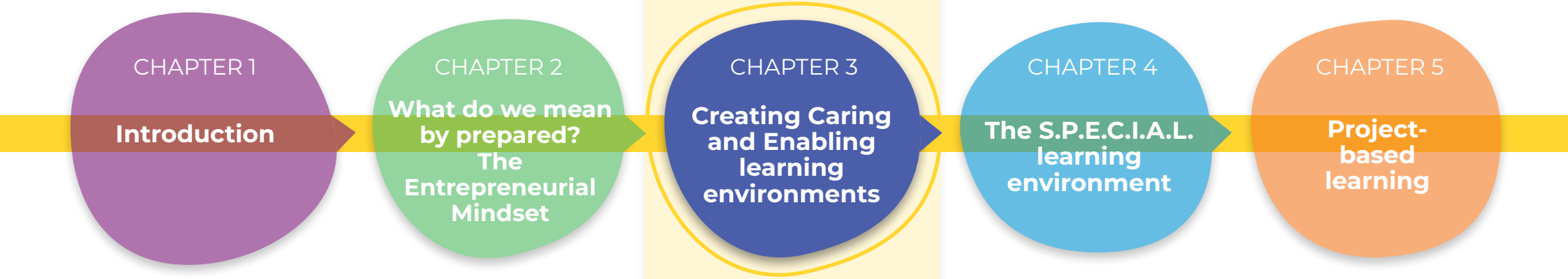
CHAPTER 3

Creating Caring and Enabling learning environments

basic education
Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

The LEGO Foundation

3 ENTREPRENEURSHIP
EMPLOYABILITY
EDUCATION

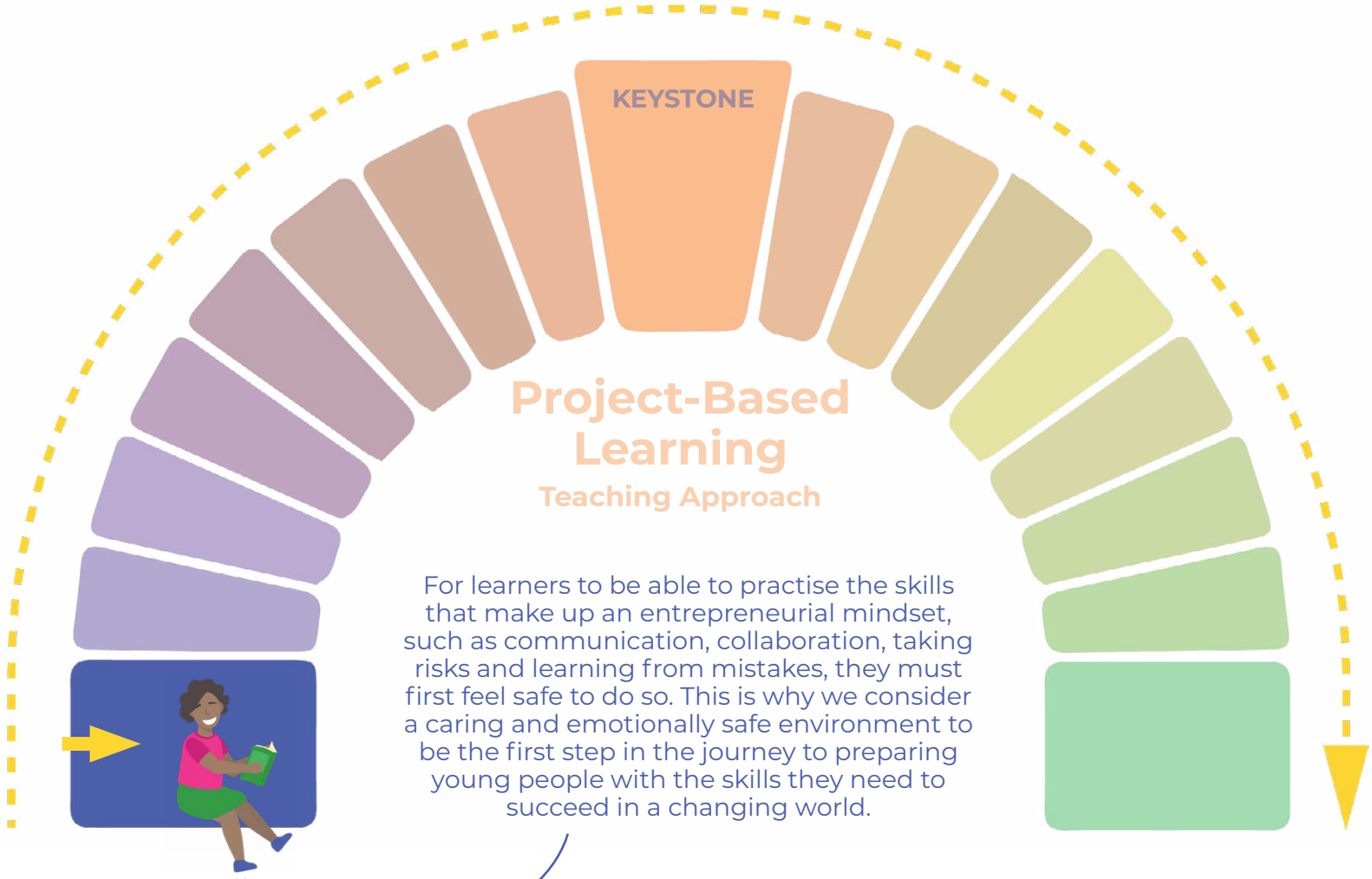

CHAPTER 1
Introduction
CHAPTER 2
What do we mean by prepared? The Entrepreneurial Mindset
CHAPTER 3
Creating Caring and Enabling learning environments
CHAPTER 4
The S.P.E.C.I.A.L. learning environment
CHAPTER 5
Project-based learning

Creating Caring and Enabling learning environments

In education, improving WHAT and HOW we teach takes up a lot of our attention, but the atmosphere or environment in which teaching and learning happen, is equally important. Learners and teachers flourish in environments where they feel safe and cared for, and where the habits of lifelong learning are enabled.

Creating caring and enabling environments are so important to the successful implementation of Project-based Learning that they are considered non-negotiables that must be in place before effective Project-based Learning can even begin.

We are going to start by exploring the importance of a CARING and ENABLING environment in the process of learning.


KEYSTONE
Project-Based Learning
Teaching Approach
For learners to be able to practise the skills that make up an entrepreneurial mindset, such as communication, collaboration, taking risks and learning from mistakes, they must first feel safe to do so. This is why we consider a caring and emotionally safe environment to be the first step in the journey to preparing young people with the skills they need to succeed in a changing world.
Learning Environment
Safe and Caring Environment
S.P.E.C.I.A.L. Environment
Prepared Learners
Entrepreneurial Mindset
Competencies (skills)

The caring learning environment: What, Why and How

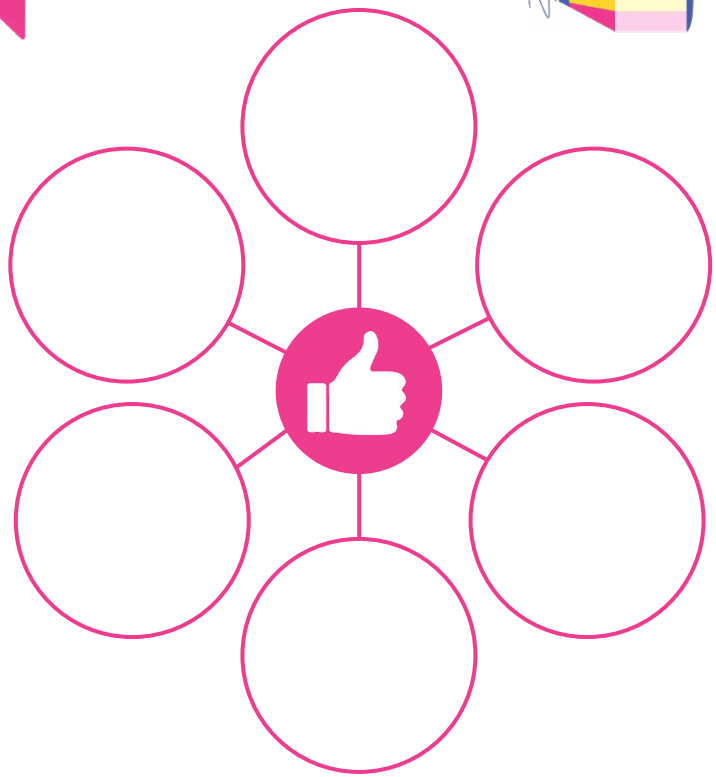
To get you into a learning frame of mind, we invite you to think back on your experiences at school and reflect on these questions.

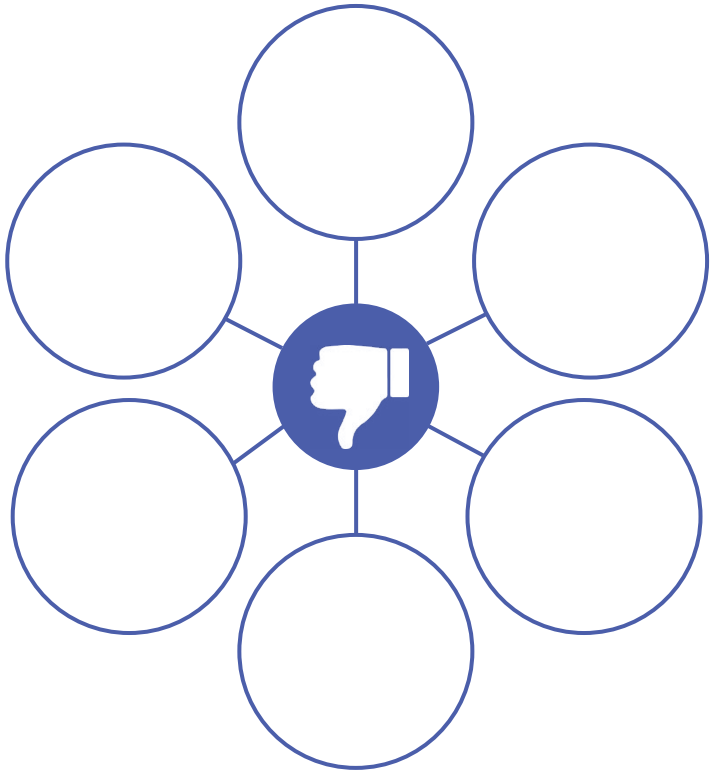
Questions for reflection

ACTIVITY: Memories of teachers

Teachers have a lot of power over learners. Some use this power to ignite the fires of lifelong learning but sadly others use it in a more abusive and destructive way. Think back to your schooldays and your teachers.

In the bubble map on the right, list how you FELT in the classes of the teachers you loved and respected and who made learning a joy.





In the bubble map on the left, list how you FELT in the classes of the teachers who did the opposite - who made school a misery.

What are caring learning environments?

"The attitude of the facilitator has almost entirely to do with climate. How can I create a psychological climate in which the child will feel free to be curious, will feel free to make mistakes, will feel free to learn from the environment, from fellow students, from me, from experience. How can I help him/her recapture the excitement of learning that was natural in infancy?"
Carl Rogers. Person-centred learning: Freedom to Learn.

A caring environment is tightly linked to psychological safety, i.e., the safety of the mind and the emotions (as opposed to the physical body). Psychological safety is essential for optimal learning in the classroom and throughout life. It can be explained as:

...the belief that you will not be humiliated or teased for the ideas you offer, for asking questions and admitting to mistakes. When cultivated in the classroom, learners don't worry about looking stupid, as the whole class knows that asking questions and making mistakes is crucial to learning.
(https://blog.innerdrive.co.uk/psychological-safety-in-the-classroom)

Scenario 1: Ask a stupid question, get a stupid answer

Questions for reflection

ACTIVITY: What do you think?

This scene may have connected to your memory of a teacher who made you feel miserable. Reflect on these questions to take your understanding of the effects of caring and uncaring environments a bit deeper.

Why do you think Lebo asked the question?

What emotions did he feel right after this interaction?

Do you think he will even ask another question?

How do you think he feels about his teacher? How has the relationship been affected?

What do you think the other learners learnt from this interaction?

Do you think an experience like this would improve the behaviour of learners?

Scenario 2: There is no such thing as a stupid question

These pictures show the effect on learning in uncaring, unsafe environments as opposed to learning in caring and emotionally safe environments. Uncaring, unsafe, and often toxic learning environments can discourage all but the most basic elements of learning. Learning environments that are caring and supportive, however, encourage wide and deep holistic learning.

Why are caring environments so important for learning?

Creating caring and emotionally safe environments has many benefits that go beyond the teaching and learning of the curriculum.

If we are to fulfil our purpose as educators, then creating caring and safe learning environments should be non-negotiable. If you are starting your Project-based Learning journey with **Collaboration, Communication, Critical thinking, and Creativity** at the core, this is especially important. These competencies cannot and will not grow in environments where learners feel (or even sense) emotional danger.

Closed for learning

Anxious

LONELY

Scared

Unvalued/ignored

HUMILIATED

Withdrawn or aggressive

DISINTERESTED

unmotivated

FEAR OF FAILURE

Sad

Resists school

suffers in silence

Open for learning

Supported

heard

Curious

VALUED

Healthy response to mistakes

ASKS FOR HELP

Learns in and out of school

Eager to know more and do more

LOVES LEARNING

Experiments with knowledge (thinkers)

Stable self-confidence

How to create caring and safe environments

I'm not prepared for this...
Have I destroyed all the learners I have ever taught?
It's too much to think about...
I'm a terrible teacher...
Do I do enough?

If you now have these thoughts spinning around in your head, then congratulations! These thoughts show that you are compassionate and concerned. They show that you think about how your actions as a teacher can affect your learners. There is every chance your learners are in a great learning environment. But if you are feeling unsure, not to worry – help is on the way.

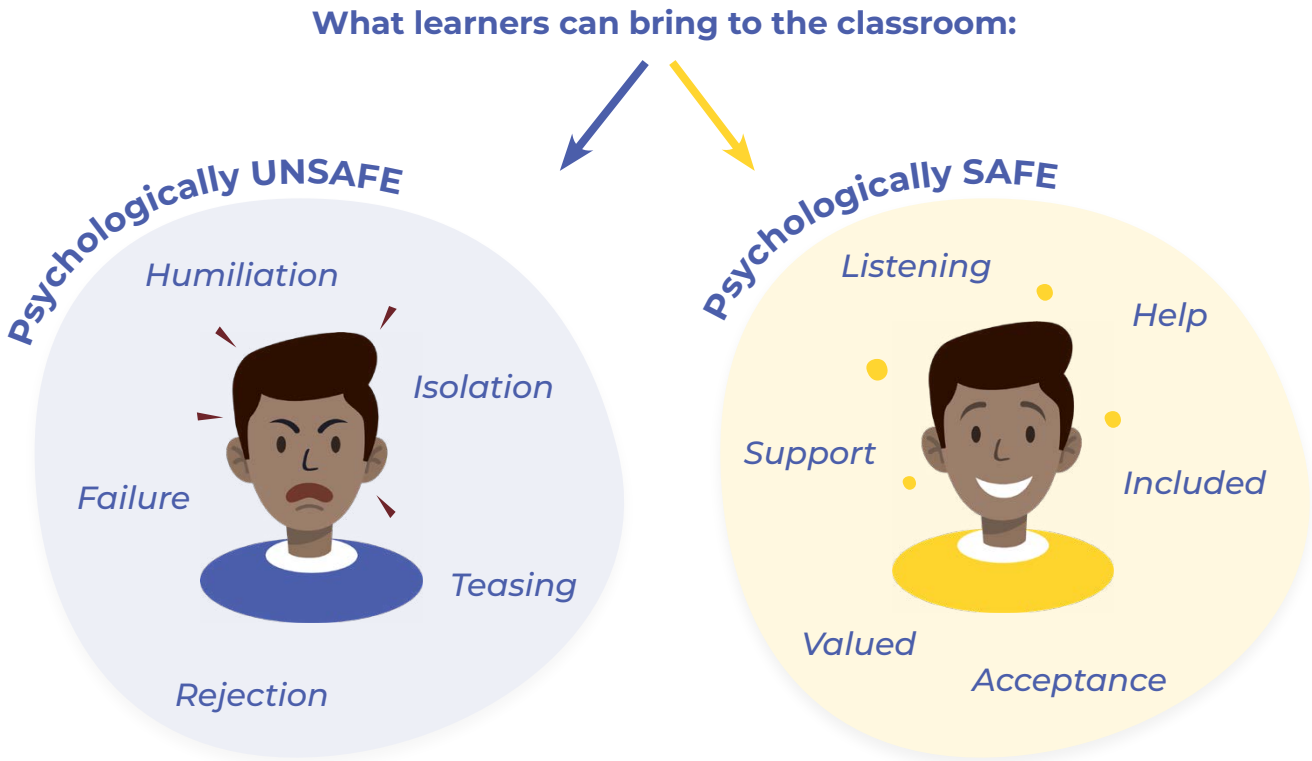
Before learning more about how to create these wonderful learning environments, let's pause and explore some of the myths and facts about caring and emotionally safe environments.

Myth 1: Teachers must become psychologists

Fact: Creating a caring and safe environment, doesn't mean you become a psychologist responsible for solving your learners' problems. For many learners, a safe classroom is the only safe space they have and just being in this space reduces some of their stress – or at a minimum, it doesn't make their tough situation any worse.

Sources of stress and distress in the wider environment or the world

Hunger *Loss* *Death of a loved one* *Abuse* *Divorce* *Chronic illness* *Separation* *Bullying*



Myth 2: Caring and safe environments mean we protect learners from all tough feelings and make sure they feel happy all the time.

Fact: Creating caring and safe classrooms is not about avoiding hard feelings. It is not about protecting learners from ever experiencing difficult emotions. Rather, it's about creating a space where learners feel safe enough to:

- grapple with challenges,
- struggle to understand complicated concepts,
- feel frustrated, angry, or helpless,
- take chances and
- make mistakes.

Myth 3: If teachers are friendly and pleasant, learners will not respect them, and they will behave badly.

Fact: Think about your own relationships and experiences with people: do you disrespect people who are friendly? Probably not! Imagine the story of two bosses: One is aggressive, disrespectful, rules by fear and often humiliates staff. Boss Two is open to listening to your point of view, and is forgiving, approachable and supportive. Which boss would motivate you to do your best? Which boss would you respect? Kindness is not weakness!

Myth 4: Caring and safe classrooms have no discipline

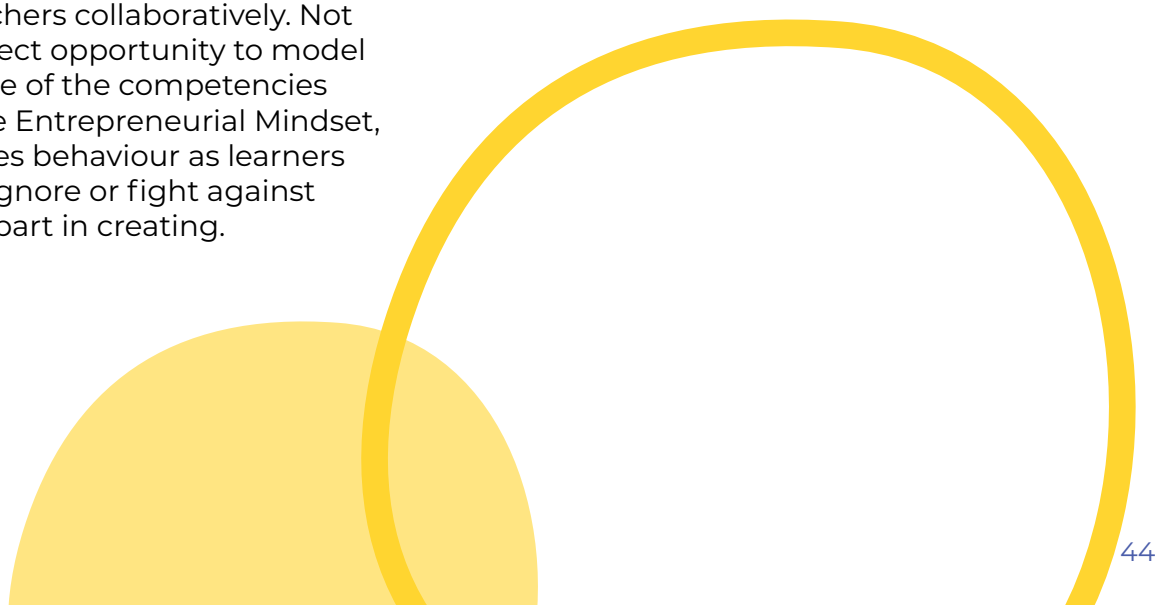
Fact: The complete opposite is true. In caring and safe classrooms, there are firm but fair rules that are consistently enforced. The purpose of these rules is not to 'control and command', but to ensure a respectful and collaborative learning environment. An example of such a rule is: "Listen attentively and be open to the opinion of others."

The next statement may shock you, but the classroom rules that are followed the most, are those that are created by learners and teachers collaboratively. Not only is this a perfect opportunity to model Collaboration, one of the competencies that make up the Entrepreneurial Mindset, it usually improves behaviour as learners are less likely to ignore or fight against rules they had a part in creating.

Myth 5: Creating caring and safe spaces can be expensive

Fact: Creating caring safe spaces in schools is not at all about buying resources or learning a new teaching approach. It is all about developing respectful relationships between teachers and teachers, teachers and learners, and learners and learners. While everyone in a classroom contributes to this sense of safety and the maintaining thereof, the first step usually rests with you, the teacher, and your actions and attitudes. We know learners are often not listening, but they are watching!

With this in mind, here are some ideas to get you started.



They may not be listening, but they are watching!

Thinking out of the box: Punishment vs. Caring and Emotional safety

"Where did we ever get the crazy idea that in order to make children do better, first we have to make them feel worse. Think of the last time you felt humiliated or treated unfairly. Did you feel like co-operating or doing better?" (Dr Jane Nelson)

Think about this quote in the context of the discipline procedures in your classroom or even your school. We know that poor discipline and bad behaviour are serious concerns in many schools and often become a barrier to teaching and learning. Many people believe that harsher and harsher punishment or even corporal punishment is the answer. But what if we tackled the problem of discipline with care and emotional safety instead?
What do you think?

Questions for reflection

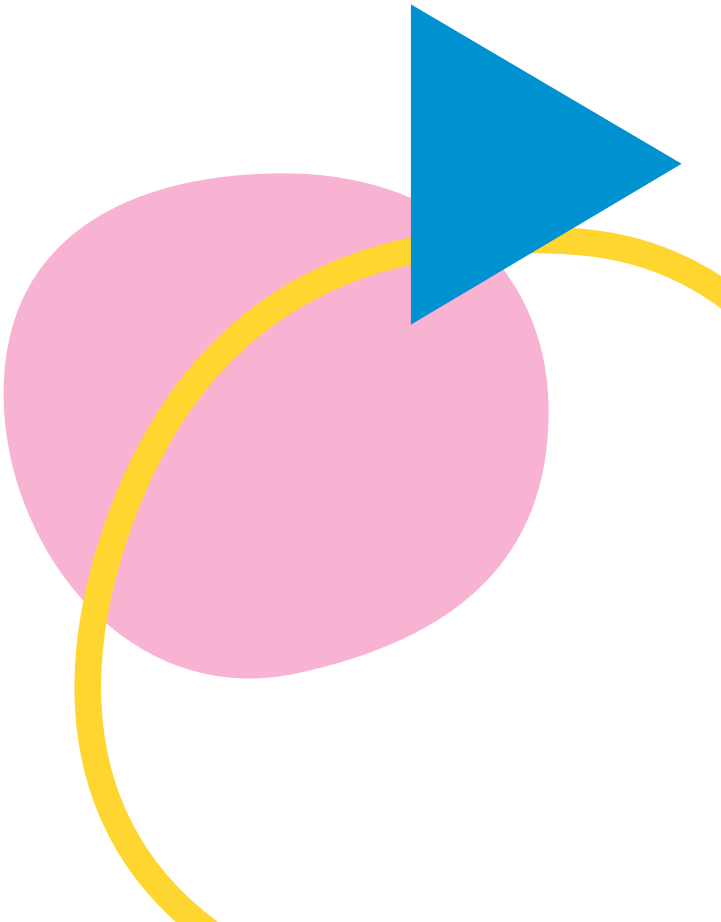
ACTIVITY: How caring and safe is your classroom?

Imagine if young Lebo asked the question, “Can we fly to the sun?” in your class. How would the learners respond? How would you respond? How caring and safe is your classroom?

Notes

CHAPTER 4

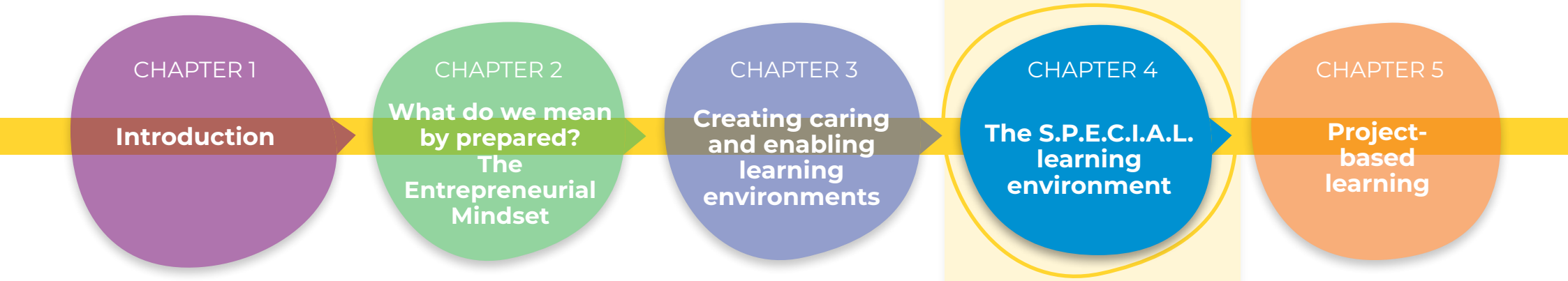
The S.P.E.C.I.A.L. Learning environment



basic education
Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

The LEGO Foundation

3 ENTREPRENEURSHIP
EMPLOYABILITY
EDUCATION

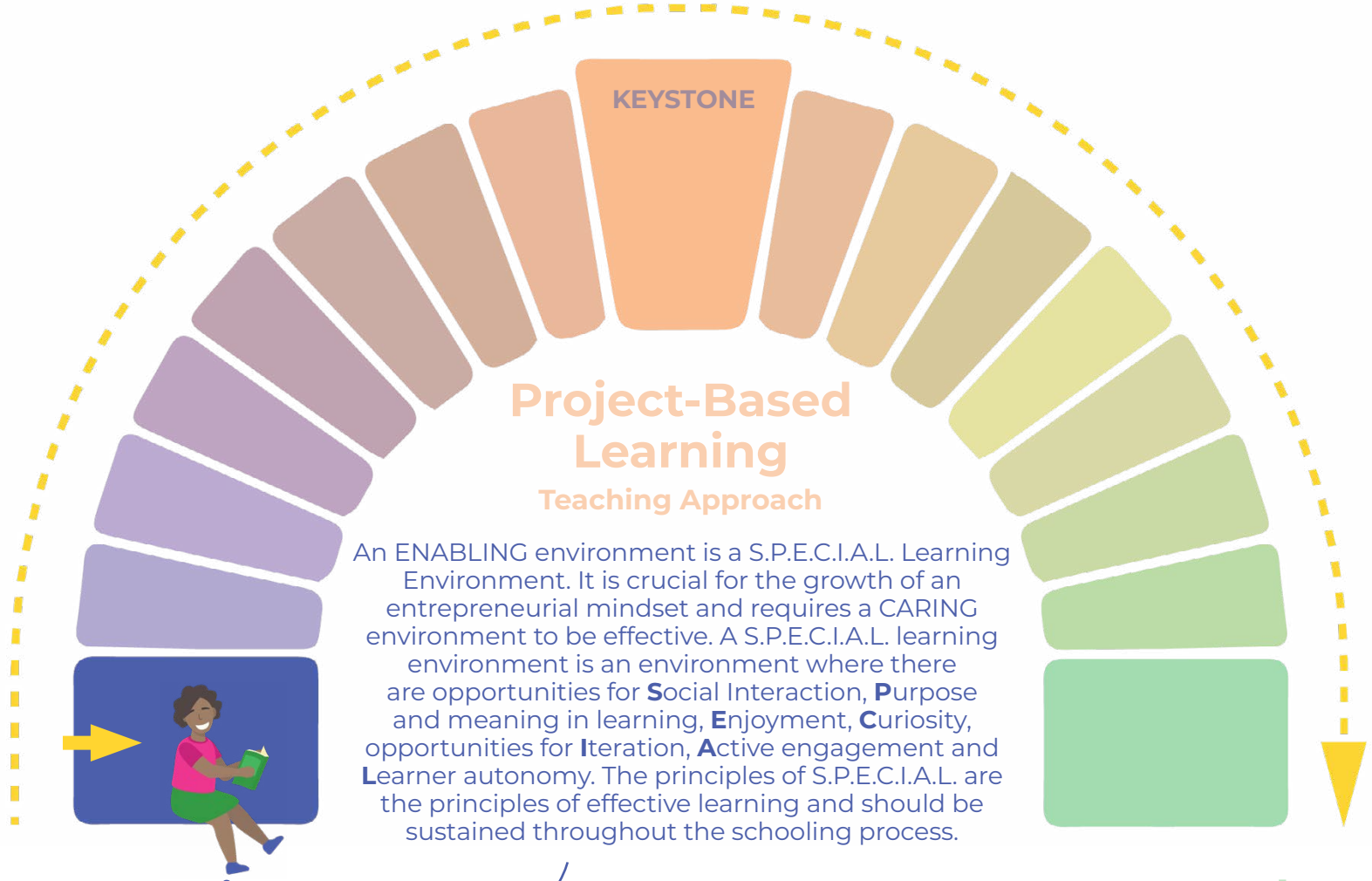

CHAPTER 1
Introduction
CHAPTER 2
What do we mean by prepared? The Entrepreneurial Mindset
CHAPTER 3
Creating caring and enabling learning environments
CHAPTER 4
The S.P.E.C.I.A.L. learning environment
CHAPTER 5
Project-based learning

The S.P.E.C.I.A.L. Learning environment

In the last part of the previous chapter, we introduced and explored the impact a CARING and emotionally safe environment has on teaching and learning.

In this next chapter we introduce and explore what it means to create ENABLING environments by bringing in seven principles that optimise or boost learning.

We call these principles S.P.E.C.I.A.L.


KEYSTONE
Project-Based Learning
Teaching Approach
An ENABLING environment is a S.P.E.C.I.A.L. Learning Environment. It is crucial for the growth of an entrepreneurial mindset and requires a CARING environment to be effective. A S.P.E.C.I.A.L. learning environment is an environment where there are opportunities for Social Interaction, Purpose and meaning in learning, Enjoyment, Curiosity, opportunities for Iteration, Active engagement and Learner autonomy. The principles of S.P.E.C.I.A.L. are the principles of effective learning and should be sustained throughout the schooling process.
Learning Environment
Safe and Caring Environment
S.P.E.C.I.A.L. Environment
Prepared Learners
Entrepreneurial Mindset
Competencies (skills)

Introducing S.P.E.C.I.A.L.

The word “special” describes something that is wonderful and treasured and highly valued – a special occasion, a special meal, or a special person are all greeted with expectation and delight. And this is exactly how we want learners to feel about learning and the places in which they learn.

The S.P.E.C.I.A.L. learning environment: What, Why and How

We want learning environments to be places of wonder, purpose and eager expectation and the best way to do this is by creating Caring and Enabling learning environments.

What is S.P.E.C.I.A.L.?

S.P.E.C.I.A.L. stands for:

- **S** Social Interaction
- **P** Purpose

- **E** Enjoyment
- **C** Curiosity
- **I** Iteration

- **A** Active Engagement
- **L** Learner Autonomy

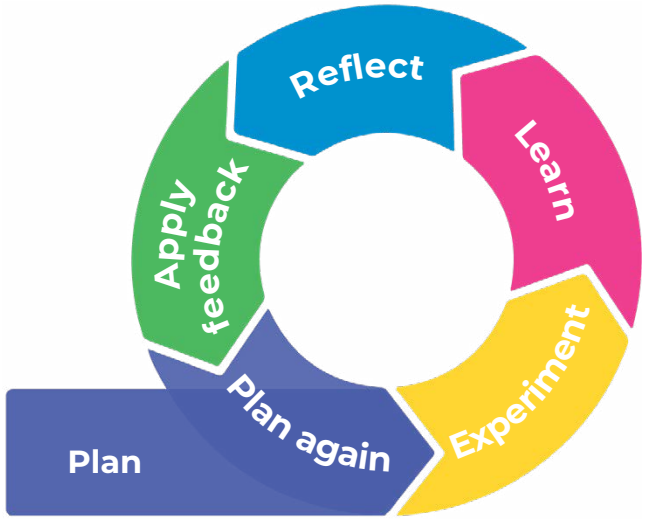
Questions for reflection

ACTIVITY: Memories of my learning

There is a theory that many teachers teach in the way they were taught, even after qualifying. If they had great teachers this is a blessing, but it could also mean that certain approaches to teaching and learning that are out of date, are still used in today's classrooms.

We will start the S.P.E.C.I.A.L. learning journey by reflecting on our experiences of schooling when we were learners. Using the rating scale, rate how S.P.E.C.I.A.L. your experience of learning was when you were at school.

The Learning Cycle of an Entrepreneurial



Rate how S.P.E.C.I.A.L. your experience of learning when you were at school.

1. Never	2. Sometimes	3. Often	4. Mostly	5. Always

When you were at school, how often did you...	1	2	3	4	5
S Work together in groups?					
P Understand the purpose or WHY of what you learnt?					
E Enjoy learning in class?					
C Feel curious about a subject and wanted to learn more?					
I Try something new, fail, reflect and learn, and try again?					
A Become actively involved rather than sitting listening to the teacher?					
L Have choices about what or how you learnt?					

We will come back to this rating scale in the final reflection in this section.

Why are S.P.E.C.I.A.L. environments so important for learning?

The principles that comprise S.P.E.C.I.A.L. come from research into how all humans learn best. According to this research, the intrinsic motivation to learn is nurtured when the teaching approach is:

Socially Interactive *- so that learners can work together and learn together*

Purposeful *- so that learners understand why they are learning something*

Enjoyable *- so that learners want to be at school and want to learn*

Sparked by ***curiosity*** *- so that learners are motivated to learn more*

Iterative *- so that learners can feel free to explore problems - try, fail, reflect and try again*

Actively Engaging *- so that learners are 'hands on and minds on'*

Directed at developing ***learner autonomy*** *and intrinsic motivation - so that learners take on the responsibility of their own lifelong learning*

The principles of S.P.E.C.I.A.L., together with a caring and emotionally safe learning environment, are essential to the success, not only of Project-based Learning but any approach to learning.

How to create S.P.E.C.I.A.L. learning environments

Start with your heart: you need to believe in the benefits and genuinely want to make the changes. This attitude will give you the energy and motivation to carry you through the challenges.

It's important to understand that your role as a teacher will change. Traditionally, teachers have full control of what is taught - from the planning phase, choosing the activities, and the actual teaching. In a S.P.E.C.I.A.L. classroom, learners are much more involved in what and how they learn. We can say that teachers move from being the "sage on the stage" to becoming the "guide on the side." Instead of teaching, teachers start to facilitate learning by creating caring and enabling environments where learners have the confidence to collaborate, explore, investigate, research, design, and test solutions to problems. Changing your belief and understanding about your role in the classroom will make the other changes easier.

The buy in to and the understanding of the need to do things differently then leads to just that - the doing. This requires the courage and confidence (and creativity) to carry out your teaching role differently. Think about how you want to start to implement this PBL approach and the caring and S.P.E.C.I.A.L. environments in your classroom. Remember "the journey of 1000 miles begins with a single step".

Go slowly. Start with small changes. You will probably fail – a few times – just remember to reflect and learn from the experience and keep going. There is joy at the end of this journey.

From traditional to S.P.E.C.I.A.L., an overview of the journey

	Traditional	S.P.E.C.I.A.L.
S Social Interaction	Teachers talk and learners listen. Learners are expected to work alone and quietly.	Learners create meaning as they collaborate, interact, work together and share learning.
P Purpose	Learning can feel disconnected, meaningless and purposeless to learners. This leaves little reason or motivation to learn.	As learning connects to learners' lives, learning has purpose and meaning. There is a good reason for learning, which unlocks the motivation to learn.
E Enjoyment	Learning is serious and can feel joyless. It can also feel overwhelming and frightening. The intended outcome is to get good grades.	Learning is a process of discovery and problem solving. The enjoyment or deep feeling of joy comes from conquering a challenge through iteration and persistence.
C Curiosity	Focus on correct answers to get high marks. Learners memorise facts to pass tests.	Focus on encouraging curiosity about the world and a love for learning (good grades come from this). Learners feel confident to ask questions and explore topics that interests them.
I Iteration	One chance to get the 'product' right. Few second chances to improve.	Many chances to iterate and improve the 'product.'
A Active Engagement	Learners passively receive facts from the teacher. They are usually expected to be compliant followers of instructions.	Learners are 'minds on, hands on' creators of knowledge and problem-solvers.
L Learner Autonomy	Learners are dependent on teachers choosing what and how they are taught.	Within the framework of the CAPS, learners participate in choosing what and how to learn. They become self-directed, independent and take responsibility for learning.

In conclusion

The seven S.P.E.C.I.A.L. principles 'ebb and flow.' All seven are not necessary all the time and at the same level. For example, in some activities, Social Interaction will be important but there will be times when learners work alone.

There is no 'one right way' to create a S.P.E.C.I.A.L. classroom. If, through a day or even a week, learners experience moments of joyful discovery, meaningful connection with the work and one another, are active and absorbed, ask questions and explore new ideas, are able to make some choices and have opportunities to redo and improve some pieces of work, you will be making a big difference to your learners' experience of school and learning.

Questions for reflection

ACTIVITY: Where am I on my journey to S.P.E.C.I.A.L.?

Now that you have an overview of the S.P.E.C.I.A.L. classroom, let's go back to the rating scale. This time, instead of rating your schooling experience, you must rate your teaching environment.

How S.P.E.C.I.A.L. is your classroom?

	1. Never 2. Sometimes 3. Often 4. Mostly 5. Always					
	How often do your learners...	1	2	3	4	5
S	Work together in groups?					
P	Understand the purpose or WHY of what they learnt?					
E	Enjoy learning in class?					
C	Feel curious about a subject and want to learn more?					
I	Try something new, fail, reflect and learn, and try again?					
A	Become actively involved rather than only sitting and listening?					
L	Have choices about what or how they learnt?					

Questions for reflection

After this rating and reflection activity, how satisfied are you with your teaching and learning environment?

Do you feel you need to make any changes and if so, what could they be?

Notes

S.P.E.C.I.A.L.

S

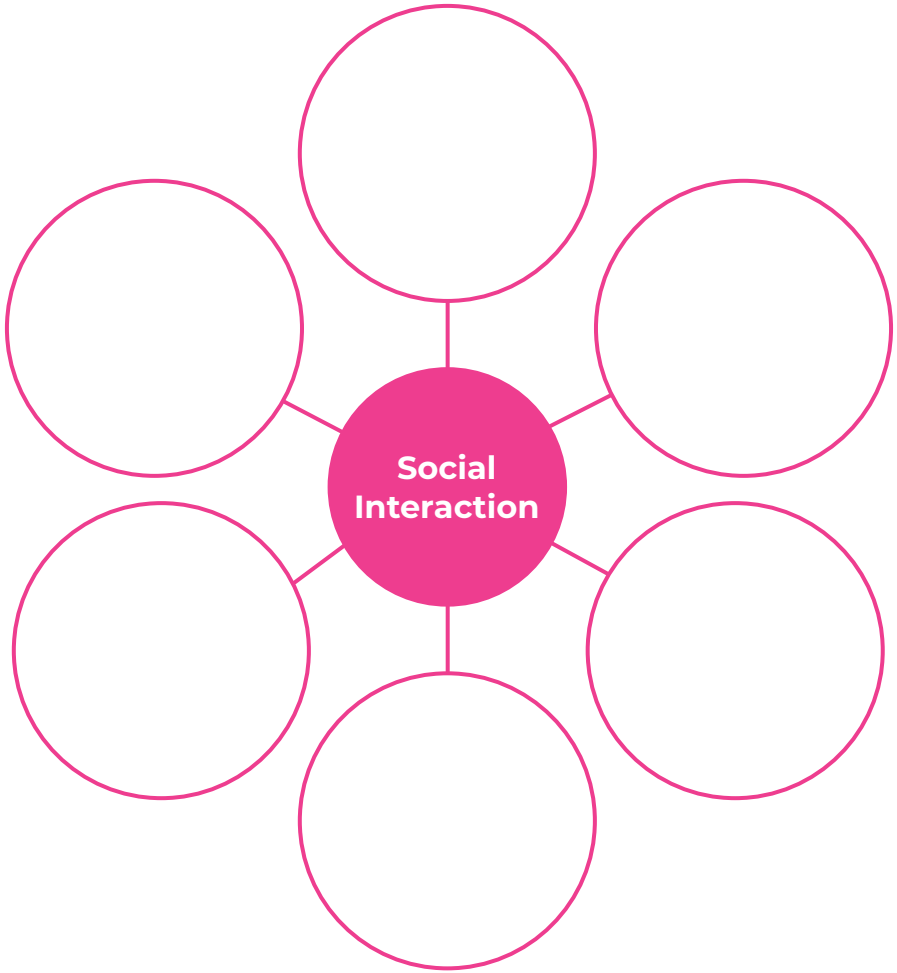
Social Interaction: Teaching and learning together

Questions for reflection

ACTIVITY: How do I feel about Social Interaction?

Most words have feelings attached to them. The word ‘special’ may remind you of good times with good friends and make you feel happy. There are words that might make you feel sad or hopeful, curious or frustrated.

Based on your experience as a teacher, how do the words ‘Social Interaction’ (which includes teamwork, group work, and collaboration) make you feel? You can write these feelings into the bubble map.



What is Social Interaction?

Interacting, or working together with others to achieve a goal is one of the most important ways that humans learn. Humans learn best by watching, copying, asking, listening, discussing, helping, and sharing with others. We don't need to teach Social Interaction to people, it is a natural human characteristic. From birth throughout life, humans reach out and interact with one another. For example, babies can't learn to walk and talk on their own. They must interact with parents, caregivers, and other children who help and support them as they learn these skills.

The role of Social Interaction in education

In education, understanding how important Social Interaction is for learning, has come a long way. Traditionally, learners were expected to work mainly on their own, which research has now shown is not the most ideal way for people to learn.

The pictures on the following page show the difference between how learners can respond in a more traditional classroom where they work alone, and in a S.P.E.C.I.A.L. classroom where there are opportunities to interact and work together.

Super S.P.E.C.I.A.L. strategy

Reciprocal reading

I read, you read, we all learn together.

Reciprocal reading is a powerful reading and comprehension strategy. It is a useful strategy because it is quick to implement, costs nothing but time, and can be used across grades and subjects.

Good for: any instance where learners need to read and understand information. Also excellent for Group Guided reading in the Foundation Phase.
Size of grouping: Between 2 and 6 learners

How:

1. Each learner first reads the same information quietly on their own.
2. After reading, each learner writes/ thinks of one question about the information. The question can be something they don't understand, or something that makes them curious.
3. Learners then take turns to ask their questions, and the group collaborates and works together to answer the questions. They can only ask the teacher for help if, as a group, they cannot work out an answer.
4. Learners then reread the information - but now with more understanding.
5. This can lead to a second round of questions and answers.

Reciprocal reading harnesses the power of meaningful Social Interaction and ticks all the S.P.E.C.I.A.L. boxes.

S	P	E	C	I	A	L
✓	✓	✓	✓	✓	✓	✓

A traditional classroom: The ‘Sage on the stage’

Questions for reflection

ACTIVITY: In the minds of learners

There will always be a place for independent work, i.e., where learners work on their own. However, when learners are expected to do this all the time, one will start to see problems both in learning and behaviour. In this picture, there is one learner who doesn’t understand and three learners who are not listening.

Study the picture and reflect on:

- Who do you think is doing the most learning in this class?
- Do you think these learners are being naughty?
- How do you think the teacher might be feeling?
- How do you think the learners might be feeling?
- If you asked one of these learners what he learnt that day, want do you think the answer would be?

However, when teachers create a S.P.E.C.I.A.L classroom where there are opportunities for Social Interaction, where learners can work together in a meaningful way, they start to see some satisfying changes in both learning and behaviour.

A S.P.E.C.I.A.L. classroom: The ‘Guide on the Side’

Why is Social Interaction so important for learning?

As illustrated in the pictures on the previous page, there are many good reasons for giving learners opportunities to work together. Some of these are:

Learning through Social Interaction is natural to humans, so in effect, you will be "going with the flow" of how learners learn instead of fighting against it. This can improve behaviour:

How to create opportunities for Social Interaction

Social Interaction means more than group work. Often when people think of Social Interaction in a classroom, they immediately imagine arranging desks into groups. **But the value of Social Interaction comes from listening, discussing, helping and sharing together with others, which can happen in a whole class, between you and your learners, in big groups, in small groups and in pairs.** It can also be face-to-face and online such as a WhatsApp group. Opportunities for Social Interaction can last a few minutes or a few hours. Start by planning your activity and then look for the opportunities for Social Interaction.

Include your learners on the journey. In a classroom, learning should happen with learners, it should not be something done to learners. So, when you make changes and bring in something new, like Project-based Learning, take the time to discuss and share what you are doing and why you are doing it.

One good way to start a discussion on the value of working together is to connect sports teams to learning teams. Learners can discuss and list the characteristics of successful sports teams or sporting partnerships and compare these to learning teams in the classroom. This is a good way to add Purpose and meaning to group work.

Here are some examples:

SPORTS TEAM	LEARNING TEAM
A group of people playing together	A group of people playing together
Winning a match is the common goal	Solving a problem, for example, could be a common goal
Each team member's contribution counts	Each team members' contribution counts

If you get Social Interaction right, the rest of S.P.E.C.I.A.L. will be much easier to activate.

What has been your experience of social interaction in your classroom and what tips would you share with other teachers.

S.P.E.C.I.A.L.

P

Purpose: Teaching to the WHY

Questions for reflection

ACTIVITY: A sad Saturday

Imagine this: You are a grade 5 E.M.S teacher. You attend a workshop on a Saturday and by mistake find yourself in a presentation on Grade 11 Physical Science! The presentation has started, and you feel shy to get up and leave. You are stuck in a meaningless situation!

1. How do you feel?

2. What do you do?

3. How much do you learn?

4. What do you think makes this situation so unpleasant?

5. Do you think learners ever feel like this at school?

What is Purpose?

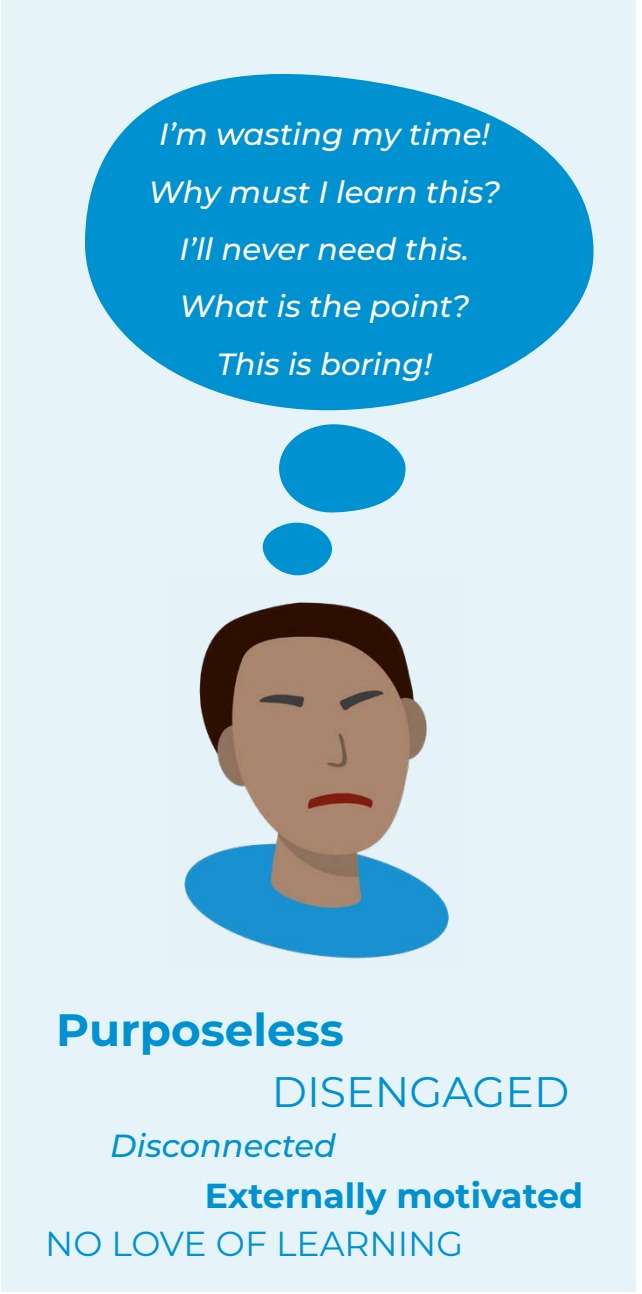
'Purpose' is the reason why we do things or why something exists. Purpose is like a battery that powers our behaviour. We are likely to focus on information or activities that we find purposeful, meaningful, and useful.

Purpose energises our self-motivation to keep going through challenges such as studying further, saving for a child's education, or training for a marathon. A sense of purpose gives us the energy to keep striving for our goals in life. When we feel connected to something bigger than ourselves this is known as Purpose.

The role of Purpose in education?

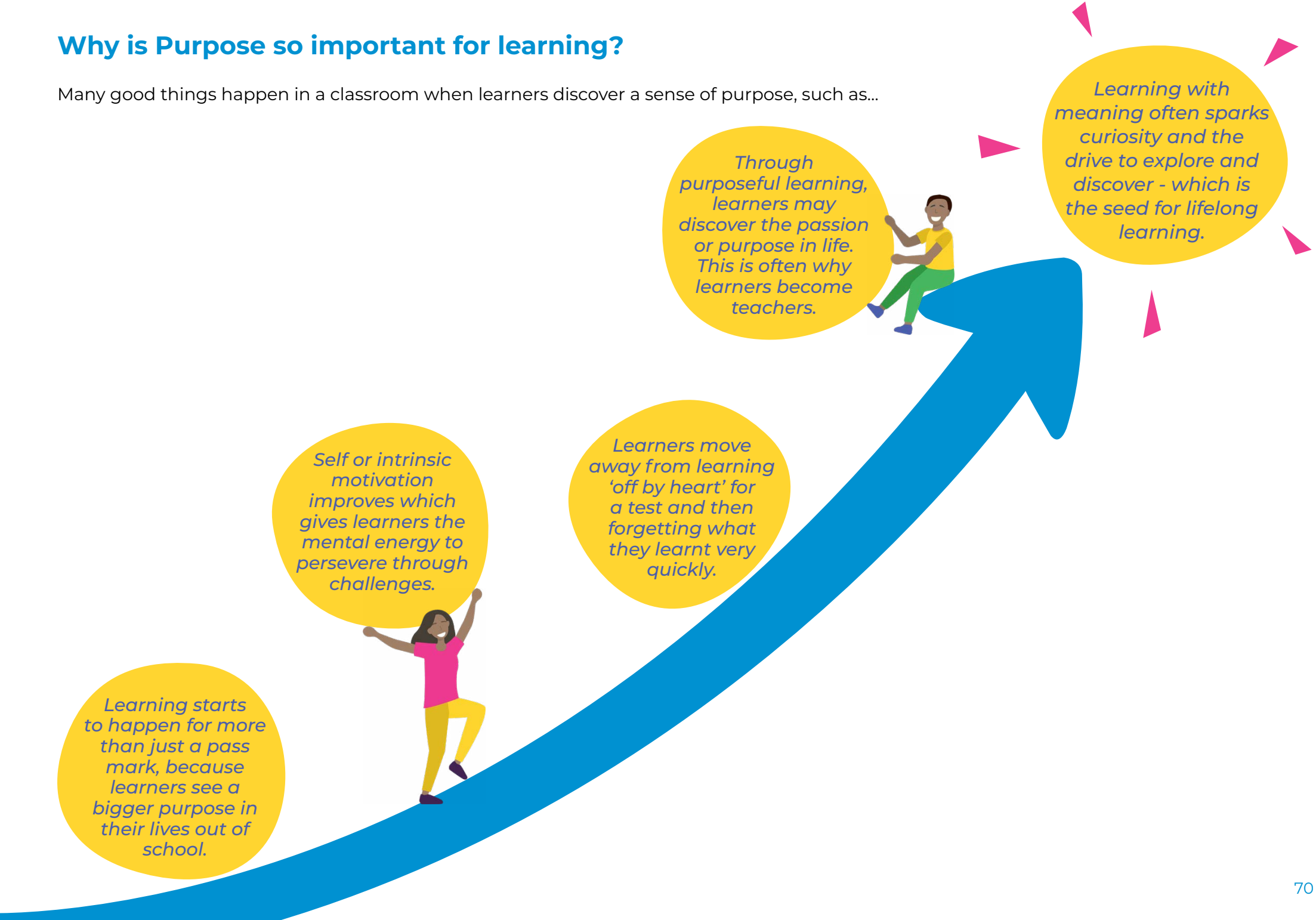
Teaching with purpose in mind means helping learners understand 'why'. Why do we wear a school uniform? Why do we need rules? Why is reading important? Why do we even go to school? As soon as learners discover real purpose or meaning in what they do, and can connect what they learn and do at school to their lives out of school, motivation improves, and much stronger learning takes place.

From purposeless to purposeful learning



Why is Purpose so important for learning?

Many good things happen in a classroom when learners discover a sense of purpose, such as...



How to create a sense of Purpose

Bridge learning from school to learners' lives outside of school.

When introducing something new, before you start talking, spend some time asking and listening.

- For example, if you are teaching the concept of 'Time' find out who can tell the time, what they use to tell time, find out how long it takes for learners to get to school, what does it mean to be early or late, what makes them late.
- Let them discover the role of time in their lives so the concept becomes real and not just a picture of a clock in a book.

Make it real.

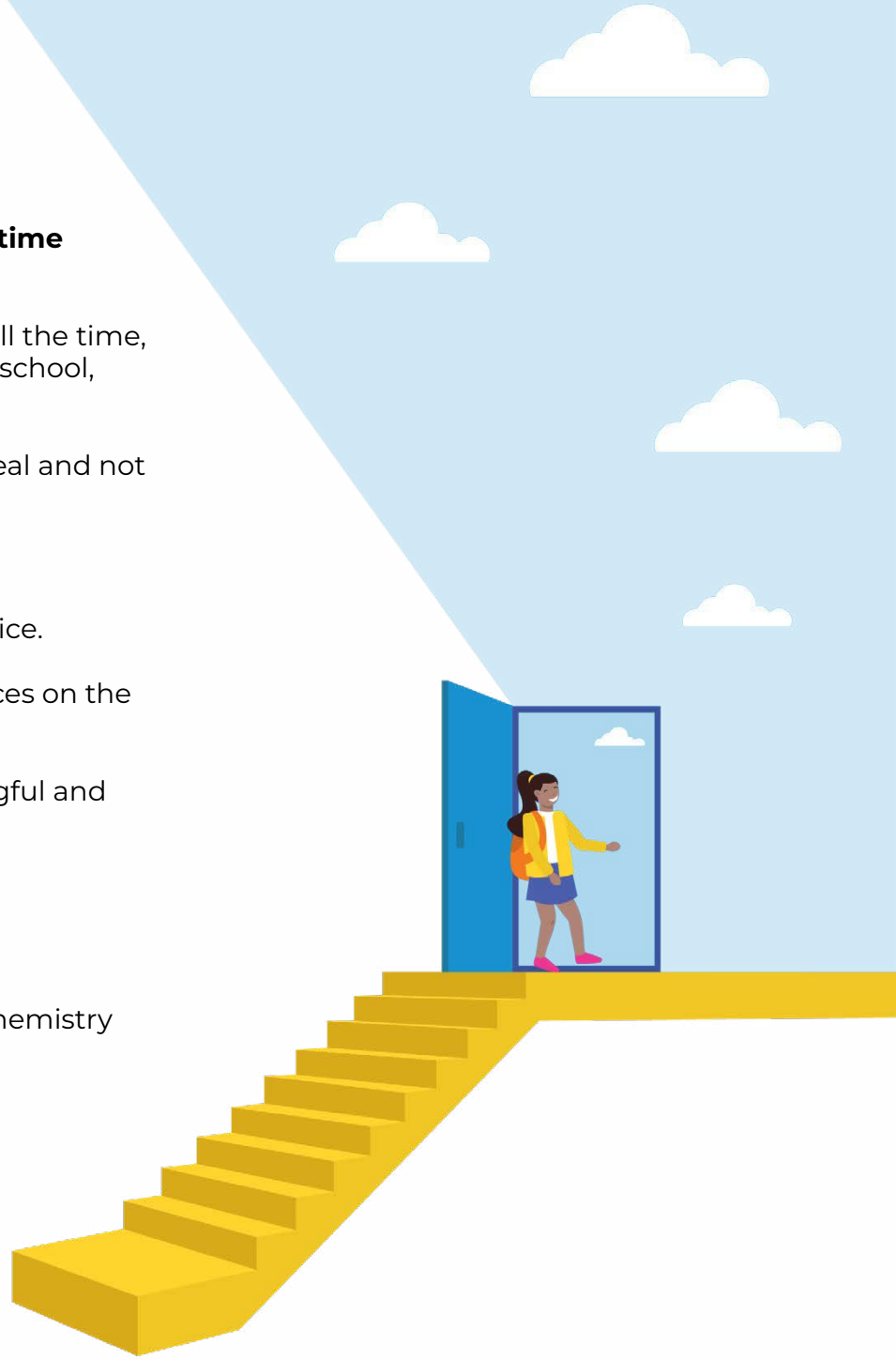
- For example, bring fractions to life by slicing oranges, or portioning out juice.
- If teaching "perimeter", send learners off to measure the perimeter of places on the school.
- In this way abstract formulas like P= (L+B) x 2 become useful and meaningful and much easier to understand and remember.

Listen to learners' voices.

- Ask them what do they think?
- Ask them why they think we learn about trees or compound interest or chemistry or percentages or poetry?

Connect to their future.

- Ask how or if the information they are learning is important for them to become an entrepreneur, or study further, or become employed.
- Will what they're learning prepare them in any way for a career?



S.P.E.C.I.A.L.

E

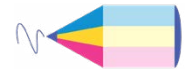
Enjoyable: Keeping the joy of learning alive

Questions for reflection

ACTIVITY: That YES moment

Have you ever had a “Yes, I did it!” moment. Perhaps you finished a marathon, maybe you finally cooked that complicated cake, maybe you helped a learner get to a “Yes, I did it!” moment.

What was the process that led to that moment? What were the challenges? Did you do it alone or were you in a group? Can you remember how you felt? Hold onto that feeling because that sense of deep satisfaction and Joy is what we are about to explore.



What is joy?

The principle of joy, or enjoyment in the context of a S.P.E.C.I.A.L. learning environment, does not mean fun and games. It means the deeper sense of joy we feel when we work hard and finally master a challenge. There is natural joy in learning, and we often see it in young children.

Have you ever seen a child stand up and take a step for the first time, or tie a shoelace on their own? Do you remember the joy on their face? That is the joy we are referring to here. We want learners to feel that same deep sense of satisfaction of putting in the effort to overcome a challenge or solve a problem.

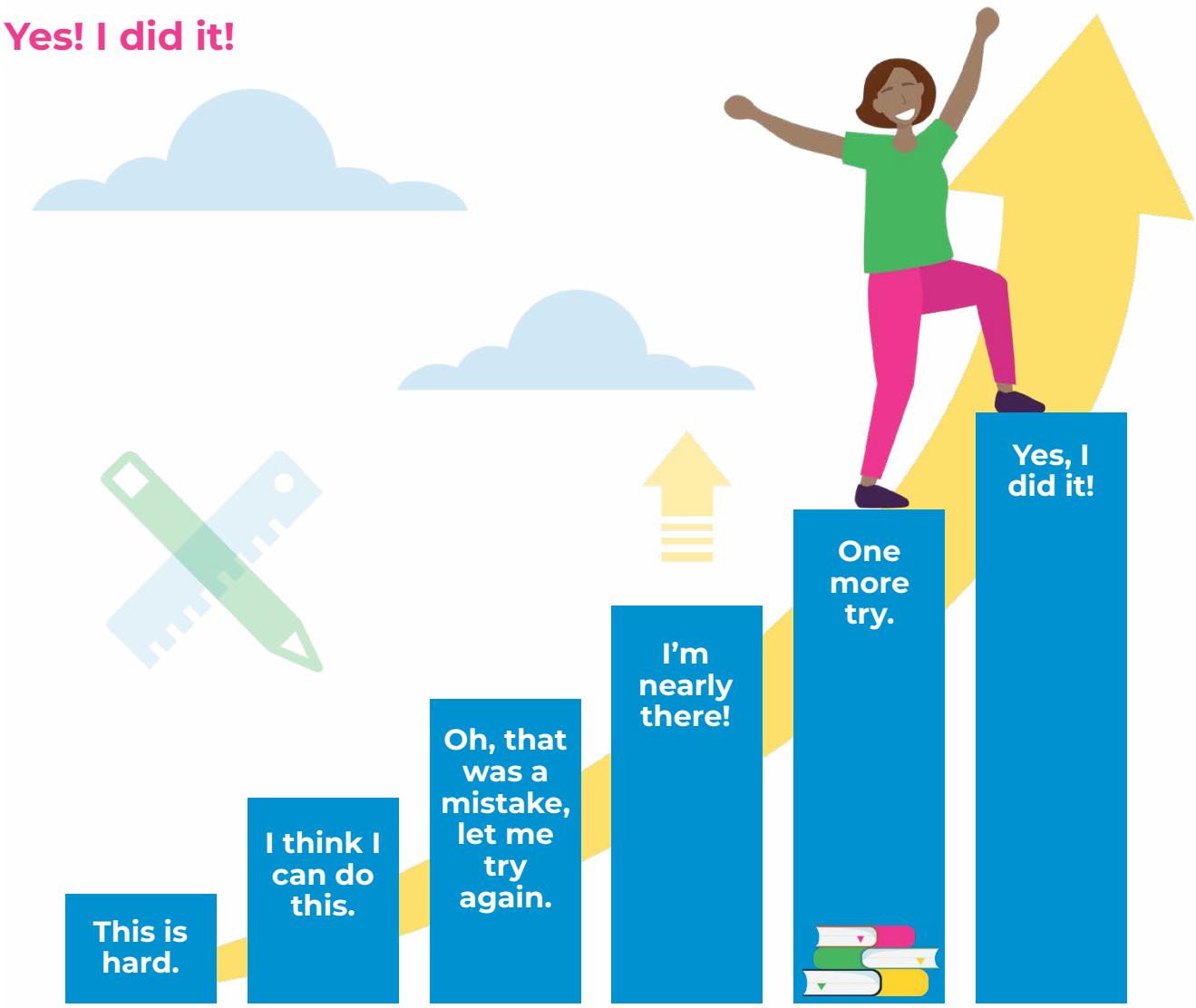
The role of joy in education?

Marva Collins, an American educator and activist once said:

"When someone is taught the joy of learning, it becomes a lifelong process that never stops, a process that creates a logical individual. That is the challenge and joy of teaching."

Although learning should and can be joyful, enjoyment, or feelings of joy are not often associated with teaching and learning. Many still believe that real learning is silent, studious and serious and that emotions and learning should be separated and activities that are enjoyable are the rewards for serious study.

But the joy we are referring to is not a frivolous waste of time. The joy in a S.P.E.C.I.A.L. classroom is the outcome of hard work and mastery. It's finally figuring out the equation, learning to read, mastering financial planning or realising the Purpose of what you are doing.



Why is a sense of Joy so important for learning?

When learners rediscover the joy of learning they experienced as young children, then all sorts of good things happen. The joyful feeling experienced at the moment of discovery or mastery can lead to the following:

How to help learners rediscover the Joy of learning

Your attitude towards learning goes a long way. Simply by believing that real, deep learning can and should be joyful, will set a positive tone in your classroom.

A problem-solving approach to teaching and learning such as Project-based Learning is useful for creating opportunities for joyful learning. Through Project-based Learning:

- Learners have problems to solve or challenges to master.
- There is support in the group so no one needs to feel overwhelmed by a challenge (this will kill the joy).
- Learners become active because the problem is solved by learners' own effort.
- There is the necessary space for iteration and reflection as they try and learn and try again until they succeed.

S.P.E.C.I.A.L.

C

Curiosity: Supercharging learning

Questions for reflection

"Good education is not what fills your head with facts but what stimulates your curiosity. You then learn for the rest of your life." (Neil deGrasse Tyson, Astrophysicist)

Sometimes learners who ask a lot of questions can be labelled noisy, 'too clever' and disruptive. What do you think?

What is Curiosity?

"Be careful! Don't touch that! Don't put that in your mouth!" - the warnings familiar to everyone who has ever cared for a toddler. Known as the driver of learning, curiosity powers young children to explore and understand their world.

It is Curiosity that energises children to discover, explore and ultimately understand their world and learn through touching, tasting, smelling, listening and looking.

Curiosity is sparked by a need to explain the unexpected and discover more about the unknown. All the worlds' greatest innovations and discoveries were powered by Curiosity, by somebody asking Why...? Or I wonder what...? Or What if...? Or How...?

The role of Curiosity in education

A lot of research into Curiosity has found that it is the mechanism that leads to the best learning. Studies also show that young children can ask hundreds of questions every day, all driven by their curiosity about and need to understand their world.

Sadly, though, when many children enter formal schooling, they ask fewer and fewer questions, and their Curiosity seems to disappear. This means that many learners lose one of the most powerful mechanisms for deep learning.

Curiosity drives learning

Why is a sense of Curiosity so important for learning?

Encouraging Curiosity in the classroom supercharges learning for the following reasons:

How to spark Curiosity in your learners

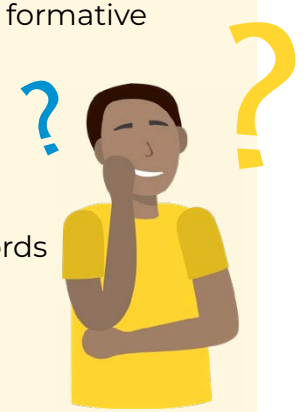
- Curiosity is catching! Role model curiosity. Let learners see and hear you being curious about what you are teaching.
- Acknowledge and value learners who demonstrate Curiosity – show them that matters.
- The path of Curiosity leads from one question to another so teach learners how to ASK lots of different types of questions. Don't worry if you don't know the answers.
- Start the lessons with a question that sparks some thinking. For example, if teaching about 'Time', start the lesson with the questions, "What if we had no clocks or watches and no time except for daytime and night-time. What would our lives be like?"
- Curiosity happened best in Socially Interactive settings.
- Problem-solving approaches such as Project-based Learning stimulate curiosity because there are problems to explore and solve.

Super S.P.E.C.I.A.L. strategy

If this is the answer, what was the question?

Asking questions is important in the process of learning and vital for Project-based Learning, so learners need regular opportunities to practise their questioning skills. This game is a fun way to develop and practise questioning skills.

Good for: Introducing key vocabulary, revise work, study skills, brain break, formative check-in.
Size of grouping: Whole class, small groups or pairs.



How:

1. Say or write a word on the board.
2. Ask learners, if this is the answer, what was the question.
3. Encourage as many questions as possible using a range of question words such as: WHEN, WHO, WHERE, WHY and WHAT.
4. There is hardly ever only one correct question.
5. Start easy with an answer such as 'Sun' that can generate lots of questions. If 'Sun' is the answer, what was the question?

Questions could be...

- What gives us daylight?
- What shines in the sky in the day?
- What is the biggest star we can see?

This game can be done in groups with one learner thinking of the answer and the others creating questions.

This game helps learners develop sharp and purposeful questioning skills. Depending on how you organise the game, it can tick many S.P.E.C.I.A.L. boxes.

S	P	E	C	I	A	L
✓	✓	✓	✓	✓	✓	✓

S.P.E.C.I.A.L.

I

Iteration: The natural cycle of learning

Questions for reflection

When you explored Purpose (The P in S.P.E.C.I.A.L.) you found out that a strong sense of Purpose energises you to keep going through the worthwhile challenges in life. Now, think back to something you achieved that you are proud of and that was driven by Purpose? Did you achieve this goal the first time around? Was it easy? What did you have to do to reach your goal?

What is Iteration?

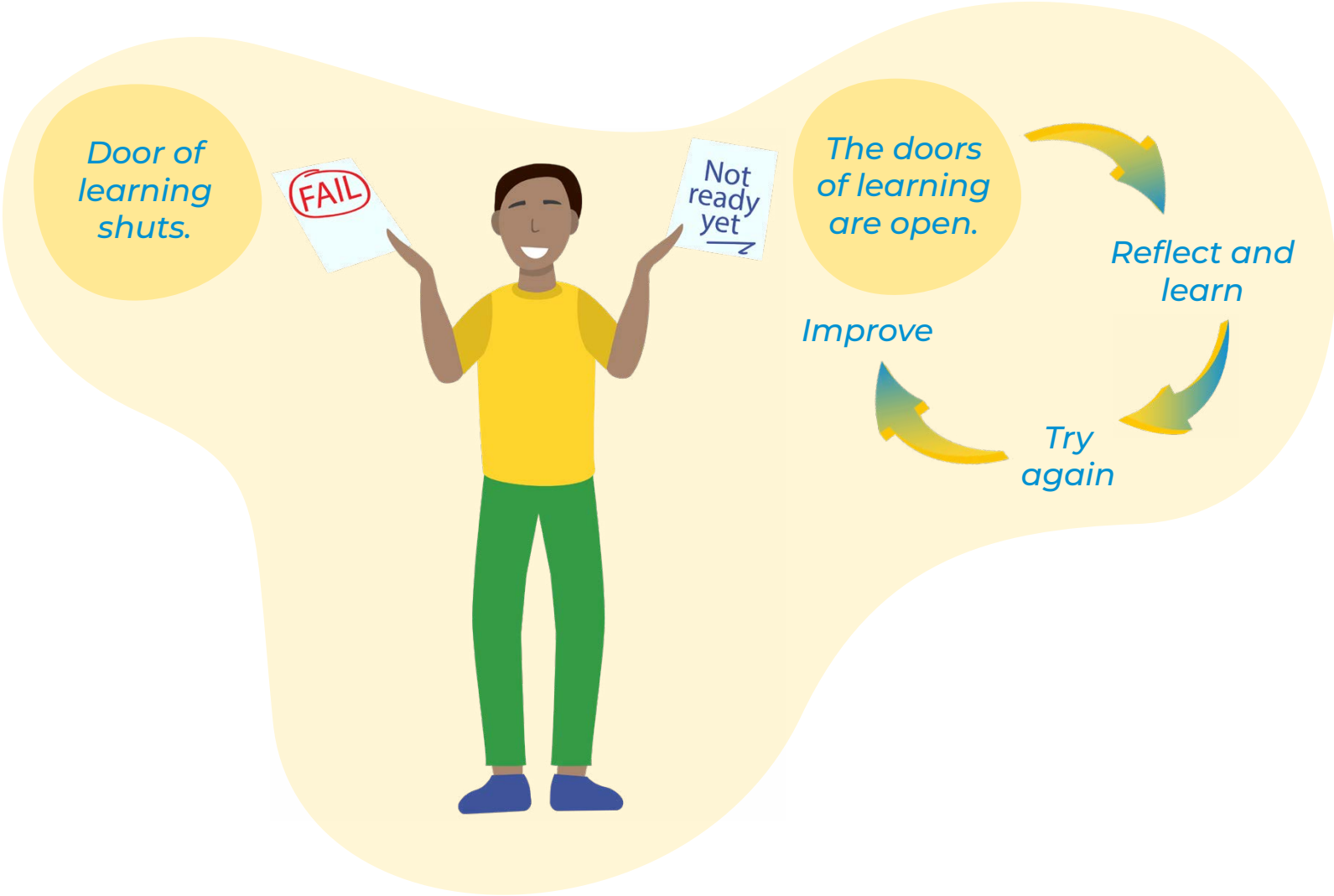
Iteration (repeating) is part of the natural learning cycle. Trying, failing, learning from mistakes and trying again is the way people learn. Learning to walk is iterative as toddlers go through the natural cycle of standing, walking, falling and standing up to try again - each time improving and getting a little better until they have mastered the skill and can walk and run around with confidence.

Learning a sport, learning a new skill such as knitting, learning to read and write, mastering algebra or geometry and many more, all require iteration. Growing as a teacher is an iterative process as you teach, reflect on a lesson, make changes and try it again. It's unusual to master anything new the first time around.

The role of Iteration in education

The importance of iteration, of the magic that comes from giving learners opportunities to try again and improve their skills, cannot be overestimated.

Iteration opens the doors of natural learning



Why is Iteration so important for learning?

Iteration improves learning and memory because learners spend a lot of time on one concept instead of trying to memorise a lot of facts quickly.

It lowers the fear of failure because learners realise that mistakes and failure are not the end of learning, but the start of something new and improved.

Learners who are not afraid to fail feel free to be more creative and think of solutions to problems in different ways.

Through Iteration comes Joy because learners overcome challenges or solve problems through constant effort and improvement.

Learners who often fail at school, start to label themselves as failures, which have many negative emotional outcomes such as poor self-esteem and low self-motivation - all of which are barriers to learning. When these learners start to believe that failure is the beginning of growth and improvement, their self-perception can improve.

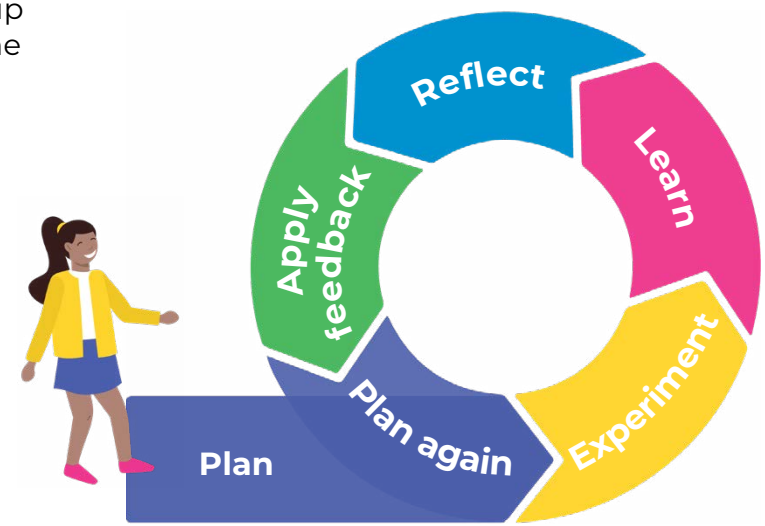
Iteration is part of the natural cycle of learning, so you go with the flow of natural learning, not against it.

Iteration is part of life, so learning the value and necessity of Iteration is a great way of preparing learners for their life out of school.

How to create a culture of Iteration

- Have a **discussion with learners about failure and mistakes**. Start the conversation with questions such as, “Can failure ever be a good thing?” or “What if no one ever failed?” or “What if the inventors of aeroplanes gave up after their first try at a flying machine failed?”
- **Introduce the word YET**. Changing your choice of words from “Your sum is wrong” to “You didn’t do this sum right yet”, gives learners a feeling that they are on a learning journey that is not yet finished.
- **Iteration depends on getting feedback that guides improvement**. A remark like, “You can do better” doesn’t help a learner understand how he/she could do better.
- Iteration develops something called ‘**Flexible thinking**’ because learners begin to think about things from different perspectives and from other people’s point of view. Iteration shows learners that there is usually more than one solution to a problem. This is an important part of becoming respectful and tolerant of attitudes, values and beliefs that are different from your own.
- **Problem-solving approaches such as Project-based Learning** follow the natural cycle of learning which includes feedback, reflection, and iteration.

The Learning Cycle of an Entrepreneurial



Questions for reflection

These are the types of questions learners can ask at the REFLECTION stage of the natural cycle of learning.

???

- *What do we think?*
- *What do others think?*
- *What feedback have others given us?*
- *Do we need to make changes?*
- *Why do we need to make changes?*
- *How will we make changes?*
- *Does the product work? If not, why not?*
- *What do others like or dislike about the product?*
- *What can we change to improve the design?*

S.P.E.C.I.A.L.

A

Active Engagement: Learning by doing

Questions for reflection

Imagine you want to learn to play a musical instrument. You have three choices:

1. Listening to a teacher explaining how to play.
2. Listening and watching a teacher play the instrument.
3. Listening, watching and getting actively involved in trying to play the instrument.

You have probably chosen number 3, and you would be right.

A combination of listening, watching and doing is a strong combination for learning – especially the doing part where you get actively involved. Now think of your classroom, or your school and reflect on how many opportunities learners get to "listen and watch and get actively involved" and how this affects their learning.

What is Active Engagement?

To be active or to act is to do something and be involved. When people are actively engaged with an activity, they are fully focussed and absorbed in what they are doing. You know those times when a child is so deeply involved in what they are doing they don't even hear you call? That's an example of Active Engagement.

The role of Active Engagement in education

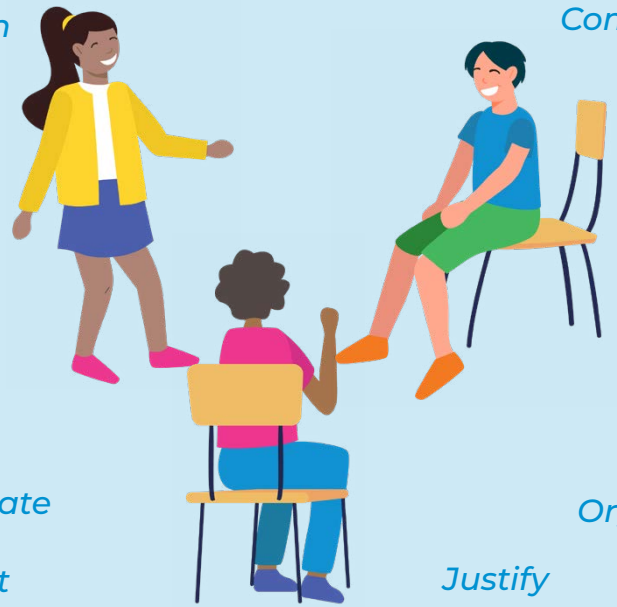
One big difference between traditional and more up-to-date teaching approaches, is the level of learner engagement, meaning how involved learners are in an activity.

Traditionally, learners were often passive. The typical classroom environment saw learners sitting listening to a teacher and being expected to absorb and remember all the information.

Fortunately, times have changed and so has teaching. Research now shows that the more active a learner is, the better they learn. You are probably thinking, "My learners never sits still and they're not learning! I don't need them to be even more active, I'll go mad!" You are right, mindless moving around will drive you mad, but this is not what is meant by Active Engagement. In a S.P.E.C.I.A.L. classroom, Active Engagement means learning through experience.

Active Engagement in action

Minds On



Explain
Choose
Solve
Compare
Decide
Translate
Predict
Create
Justify
Organise
Defend

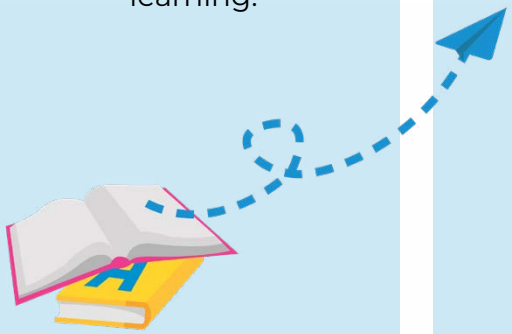
Minds On, Hands On

Collect
Measure
Estimate
Adjust
Iterate
Plan
Sketch
Construct
Calculate

Why is Active Engagement in learning so important for learning?

Active Engagement has many benefits. When learners are active, rather than passive, you will see:

A much deeper learning and memory of information because learners don't passively receive information, they must take action and do something useful with it. This is called experiential learning.



Learners who are actively engaged are more likely to stay focused on an activity. This improves behaviour.

Active learning can 'push' learners up Bloom's Taxonomy of Thinking Skills, so they move from rote learning and remembering to the higher order skills stipulated in the curriculum. For example, Intermediate Phase Natural Sciences asks learners to compare, classify, identify problems, ask questions, predict, plan, investigate and interpret. The best way to learn these skills is to do them.

How to create opportunities for Active Engagement

Remember, whoever is doing the most action is doing the most learning, so when planning activities, try to create opportunities where learners can take over the action.

This links back to the changing role of teachers from the "Sage on the Stage" where learners are passive to the "Guide on the Side" where learners are active.

The beauty of S.P.E.C.I.A.L., is that many of the principles do double duty.

So, learners will be Actively Engaged when they:

- Interact socially and work together to solve problems
- Connect what they learn in school to their life out of school
- Ask questions because they are curious
- Iterate and try and try again to improve a product
- Feel the sense of joy that comes from overcoming a challenge through constant effort

Blooms list of measurable verbs

As learners go through the process of Project-based Learning in a S.P.E.C.I.A.L. learning environment, they naturally move back and forth along this continuum of thinking skills.

S.P.E.C.I.A.L.

L

Learner Autonomy: taking charge of one's own learning

Questions for reflection

Do you think your schooling prepared you for the choices and decisions you needed to make when you left school? If YES, reflect on how your teachers did this. If NO, what more did you need from them?

When people leave school, their role changes from **learner** or **student** to **school-leaver** or **young adult**. With this new role come changes in expectation. School leavers are expected to be responsible, to make their own decisions and be independent (autonomous). If learners get opportunities to develop their independence (autonomy) all the way through schooling, they will be well prepared to take charge of their lives.

What is Learner Autonomy?

The main purpose of the DBE-E^3 programme is to prepare learners for a changing world. A big part of being prepared is being responsible for yourself, to have the skills that make you independent, that help you organise yourself and make wise decisions. Young children fight for independence. They want to feed themselves, choose their clothes and make their own decisions about who to play with. This is the spirit of independence that learners need as part of their preparation for a changing world, and this is the purpose of Learner Autonomy.

The role of Learner Autonomy in education

Learners' who are autonomous, or more independent, are active about their learning. They don't wait passively for teachers to give them information and resources, to fix their mistakes, or to create study timetables – they can do this themselves. Learners who are independent are self-checking, self-correcting. They reflect on their learning. They know where their strengths are and where they need help. Independent learners are self-(intrinsically) motivated. They are self-directed and don't need you to push and pull them along the journey of learning. Because of this, they are often more successful at school and in life than their passive, more dependent peers.

Prepared for a changing world

Why is Learner Autonomy so important for learning?

As learners become more independent, you can expect the following changes:

- Learners don't rely on you for everything. Because they are thinking about what they are doing, and self-checking, they will come to you for the missing worksheet, or extra help. The pressure of responsibility for learning moves from you, the teacher, to the learners.
- Independent learners see learning as Purposeful and useful (The P in S.P.E.C.I.A.L.) which boosts their self-discipline and self-control. This, in turn, improves behaviour.
- Independent learners take responsibility for their successes and failures. They don't blame their teachers, parents, the school when things go wrong (unless there is real blame to assign). They reflect on their actions, Iterate and improve.
- The combination of Learner Autonomy, Active Engagement and Purpose leads to deep learning that lasts.
- Learner Autonomy leads to self-direction which is key to the Entrepreneurial Mindset

How to create opportunities for Learner Autonomy?

- The more active you are in the classroom, the more passive the learners will be. Try to hand over as much (appropriate) responsibility to learners as possible.

Answer questions with questions, not solutions. Here are some examples:

?

What colour must I use?

Answer with 'What do you think?'

?

I can't find the scissors.

Answer with 'What are you going to do about that?'

?

My worksheet is lost.

Answer with 'What would you like me to do about that?'

- Strive to create a caring and safe S.P.E.C.I.A.L. learning environment. At the heart of the S.P.E.C.I.A.L. principles, is the learners' independence and preparation for a successful life after school. Learning in a S.P.E.C.I.A.L. learning environment therefore has built-in, real opportunities for learners to become more and more independent and take responsibility for their learning and ultimately their future.
- Problem-solving approaches such as Project-based Learning that are learner-centred are ideal for strengthening Learner Autonomy because learners, not teachers, ask questions, source information, plan, iterate, reflect and develop solutions to real-world problems.

Social Interaction

Teaching and learning together

Purpose

Teaching to the WHY

Enjoyment

Keeping the joy of learning alive

Curiosity

Supercharging learning

Iteration

The natural cycle of learning

Active Engagement

Learning by doing

Learner Autonomy

Taking charge of one's own learning

> *"Real learning: attentive, real learning, deep learning, is playful and frustrating and joyful and discouraging and exciting and sociable and private all the time, which is what makes it great."*
>
> E. Duckworth

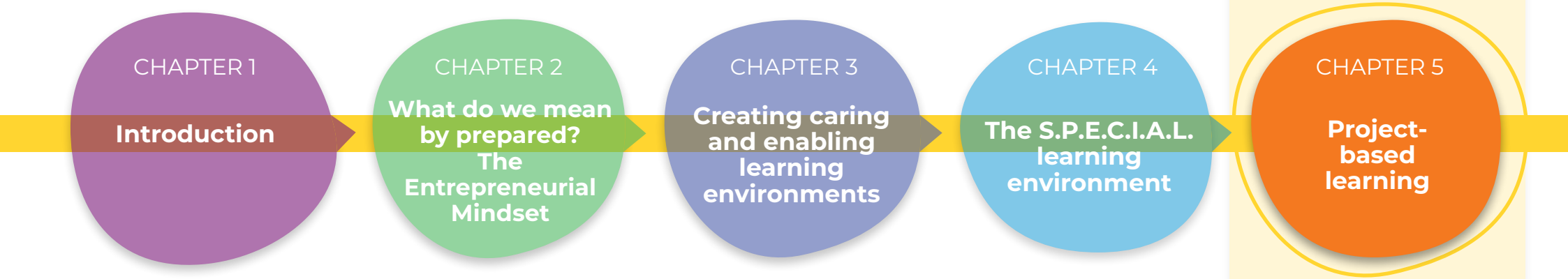
CHAPTER 5

Project-based Learning

basic education
Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

The LEGO Foundation

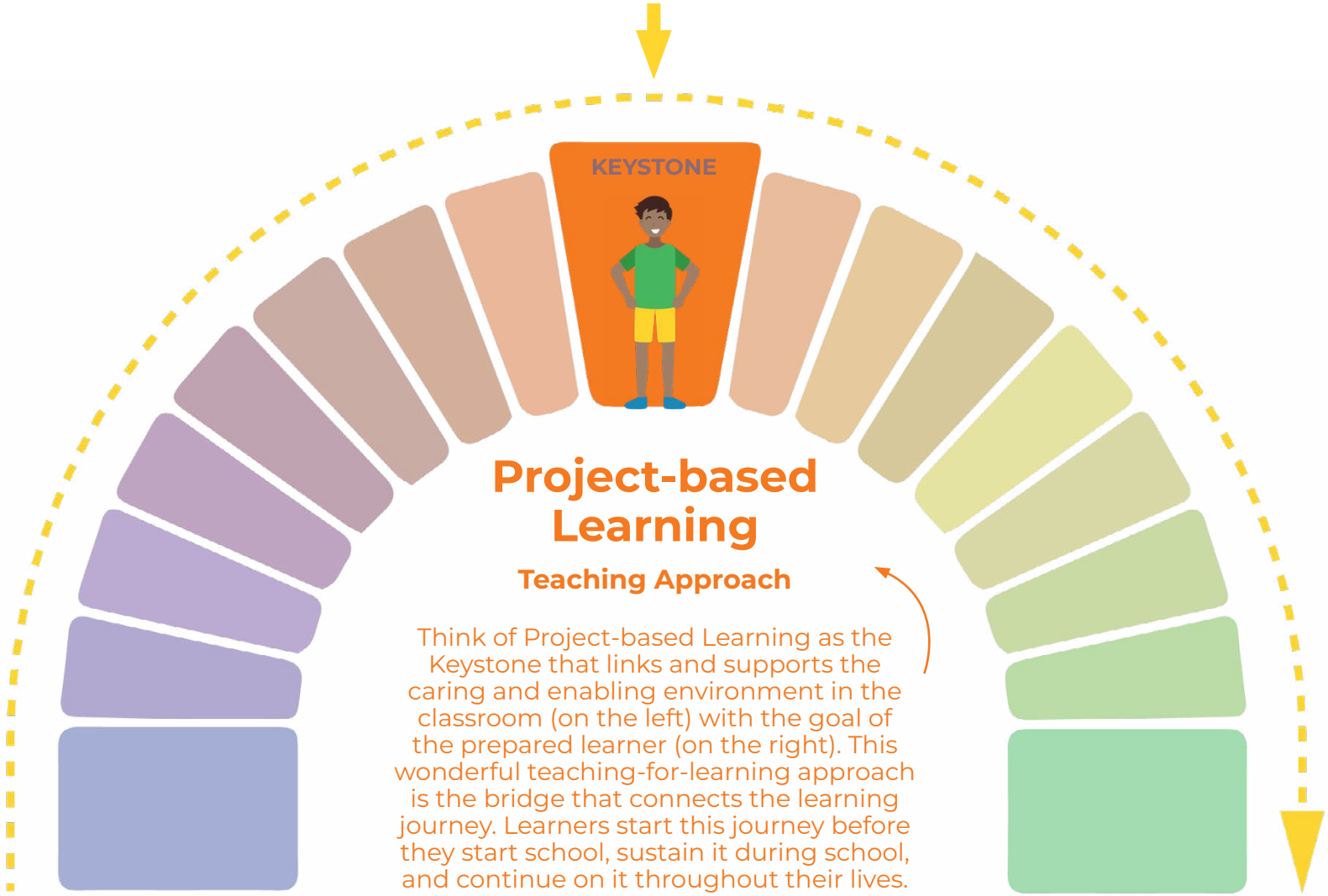
3 ENTREPRENEURSHIP
EMPLOYABILITY
EDUCATION


CHAPTER 1
Introduction
CHAPTER 2
What do we mean by prepared? The Entrepreneurial Mindset
CHAPTER 3
Creating caring and enabling learning environments
CHAPTER 4
The S.P.E.C.I.A.L. learning environment
CHAPTER 5
Project-based learning

Project-based Learning, the keystone in the Teaching-for-Learning Journey

To be prepared for a changing world we believe that learners need to grow their entrepreneurial mindset. We know that the characteristics of an entrepreneurial mindset grow best in caring and enabling learning environments that we call S.P.E.C.I.A.L.

We will now explore Project-based Learning which is a teaching process that gives learners opportunities to grow their entrepreneurial mindsets.



Project-based Learning

Teaching Approach

Think of Project-based Learning as the Keystone that links and supports the caring and enabling environment in the classroom (on the left) with the goal of the prepared learner (on the right). This wonderful teaching-for-learning approach is the bridge that connects the learning journey. Learners start this journey before they start school, sustain it during school, and continue on it throughout their lives.

Learning Environment

Safe and Caring Environment
S.P.E.C.I.A.L. Environment

Prepared Learners

Entrepreneurial Mindset
Competencies (skills)

In this chapter we give you a brief introduction to Project-based Learning. We will cover:

1. What project-based learning is
2. Why it is important and what the benefits are
3. What a project within project-based learning looks like.
4. How you can get started with Project-based Learning.

This guide is an introduction to the main concepts of Project-based Learning.

What is Project-based Learning?

Project-based Learning is a way of teaching that encourages learners to work together to solve problems that are real to them and come from their daily lives. As learners go through the process of solving problems, they grow their skills as they continue to learn to:

- **Collaborate** and work together in groups
- **Communicate** meaningfully and respectfully
- **Think critically**, ask questions and challenge opinions
- **Creatively** solve problems in new and innovative ways using knowledge from the CAPS.

Through Project-based Learning, learners gain knowledge and the skills they will need to succeed in a changing world.

Why is Project-based Learning important?

Throughout this teacher's guide, we have been talking about preparing young people for success in life after school. Being prepared means being 'entrepreneurial'! So, learners leave school with an entrepreneurial mindset, ready to identify and solve problems; this is what employers are looking for.

Employers are seeking people who can think critically, innovate, learn without the fear of failure and communicate clearly and confidently. The world needs young people who can collaborate, who risk small, regular and carefully designed experiments and who persevere and do not give up even when a solution isn't immediately obvious. They can adapt to change with as little anxiety as possible. We all have the potential to grow our entrepreneurial mindsets, and we can do this by doing entrepreneurial activities.

But what are entrepreneurial activities?

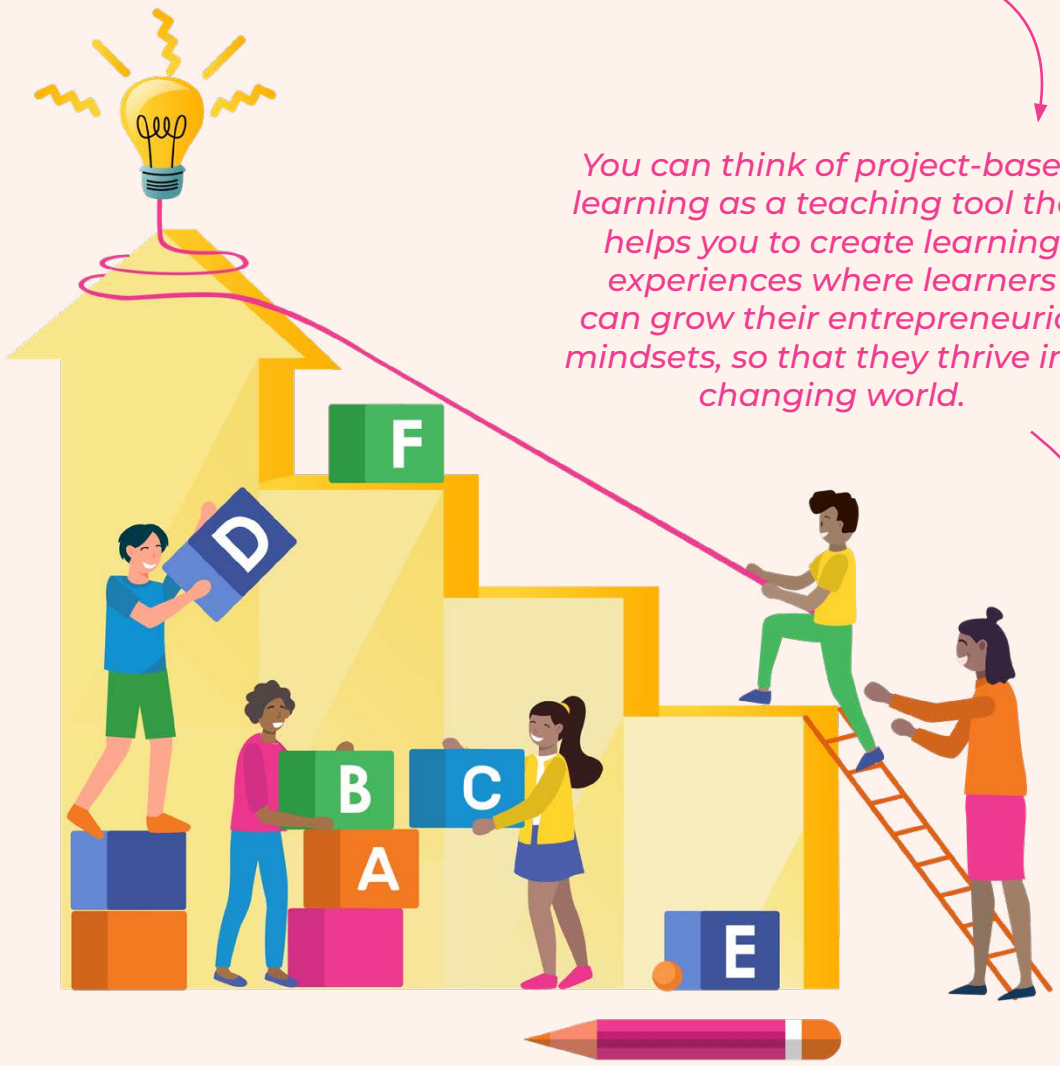
These are experiences where people see problems and find solutions to real-world problems. This just so happens to be exactly what learners do when they take part in Project-based Learning.

Teacher Tip

PBL - practising skills:
Project-based Learning is more than just group work. PBL goes a step further because the project is the whole of the lesson. It is the way curriculum content is communicated, and the process in which learners discover and practise knowledge and skills.

Project-based learning is a learner-centred process where learners work together to solve real-world, meaningful problems.

You can think of project-based learning as a teaching tool that helps you to create learning experiences where learners can grow their entrepreneurial mindsets, so that they thrive in a changing world.



Remember - an "entrepreneurial" is someone who has an entrepreneurial mindset and who can identify problems and find solutions to these problems.

What are the benefits of Project-based Learning?

If you Google project-based learning, you will find a lot of research on how effective Project-based Learning is at preparing learners with the skills they need to succeed and thrive in a changing world. You'll see studies showing how Project-based Learning contributes to academic success, and how it develops learners' skills like collaboration, communication, critical thinking, creative innovation and a whole host of other important skills.

We recently discovered that Project-based Learning also helps learners develop the skills they need to be 'entrepreneurial' i.e., communication, collaboration, critical thinking, creative innovation, problem solving and others. These are all skills they need to succeed in an ever-changing, uncertain world.

Teacher Tip

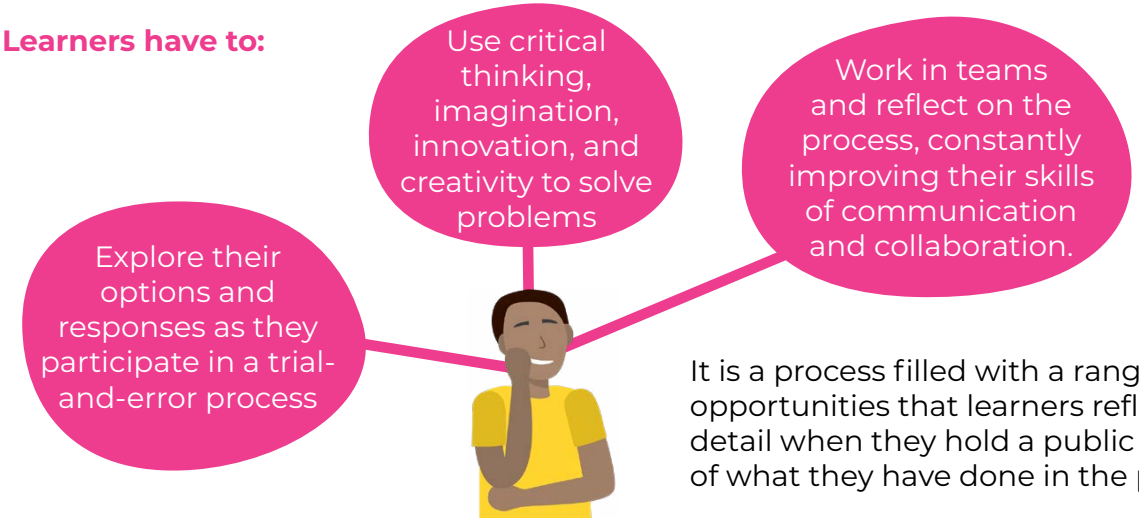
Skills (for example Collaboration, Communication, Critical thinking and Creative innovation): *Try to find ways of linking the curriculum content to the specific skills you feel your learners need to practise. Be conscious of what skills you are trying to improve.*

Project-based Learning as a tool to develop the entrepreneurial mindset

So how do we make sure learners are practicing the skills of someone with an entrepreneurial mindset? We need to go beyond memorising curriculum content towards enabling learners with the skills they need to engage any content in any context to their advantage.

In Project-based Learning, learners do more than just remember information or practise a step-by-step procedure. They are making something that solves a real-world problem based on a meaningful and open-ended driving question that does not have a single correct answer. There is no cheat-sheet for it.

Learners have to:



It is a process filled with a range of learning opportunities that learners reflect on in detail when they hold a public presentation of what they have done in the project.

Teacher Tip

Innovation through collaboration: *Most innovations are the product of great teamwork. Create opportunities for teamwork; ensure the equal participation of team members; agree how to work together; brainstorm ideas; make decisions together; resolve conflict; divide roles that play to each other's strengths and interests; hold each other accountable; give and receive feedback with respect; manage time and resources through the creation of schedules; and develop a group identity all team members can be proud of.*

How does PBL integrate with your teaching requirements?

To help you implement Project-based Learning in your classrooms, we have created 7 Project-based Learning projects for grades R - 6. These projects fall within Life Skills and help you with your term three school-based assessment. These projects are all aligned to the CAPS curriculum, and each have a detailed CAPS assessment rubric.

What does a Project-based Learning project look like?

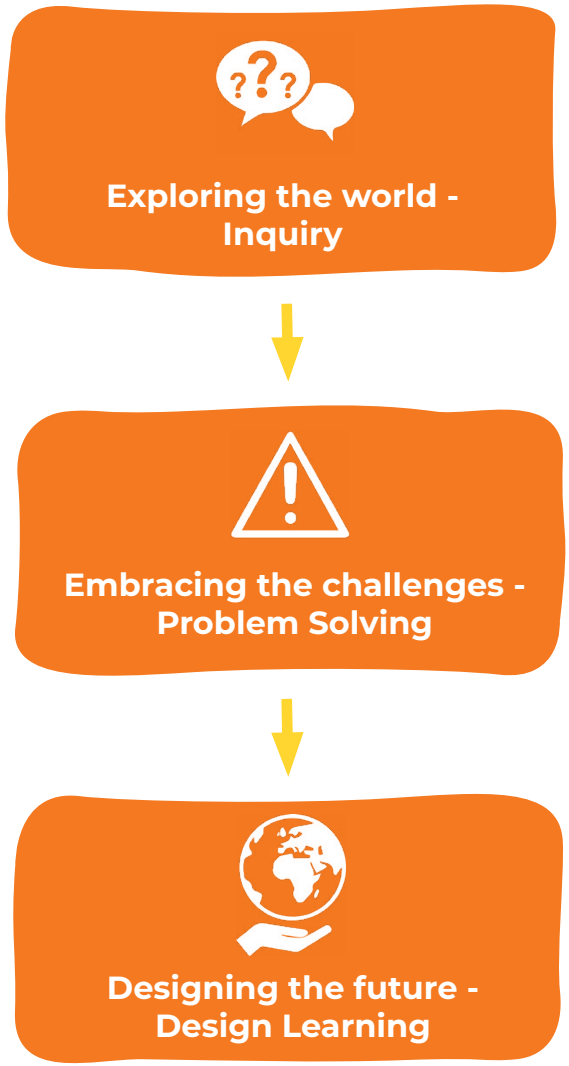
Let's take a closer look at what a Project-based Learning project looks like in the classroom.

Meaningful problem:

Projects are centred around a problem that learners need to solve. This problem is relevant and meaningful to learners' lives. Through the projects learners participate in three "performances" that help them to solve the problem. We call these three things performances, because they are "performances" that learners need to actively do/perform. Importantly, these performance areas also go far beyond formal education to include the ways in which learners make predictions and

navigate the world, solve problems in their communities, and generally prepare learners to successfully navigate a changing and uncertain world.

The performances are:



Asking questions:

The Project-based Learning process is focused on learners asking questions. Learners will grow their ability to know which questions to ask and when to ask them, as well as how to ask questions that lead them to innovative outcomes. The confidence and ability to ask questions is fundamental to the curiosity that drives the intrinsic motivation to learn and discover solutions. Some of the questions are also reflective questions - which we call "metacognitive questions". These are questions that help us to think about how we think, and how we learn. The purpose of learners thinking of their own questions is to encourage learners (rather than the teacher) to reflect on what went well and what needs improvement.

In this way, they judge their own mastery or skill and become motivated to try again for a better outcome next time around.

Getting learners to ask the questions immediately shifts the focus of learning onto the learner, which helps them own their own learning. Questioning in general and metacognitive questions in particular are really important to being an 'Entrepreneurial'.

Metacognition is the awareness we have about how we think, how we learn, what our strengths are and where we need to improve.

Teacher Tip

Mirror the real world: *Try to create the real world as much as possible. Perhaps the activity resembles the world of work, a local challenge or a global crisis. It needs to be meaningful and doable. Ask yourself "What can learners do with this knowledge and these skills that resemble what adults would do in the real world?"*

Teacher Tip

Meaning in the curriculum: *Remember that the curriculum is a wonderful starting point to include relevant content from local knowledge systems, current challenges facing the learners' communities, local or national events on the news etc.*

Let's take a closer look at these three performance areas and the types of questions learners could ask.

Exploring the world - Inquiry

During this **INQUIRY** performance area, learners explore the world around them by asking open-ended questions. They discover knowledge including but not limited to the CAPS content as they move from what they know, to what they do not know - but need and want to know - about the topic. As they discover this knowledge (and experience) learners compare, organise and analyse this information.

During this performance area, learners ask questions such as:

???

Learner's Questions:

- What do I already know? How do I know it?
- What information do I need to know to add to my knowledge?
- What do I want to know and how can I find out more?
- What don't I know? How can I find out?
- What are the most important questions I can ask right now?
- What new information do I have now? How can I add that to what I know?
- How can I organise all this information, so it makes sense to me?
- What is my best guess about what is going on here?

What sorts of INQUIRY questions would you add?

Teacher Tip

Questions questions questions: *Ask learners to think of the questions they want to ask. Questions help learners to think about what they already know and what they want to know about that question. Learning becomes meaningful when learners ask questions.*

Embracing the challenges - Problem Solving

During this **PROBLEM SOLVING** performance area learners start to focus on the problems that they began to find when they were exploring the world. Learners work together to first state the problem and then think of solutions to the problem.

During this performance area, learners ask questions such as:

???

Learner's Questions:

- What is the best description of the problem I am trying to solve here?
- What other kinds of problems does this problem remind me of?
- What do I want to get out of this challenge? How will I know I have succeeded?
- What are all the different variables (parts of the challenge)? How do they relate to each other? How will things change over time if nothing is done differently?
- What is most challenging about this problem?
- What method am I going to follow to solve this problem?
- What are all the possible solutions that respond to this challenge?
- What are all the ways I am free to act? What are all the constraints I can do nothing about?
- How can I get advice or feedback on the solutions I've chosen?
- Whose problem is this?

What sort of PROBLEM questions would you add?

Teacher Tip

Discovery discovery discovery: *Think about what kinds of activities would help learners to discover for themselves. Try not to tell them things - get them to find out for themselves. They could research, work together in teams or invite an expert to answer their pre-prepared questions.*

Designing the future - design learning

This **DESIGN LEARNING** performance area is very practical.

Learners could:

- Plan and create something
- Build something
- Create a drama or play

It is all about making something physical - a model that tests one or more of the possible solutions that learners identified when they were exploring the challenges.

Making model/doing presentations, creating a drama (for example) and getting feedback on these models, applying this feedback to make this better, is called iteration. It is an essential part of the learning process and of being entrepreneurial. In this performance area it is a nice idea for learners to organise a public exhibition of their work. They can present to people in the school, or, even better, invite people from the community.

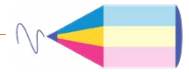
During this performance area, learners ask questions such as:

???

Learner's Questions:

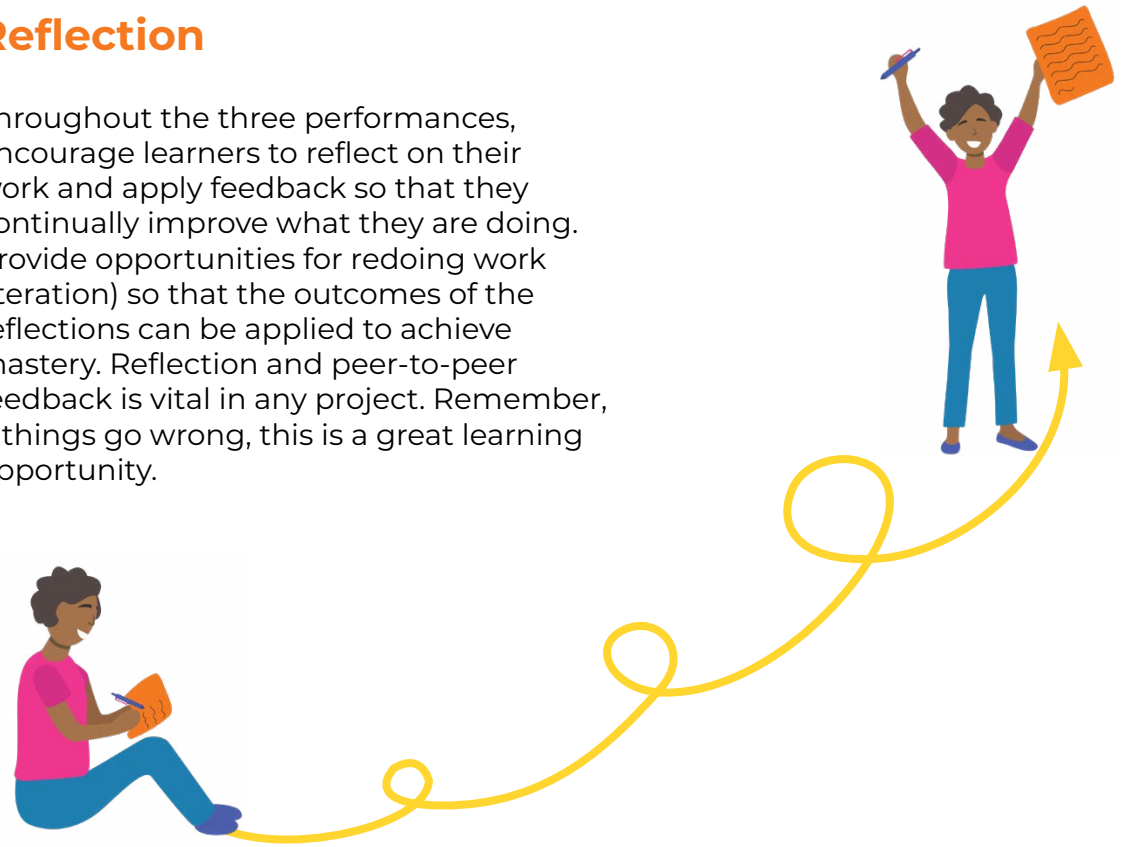
- What kind of rough design can I create to get feedback from my team, parents, community members before making my first model?
- What impact will this design have on the environment and the lives of others?
- How can I share my model with other people for feedback?
- How can I test the final model? How will I know it is complete?
- Who will give me the critical and creative feedback I need to improve on the model?
- What is the most important thing I have learned in this experience?
- What am I trying to change here?

What sort of DESIGN THINKING questions would you add?



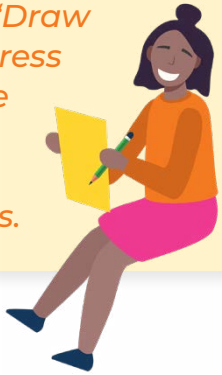
Reflection

Throughout the three performances, encourage learners to reflect on their work and apply feedback so that they continually improve what they are doing. Provide opportunities for redoing work (iteration) so that the outcomes of the reflections can be applied to achieve mastery. Reflection and peer-to-peer feedback is vital in any project. Remember, if things go wrong, this is a great learning opportunity.



Teacher Tip

Learning activities: *Have a list of activities at hand when the learners are doing their projects, so that you can guide them to use the most appropriate ones for the activities they are doing. For example: "Act it out", "Brainstorm ideas now", "Create a collage", "Draw a mind map", "Express your opinion", etc. Be creative, you could also ask learners to suggest the activities.*



Public Performance

Sharing with a broader audience is one of the things that makes Project-based Learning real. It can happen during or at the end of a project. Learners can share their experience with their community, with 'pretend' or real clients for their products, with experts who can give feedback on project ideas, or with public officials who are responsible for the issues the project covered.

Teacher Tip

Reflections: *Create many moments of reflection and feedback throughout the project. For example, regular check-ins to see where they are in the process and how they feel about what they are achieving, or moments of quiet personal reflection, group reflection or peer-to-peer reflection.*

This graphic is a visual summary to help you remember.

Project-based learning is not “doing Projects”

Did you know Project-based Learning and projects are not the same thing?

You might be thinking that you are already doing a project because the third term school-based assessment is a project. Project-based learning is slightly different! Project-based learning is all about solving real-world problems that mean something to the learners.

Let’s unpack some of the key differences.

Project	Project-based Learning
One attempt: learners hand in one final copy of the project.	Feedback, reflection and iteration is essential to the learning process. Learners give, receive, and apply feedback to improve their process and products, and find ways to overcome challenges.
It’s all about the mark.	It is all about the process: the process is more important than the end product. Learners learn a lot if their project does not work. Therefore, reflection and feedback are so important to the process.
Teacher directed: teachers instruct learners what to do, how to do it, when to do it.	Learner-led: learners make decisions about the project, such as how they work and what they create.
Not always relevant: Learners may not always know why they have to do the project or why it is relevant to their lives.	Real-world: the project is framed around a meaningful problem to solve that is context and age appropriate.
Traditional projects are often done by individuals.	Working in groups: an essential part of Project based-Learning projects is that learners work together. This is important because in the real world you usually have to work with other people.

If you want to know more, please watch this video: https://www.youtube.com/watch?v=dhwuQU2-g5g

How can you get started with Project-based Learning in your classroom?

If you have never done Project-based Learning before, it may seem like it is going to be challenging. You might be thinking, "Where do I start? I don't have time to make a project. I don't know enough to do this!"

That is why we have created CAPS-aligned Project-based Learning projects for grades R-6 in Life Skills for you. These projects contain everything you need to implement a project in your classroom. They will be available to download from our website here:

https://learn.ecubed-dbe.org

If you have more experience in Project-based Learning and would like to either adapt a project or create your own, we have a more detailed guide on the 12 steps to creating your own Project-based Learning project.

Teacher Tip

Slow down and allow for reflection...: *Deep learning happens by refining and reworking and trying again. Try not to have learners rush to create the end product. Make sure there are opportunities for feedback, reflection and re-working (iteration). This leads to deeper learning and expertise.*

Teacher Tip

Work in progress: *Get learners to hand in their "rough work" for assessment throughout the project so that it can inform their performance as they go. Allow them to create more than one rough draft. Working in rough also slows the learning down and makes learners more aware of the natural learning cycle.*

Teacher Tip

Freedom to fail: *Feedback is essential for learning. It can be a self-assessment, peer-assessment or other forms of formative (continuous) or summative assessment, but its purpose should always be to inform the learner in a way that they feel comfortable to hear. This constructive feedback helps learners improve their next task or performance. This cannot happen if they are afraid of failure.*

Design your own project in 12 steps

Here is a summary of the 12 steps.

12 steps to planning a project		Write your ideas here
1 Working with CURRICULUM CONTENT	What curriculum content do you want to cover?	
2 Prioritising TRANSFERABLE SKILLS (such as collaboration, communication, critical thinking, creative innovation).	What skills do you want learners to develop?	
3 Exploring REAL-WORLD APPLICATIONS	What real-world situations can you think of, based on the skills and curriculum content you decided in steps 1 and 2.	
4 Choosing A MEANINGFUL AND DOABLE CHALLENGE	Turn your ideas from step 3 into a challenge or problem for your learners to solve.	
5 Identifying PRODUCTS AND PROCESSES 	List the types of products or services you think learners might come up with. This will help you to see if your chosen challenge will work, and if it is age appropriate for your learners. When learners do the project they need to choose what they want to create.	
6 Creating opportunities for COLLABORATION	Think of the different ways your learners can collaborate or work together in the project. Provide tools and methods learners can choose from to use to work effectively as a team. Remember: When learners struggle with collaboration, this is a great learning opportunity for them.	

12 steps to planning a project		Write your ideas here
7 Ensuring LEARNER PARTICIPATION	Make some notes for yourself on how you can support learners to make their own decisions so that they own the project.	
8 Creating a SEQUENCE of events	Now that you have thought about all the different parts of the project, think about how you will order them. Think about the three performances here.	
9 Developing INSTRUCTIONS	Create clear instructions for learners to help guide them through the project.	
10 Including moments of REFLECTION AND FEEDBACK	Reflection and feedback are essential to learning. Make sure you build in regular opportunities for feedback throughout the project. What ideas can you think of here?	
11 Integrating everything into your SCHEDULE	Look at your timetable, the CAPS document and work out how much time you have for your project.	
12 Finding opportunities to SHARE what you have learnt	Ask the learners to think of ways of sharing their projects with the public (this can be in and outside of school). Sharing the outcomes of the project in the form of a public exhibition makes the whole process real. It can happen any time during the project.	

Teacher Tip

"It's how you play the game..." *The end of the project is not the goal. The goal of PBL is the process. This is why formative assessment is used throughout the PBL process and is carried out during the learning process (rather than a summative assessment at the end). This is because what is observed during the process is far more important than the end product. Formative assessment can regularly improve both the learners' and the teacher's performance so that learning goals are achieved together.*

So, in a nutshell (and as a reminder)...

Project-based Learning is:
PARTICIPATION in an
ONGOING PROCESS that is
driven by a real-world
CHALLENGE that is
RELEVANT to the learners.

The Project-based Learning process:
uncovers **KNOWLEDGE** and **SKILLS** that improves
the learner's **POTENTIAL** for:
collaboration,
clear communication,
critical thinking, and
creative innovation.
(All of which are key elements of the mindset of an
entrepreneurial)

Project-based Learning is **MEANINGFUL** to the learner and their context, offering a sense of **PURPOSE**, and connecting learners to something bigger than themselves, allows them to develop **MASTERY** having the satisfaction of getting better at something by taking small steps and learning from feedback, affirms their **AGENCY** and **AUTONOMY**, allowing them to question, offering them choice and freeing them to change their world. It is supported by relevant curriculum-based **CONTENT**, and directed by meaningful **FEEDBACK** which offers an opportunity to risk failure and adapt performance.

Conclusion

Now you have either made your own project or used one of ours, don't worry if it wasn't perfect. The most important step is that you are starting something new and being an entrepreneurial yourself.

Remember, you are on your own learning journey. There will be ups and downs and that's OK. Like your learners, we hope that you iterate (try again), reflect and feel the joy of success as you master each new step.

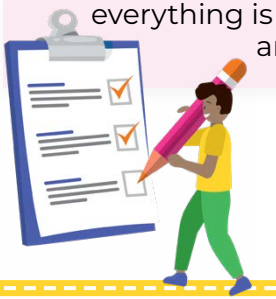
Good luck and let us know how you get on!

Teacher Tips

Cultural knowledge: Take some of the core concepts from your lesson and ask learners what words or phrases they would use in their home language for that concept. Translation isn't always a neat one-to-one match. The differences in meaning introduce cultural knowledge that can encourage discussion and add to the richness of the lesson.

Diversity is strength: Try to find creative ways of exploring how different languages represent different concepts. Try not to use just a single source but try to find ways of including and benefiting from different ways of knowing. You could have conversations about how different languages represent concepts such as values, respect, success, intelligence, knowledge, beauty, power, wealth, health, identity, race, gender, sexual orientation, categories, cultural assumptions, social hierarchies, knowledge, truth, morality, sanity, freedom, etc.

Beginning with the end in mind: Giving learners a step-by-step checklist or the assessment rubric will help to clarify exactly what you expect and will help them to plan. They can see what everything is building up to and can anticipate the next step.



Innovation in diversity: Show many, different examples of what is possible in a project. This will keep learners from copying a single example and gives them permission to innovate and be creative.

The whole child: The most rewarding projects involve the whole learner. This includes senses, perceptions, emotions, physical movement, knowledge, language and relationships.

Balancing act: Try to create a balance between creating a flexible, relaxed, playful environment with one that is structured. It is like creating a 'playpen' (or boundaries) within which learners have the freedom to explore, while bumping up against constraints such as simple rules, scaffolded sequence of activities, set goals, time limits, or material constraints that contain and inform them. This way, they will feel safe but also free to innovate.

Strength in diversity and inclusion: Find as many opportunities as possible for productive dialogue and teamwork. Help learners to grapple with group dynamics, collaborative practices, negotiation, resolving conflict, democratic process and building knowledge together. There is strength in diversity and inclusion and it strengthens learners' 'voice and choice'.

Honesty is the best policy: Hearing criticism is difficult for us all - but it is very important to be able to be truthful. Honest feedback is the key to effective collaboration. Allow learners to create and experiment with different 'rules of engagement,' so that they agree on rules that help them deal successfully with disagreement.

Each one teaches one: Everyone has something to contribute. Try to ensure that certain learners do not do most of the work. You can work with them to create specific roles. If each learner has a specific role vital to the completion of the project, they are more likely to accept responsibility for the team's success.

Learning happens at the edges: Your role is to ensure that the challenges are stretching but not too challenging, and the easy stuff stimulating but not too easy - for each learner. This is hard to achieve as a teacher. It is called "the zone of proximal development" - that space where learners can best stretch their learning. You want to try to create a satisfying sense of growth and achievement. If they are afraid of failure this will not happen.

Learner autonomy: One strategy to help learners take ownership of their work, is if they can create with you the assessment rubric you will use. It helps them understand the outcomes, describes the skills, and allows learners to think more deeply about what should be valued in the learning experience.

Journaling the journey: Ask learners to keep a journal to record their feelings and thoughts throughout the project process, with a description of exactly what they did and how the team operated. This is a useful way of affirming individual responsibility. They can add rough sketches from the group's process, or their own doodles and artworks, or whatever they need to express themselves. If you are going to assess journals, make that clear from the start.

Individual strengths: Try to create projects or activities that appeal to a range of learner strengths. Some may be better at writing, doing online research, making art, building structures, organising the team, presenting, and so on. Regardless of what they are doing individually they are still witnessing what other team members are doing, giving feedback to them and learning from them.

We don't live in silos...: Unfortunately school tends to create the impression that knowledge is in subject silos. This is not how the real world works. So, to mirror reality, try to break down some of the artificial barriers between subjects and encourage learners to transfer knowledge from one context to another. This ability to transfer knowledge is one of the most valued skills in the workplace and one of the most powerful techniques for solving personal problems.

Create positive identities: Try not to perceive a learner's disability or barriers to learning as the most important element in defining who they are. This just neglects all the other aspects of their being and ability. Rather accept that all learners are differently-abled and have learning strengths – as well as difficulties. When we only compare the performance of a child to narrow outcomes, we get a distorted view of what is natural and normal - and we can also miss the positive. We risk embedding a negative self-image, which is hard for them to rectify in the future.

Be prepared: Have the learners think about what written materials they may need, such as instructions, project checklists, useful background information, feedback/assessment forms, etc. and what physical materials they may need such as paper, stationery, cardboard, waste for recycling, building materials, glue, etc.

Speaking is always best: Try as much as possible to give verbal feedback rather than a written mark. Try not to make comparisons with other learners but rather help them to try to figure out where they are on their own learning path and what they need to do to take the next beneficial step.