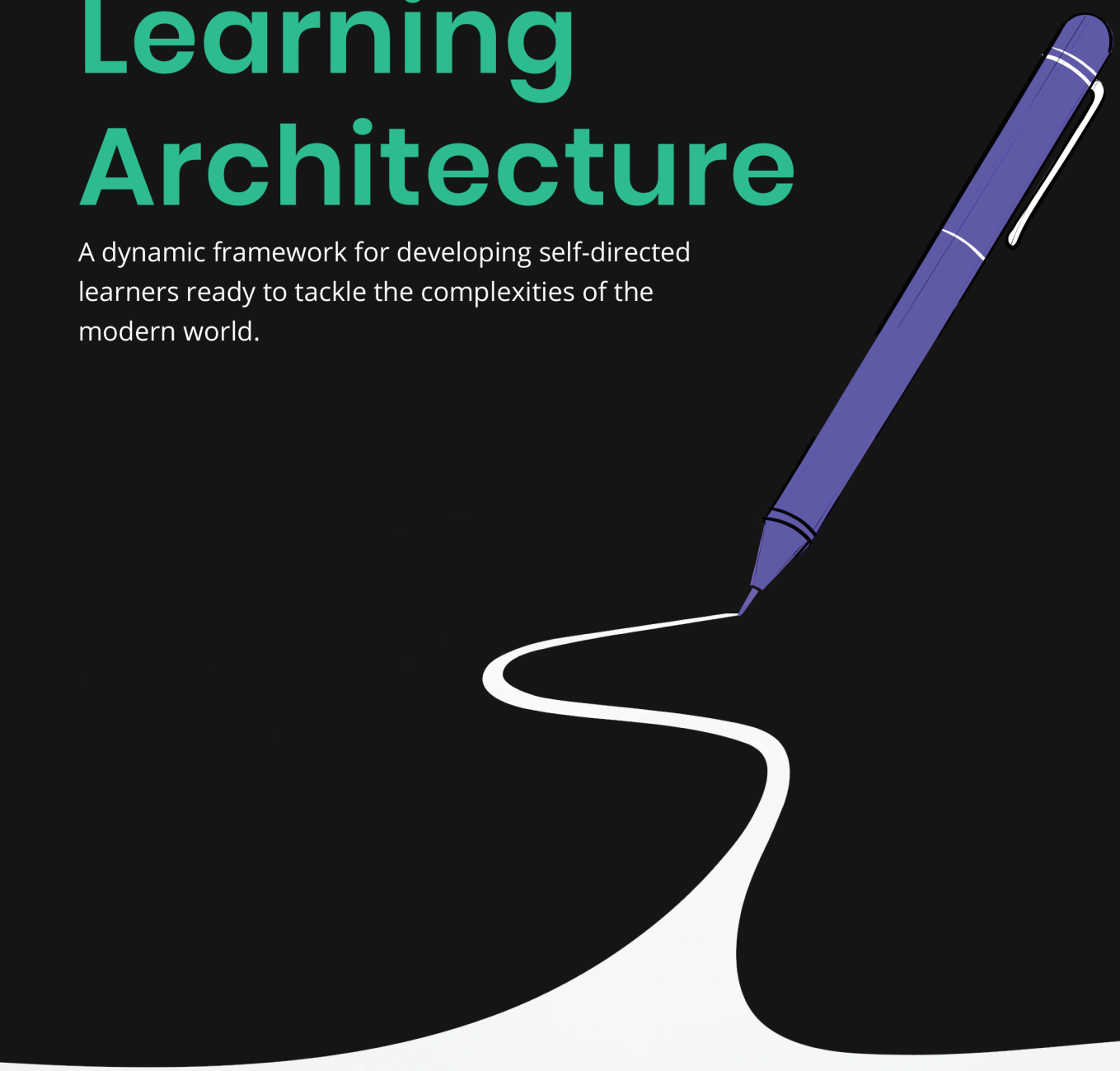
Learning Architecture

A dynamic framework for developing self-directed learners ready to tackle the complexities of the modern world.



8billionideas

A purposeful approach to learning is needed to ensure every learner is equipped with the skills and belief to change this world.

CONTENT

Version 1

01. Introduction

The Organisation for Economic Co-Operation and Development (OECD) in its review of the future of education, has identified that more than ever young people need new skills for a rapidly changing world.[1] Educators must equip learners to participate in this world and in doing so, equip learners with the skills and beliefs to change the world. Given this requirement, it is likely that learners will need to apply their knowledge in unknown and evolving circumstances.

For this, we will need them to become confident thinkers and develop the skill of meta-cognition, which is the ability to think about your own thought process and evaluate information critically. Learners will need to develop learning as a skill in its own right. On a social and emotional level, they will need the skills of empathy, self-efficacy and self-regulation.

The OECD expects that values like a respect for human life and dignity and respect for the environment will be needed in conjunction with core values of trust, diversity and virtue. Character education will be instrumental here. The OECD also suggests that learners will need to use and embrace new technology.

Against this backdrop, this white paper sets out the core considerations behind 8billionideas' learning philosophy. Whether it's called Education 4.0 [2] or more simply preparing learners who are skilled consumers and producers of digital information [3] to work in today's globalised context, a purposeful approach to learning is needed to ensure every learner is equipped with the skills and belief to change this world.

02.
Our world view in relation to learning

Any framework for learning is based on a worldview and a set of underlying assumptions about how people know what they know and make sense of the world they live in.

There are many ways to build a learning architecture. Approaches to the field of education are constantly evolving as new research and practice become available.[4] To make sense of new scholarship and to apply it successfully, we must start by understanding the assumptions we make about the learner in front of us. For example:

How do learners make sense of and navigate the world?
How might they learn from our teaching?

To answer these questions, we need to look at the wider context of the learner and how they make sense of their world.

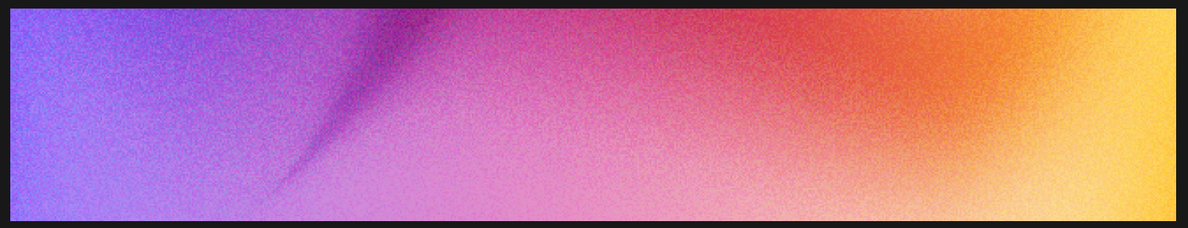
Wider context: learners are not blank canvases

Learners do not exist in a vacuum. Our failure to recognise this has meant that little has changed to close the gap in the achievement of high-performing individuals and schools compared with their lower-performing peers.

Part of the problem lies in the lack of assistance educators have received to integrate the social, cultural and political differences that exist in society with their approach to education and teaching. [5] If we aim to equip learners with the skills and belief to change the world, we must consider these differences.

One helpful way to think about these differences is to consider the broader context of the learner and their experiences before they enter the learning environment.

Developmental psychologist Urie Bronfenbrenner has helped us to understand a child's development in relation to their environment. [6]



Bronfenbrenner's theory maps the key circles of influence that surround each child.
The most powerful circles make up the immediate life space of family, school, and peer group. As the circles go out some children have significant community connections such as work, church, youth clubs, and formal or informal mentoring. Surrounding these circles of influence are broader cultural, economic, and political forces.

Researchers believe that the circles of influence closest to the child have the greatest impact on development.[7] Thus, while poverty can be a negative force in development, the immediate forces, in a particular child's family, school, peer group, and close community exert the greatest influence. The interrelations among these nested environments allow us to see how patterns of interactions within these systems influence each other and affect learners' developmental outcomes.[8] Nor is this ecology static; it changes over time as the child transitions in their life from primary, to secondary and on to higher education or work. [9]

A learner's learning is situated in the wider ecological context

Taking this perspective has an impact on our practice. There is a vital role for the educator in bridging the circles of influence in learners' lives.

Learning becomes a collective process, situated in the social context of the classroom and wider family and beyond.[10] Evidence suggests that educator–learner relationships are important for children's development in a learning environment.

Additionally, seeing the learner in their wider context influences how we create inclusion, design our learning and which methods we use to evaluate whether this has had an impact.

Students bring their prior experience to learning

The learners we meet are not blank canvases on which to imprint learning. They come with their life experiences based on their social situation at home and in school, along with their wider culture.

These shape the ways learners engage with teaching, the sense they make of their learning, and its application to the real world. Therefore, they influence the approach we must take towards teaching them.

Whilst we might name an approach to learning based on these assumptions as broadly constructivist, in practice this means that learners will learn best when engaged in learning experiences, not being taught passively. Teaching from this lens builds on learner knowledge and experience, recognising it is ever-dynamic and changing.

There is a dialogue between the educator and the learner.

Learner experience is the building block for new knowledge.

01.
Learner's inner life and previous story – identity, family, background, experiences, demographics.

02.
Peer group dynamics – how the learner is affected by their social circle and immediate relationships.

03.
Local area influence – the impact of the local context, such as the city or community where they live.

04.
Physical and social learning environment – the setting in which learning takes places, such as a classroom.

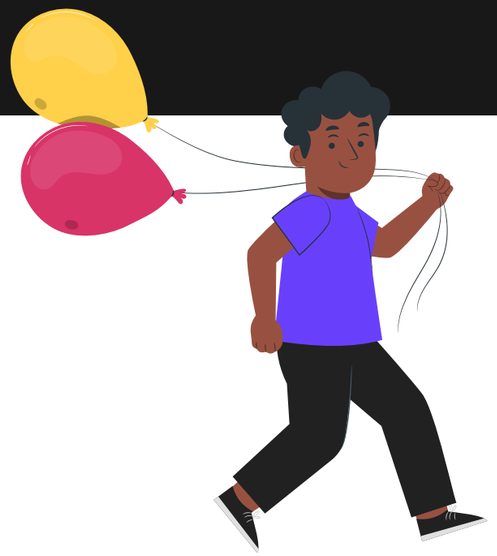
05.
The world – expanding horizons beyond the immediate surroundings into the global context.

Classroom based on constructivist assumptions

Pursuing learners' questions and their interests is integral to exploring, learning and unlearning, allowing educators to explore the bigger concepts that today's learners will need to be cognisant of to be successful in the future.

Summary

Being clear about these two high-level framings for our practice allows us to make more detailed and nuanced choices about our pedagogy and practice. How we work with and include learners, their interactions with us, each other and their wider ecological system, along with how we assess and include them – these are all determined by our underpinning assumptions.



Traditional learning environment (T) vs constructivist learning environment (C)

T: Curriculum begins with the parts of the whole. Emphasizes basic skills.
C: The curriculum emphasizes big concepts, beginning with the whole and expanding to include the parts.

T: Strict adherence to a fixed curriculum is highly valued.
C: In a constructivist environment, the pursuit of learner questions and interests is highly valued.

T: Materials are primarily textbooks and workbooks.
C: Learning is interactive in a constructivist framework, building further on what the learner already knows.

T: Educators disseminate information to learners. Students are recipients of knowledge.
C: The learning process is interactive, and the learner is encouraged to draw upon their existing knowledge.

T: Educator's role is directive, rooted in authority.
C: Educators have an ongoing dialogue with learners, helping them to construct their own knowledge actively.

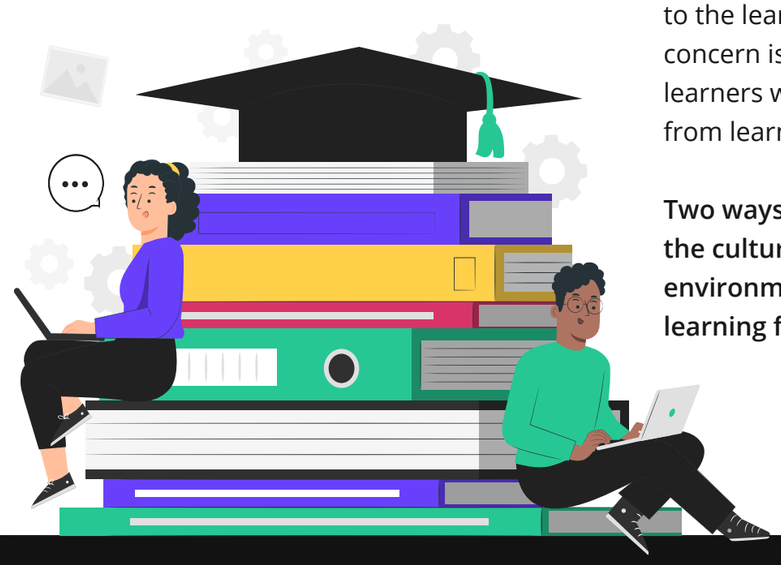
T: Assessment is through testing and correct answers.
C: Educator's role is interactive. Rather than being based on authority, it is rooted in negotiation and dialogue.

T: Knowledge is seen as inert.
C: Knowledge is not static or fixed, but rather dynamic and shaped by our experiences and interactions.

T: Students work primarily alone.
C: Students engage in collaborative learning, working primarily in groups to engender interactive learning.

03.

Making learning inclusive and accessible



We take a broad definition of inclusion in a learning environment that seeks to include and inspire all learners. [13]

Whilst the nature of the inclusion challenges that learners face will vary - from language, ethnicity, poverty, and disability through to the learning environment - the common concern is how do we better bring in those learners who feel marginalised or excluded from learning?

Two ways that we do this are through the culture we create in the learning environment, and the way we design learning for flexibility.

Without inclusion, our practice as educators is hollow. Whilst there is no magic formula to ensure inclusion, we continually reflect on and evaluate the ways that we achieve this. We assume that the barriers to learning are in the design of the environment, not the learner.

The idea of inclusive education has become a global policy vision for everyone involved in education.[12] We are committed to making learning as inclusive and accessible as possible, and we will continually strive to improve the way we work towards this.

Our full commitment to inclusive and accessible learning is reflected in our mission statement: to give every student on the planet the skills and beliefs to change the world.

Welcoming and supportive culture – social and emotional climate for learning

The culture created within the learning environment provides the foundation within which inclusive learning can take place; a culture where every learner matters and matters equally. This involves creating a learning environment that embraces both inclusion (the processes that help overcome barriers limiting the presence, participation and achievement of learners), as well as equity (ensuring everyone's behaviours demonstrate fairness and where the education of all learners is seen as having equal importance).

There are numerous outline frameworks within which to situate inclusive practice.[14] For example the National Framework for Inclusion in Scotland[15] provides a range of reflective questions for educators about themselves and the learners within their context. Helpfully, it also lays out a structure for creating an inclusive learning environment.

To check if we are creating an environment for inclusion and equity, we can ask ourselves certain questions.[16]

- **Learning is planned with all learners in mind**
  Do activities take account of learner interests and experiences? Are varied methods used? Do the learners understand the purposes of lesson activities?
- **Learning experiences encourage all learners to participate**
  Are learners addressed by their name and treated as individuals? Are there materials that engage the interest of the learners? Do learners feel they can speak during lessons? Are lessons relevant? Are different groups encouraged to speak equitably?
- **Students are actively involved in their own learning**
  Are learners encouraged to take responsibility for their own learning? Does the learning environment encourage independent learning?
- **Students are encouraged to support one another's learning**
  Do ways learners are grouped encourage them to interact? Do learners sometimes work in pairs or groups? Do learners help each other to achieve the goals of lessons?
- **Classroom behaviours are based on mutual respect**
  Are there established rules for taking turns to speak and listen? Do learners feel that classroom rules are fair? Is bullying discouraged?
- **Students feel that they have somebody to speak to when they are worried or upset**
  Are the concerns of learners listened to and addressed? Do educators make themselves available for learners to talk to them privately?
- **Assessment contributes to the achievement of all learners**
  Are learners given constructive feedback on their work? Do educators ensure that diversity is respected, even within an assessment system?

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  Are learners given constructive feedback on their work? Do educators ensure that diversity is respected, even within an assessment system?

Lesson study – working together to improve inclusion

A powerful approach for collaborative professional development that focuses on learner inclusion is lesson study. Lesson study is a systematic procedure for the development of teaching that is well established in Japan and some other Asian countries. The goal of lesson study is to improve the effectiveness of the experiences that educators provide for all their learners. The focus is on a particular lesson, which is then used as the basis for gathering evidence on the quality of experiences that learners receive. These lessons are called research lessons and educators collectively work to improve them in response to learners of the planned activities. [17] [18]

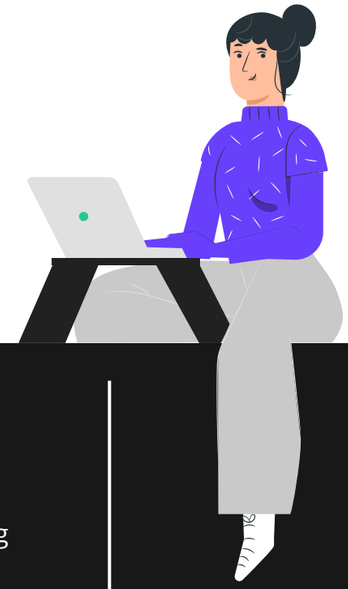
Designing for flexibility

Learning design is a second powerful tool for inclusion: what are learners learning, how are they learning and why are they engaged (or not) in learning? The aim is to create a "curriculum"[19] that is flexible for everyone. This is not only so that they can feel and be included, but also supported and challenged appropriately to reduce boredom and frustration and maximise a high achievement standard.

Designing for flexibility takes context and systems into account. In crafting a new session, we sometimes go straight to the content of the subject, forgetting that learners' day-to-day experiences exist in the ecological system of peers, families, communities and so on; learners bring their history and context with them to the classroom. Instead, we need to create learning solutions that develop learners' abilities to apply what they have learned in one context to another context; and to develop, through its emphasis on sociocultural aspects of learning, the habits of collaboration and of working in and through a community.[20] Universal Design for Learning (UDL) has become a popular[21], if controversial,[22] [23] heuristic for this type of inclusive learning design. We recognise it is not the only model,[24] but for around 20 years it has been positioned as one approach to curriculum that reduces barriers to and increases engagement in learning.

Proponents of UDL hypothesise that learners will participate in tasks in different ways. They argue this will not only depend on how their mind works, but also their range of interests and experiences within and beyond the classroom. The starting point is to focus on what learners already know and can do.[25] [26] We are inspired by UDL to create our own framework for inclusive learning design which we use to reflect on and evaluate our approach and content.

Three dimensions of learning - why, what, and how



Engagement
(The why of learning) – How do we emotionally engage learners? Through providing options for recruiting interest, sustaining effort and persistence and equipping learners to self-regulate their motivation.

Representation
(The what of learning) – How do we work with the fact learners will come with their unique ways of making sense of the world? Through providing options for perception, language and symbols and comprehension.

Action and expression
(The how of learning) - How do we help learners to navigate the learning environment and express what they know? Providing options for navigating the material, expression communication, setting goals and strategies.

UDL theorises a link between three general “networks” in the brain, the affective, recognition and strategic networks (see Figure 2), and the way we can make learning inclusive. Because this brain science is not heavily substantiated by empirical research, we instead take inspiration from the useful heuristic and use this to interrogate whether learners have constant opportunities to ask who, why, and what.

Flexibility is key in designing learning for inclusion inspired by UDL, with a focus on the strengths and challenges of the learner. For example, how can we provide a choice of assignments, a variety of materials, flexible assessments, varied presentation of content and scaffolded support for learners?

UDL helpfully provides a set of guidelines to be used to implement this framework – going from the multiple ways of engaging learners (the why of learning); multiple ways of representing learning by giving options to understand and perceive the materials (the what of learning); and multiple ways of taking action and communicating about the learning to give learners options in how they act and have agency (the how of learning).

Multiple paths to meaning

Why? Why Is It Relevant To Me? Why Should It Matter?

Multiple paths to spark interest. Multiple ways to relay importance, meaning, and relevance to different learners. Multiple choices. Multiple goals and objectives. Multiple references to the wider world, learner's lives, and meaning and implications. We provide multiple paths to meaning to help learners ask and answer "Why?".
In doing so we aim to foster:

Purpose and Empowerment

Multiple paths to see

What? What Are We Learning? What Different Ways Can We Engage With Ideas?

Multiple ways to comprehend information- through pictures, words, discussion, media, activities, questions, and play. Multiple ways to engage with ideas. Multiple examples. Multiple access needs and considerations are taken into account. Multiple ways for educators to pivot, reframe, and change approach to fit the learners in front of them. We provide multiple materials and ways to comprehend the learning to help learners confidently engage with what they're learning.
In doing so we aim to foster:

Knowledge and Curiosity

Multiple paths to do

How? How To Practice In Different Ways? How To Understand In Different Ways?

We provide multiple different activities that use different skills, energy, and provide variety. We provide opportunities for physical movement. We provide multiple opportunities to work with peers. We provide the opportunity to work individually. We provide activities both abstract and physical. We provide multiple ways of doing and engaging with the learner to include everyone and in doing so we aim to foster:

Motivation and Mastery

A Holistic Approach

This approach highlights the importance of offering multiple paths to engage learners and foster understanding, purpose, and curiosity. This is achieved by providing multiple ways of asking, seeing, and doing. In addition, it is important to employ a variety of methods – such as discussions and workshops – while considering different access needs. This method helps learners confidently engage with the material and allows educators to pivot and adapt their teaching to fit the learners in front of them. Providing multiple paths to meaning not only helps learners to retain information, but also encourages them to develop critical thinking skills and become active participants in their own learning.

Accessible web best practice is captured in the WCAG 2.1 guidelines.[27] More simply, the POUR acronym is an internationally agreed standard to help content authors and developers create digital content with accessibility, and hence inclusion in mind. These guidelines are shown below.

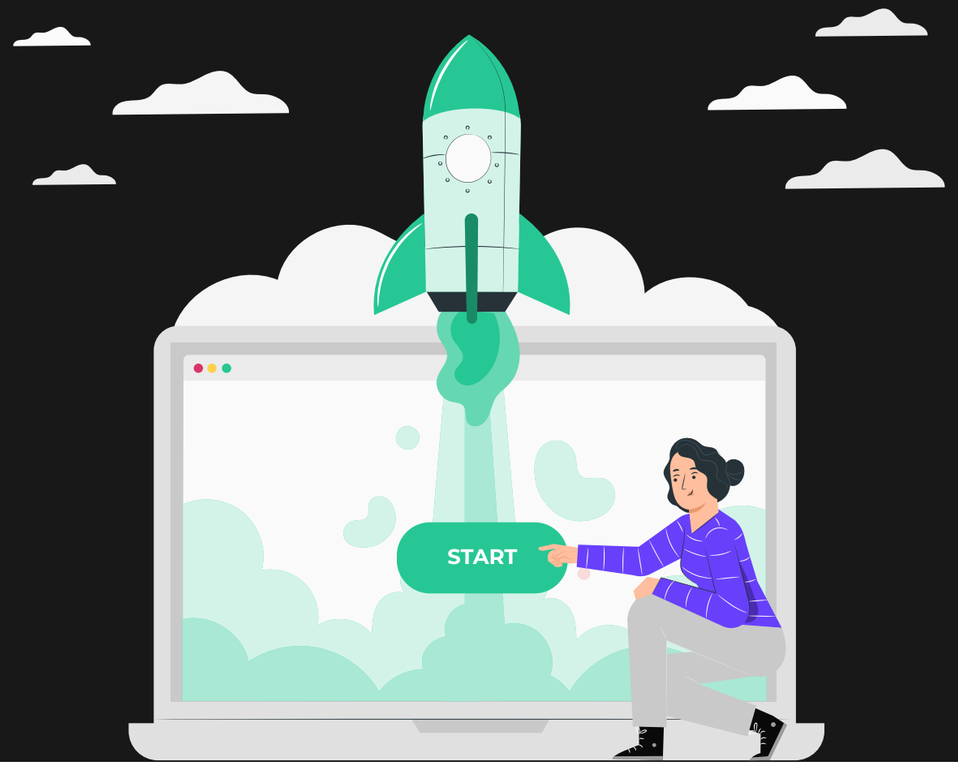
POUR - Four principles of digital accessibility[28]:

1. **Perceivable -** Information and user interface components must be presentable to users in ways they can perceive. Users must be able to perceive the information being presented (it can't be invisible to all their senses).

2. **Operable -** User interface components and navigation must be operable. Users must be able to operate the interface (the interface cannot require interaction that a user cannot perform).

3. **Understandable -** Information and the operation of the user interface must be understandable. Users must be able to understand the information as well as the operation of the user interface (the content or operation cannot be beyond their understanding).

4. **Robust -** Content must be robust enough that it can be interpreted reliably by a wide variety of user agents, including assistive technologies. Users must be able to access the content as technologies advance (as technologies and user agents evolve, the content should remain accessible).



Summary

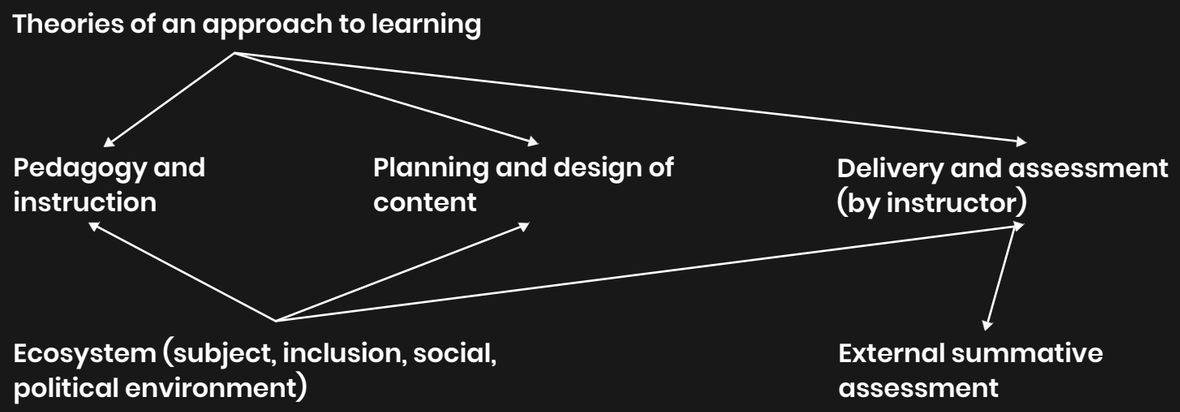
The goal of inclusive learning is for all learners to be purposeful, motivated, resourceful, knowledgeable and goal-directed. Right from the start of a learning experience, the intent is to make sure that the greatest range of learners can access and engage in the learning. Creating an inclusive environment in terms of culture, flexible learning design, and accessibility are key to this. Thinking about what prevents learners from learning and being included in the learning environment, allows them to succeed.

04. Creating impactful learning

Creating effective learning is like unpicking knitting. Our own beliefs and background are woven in with the methods we chose to use, how we give feedback and assess progress, the thinking and dialogue skills we develop, and bound in with the learner's own ecosystem, capabilities, and experiences. All of this is scaffolded in a learning journey.

The learning journey

We know that learning is not a straight-line process. Our pedagogy is fashioned through our beliefs as educators, the interplay with culture, the ecosystem of our learners, and the variety of methods of teaching we use. This includes how we give feedback, and the assessments we set. It is how we deliver the curriculum to the class, and scaffold the learners' understanding. Pedagogy involves a range of techniques, including whole-class and structured group work, guided learning, and individual activity. This encompasses a focus on developing higher-order thinking and the ability to analyse your own thought process, making good use of dialogue, and questioning to do so. In addition, effective pedagogies are inclusive and take the diverse needs of a range of learners, as well as learner equity, into account.[29]



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As a result, we understand that learning isn't a one-shot activity. Instead, it's more like a spiral of interventions with the aim to deepen the learner's understanding and ability to apply their knowledge in the world. However, to make learning interventions workable, it's helpful to order these factors into a learning journey.

A learning journey is the term we use to capture the learning experiences of learners participating in a discrete set of learning activities.[31] It is a helpful framework, a thread in the knitting, from which to experiment with impactful learning design. Research indicates that there are several phases to a learning journey.

Starting out: Being engaged by – and in – something that is personally relevant and connected to the local community and world around the learner.

Exploring: The experiential activity that ties into what the learner already knows and experiences, allowing them to use a range of ways of thinking to explore the problem. This may involve digging deeper into the topic and showing the learner's understanding by producing visible work shared with the group.

Interacting: Working together to reflect and gain new perspectives, cultural understanding and insight, and with feedback, create new understanding.

Presenting a learning journey as a time sequence of decisions is a simplified view. The skill of the designer and educator is to remember that learning is a complex cyclic interplay of factors. In practice, interventions will be shaped, revised, and repeated in the learning journey to help move the learner forward.

Exploring evidence-based learning techniques

If we stay with the knitting analogy, a second thread in the knitting is knowing the most impactful learning techniques to use with learners. Sometimes this can feel like a search for the Holy Grail. Psychologists have been trying to find and validate the use of effective learning techniques for more than 100 years.[32]

01.

Criteria
Relevance to effective educational theories.

Evidence
Does the proposed pedagogy relate to our worldview and the educational theories we know are effective in terms of improving learning?

02.

Criteria
Research evidence about its effectiveness.

Evidence
What studies test the proposed pedagogy and its outcomes?

03.

Criteria
Level of adoption in educational practice.

Evidence
What is the current level of adoption and use in education?

04.

Criteria
Impact on the development of twenty-first century skills.

Evidence
Can the pedagogy contribute to the development of twenty-first century skills?

05.

Criteria
Innovative aspects of pedagogy.

Evidence
What is innovative or new in relation to the proposed pedagogy?

There is usually good research data to allow us to evaluate a technique's evidence-based efficacy, as well as whether it can easily be implemented. These range from simpler techniques, such as using more time to provide explanations or asking learners many questions during class,[34] to more complex. For example, we know research has found that practice testing and distributed practice receive high utility assessments because they benefit learners of different ages and abilities. They have been shown to boost learners' performance across many criterion tasks.[35]

We use testing whilst learning, harnessing the impact of the testing effect, as it has been shown that taking tests during the learning phase better facilitates later retrieval of the tested material from long-term memory compared to non-tested learning material.[36 37] Researchers believe that a powerful learning event takes place when previously studied information is tested, because of the effortful processing it takes to do it.[38] The advantages of spaced learning are well-researched, suggesting that multiple learning sessions yield better long-term outcomes. [39] We aim to use this in our learning journeys. However, findings indicate there is an advantage to spacing out the retrieval practice episodes on the same content. But research does not support the widely held belief that inter-retrieval intervals should be progressively increased until a retention test. [40 41]

Similarly, interleaving, learning new skills or knowledge simultaneously rather than one by one, can make learning more efficient in some circumstances.[42] Although not fully understood, it is believed that this process works because our brains crave variation. However, the strength of the effect depends on the type of learning material (it is, for example, low for mathematical tasks) and how similar the materials are between categories.[43] Based on evidence, Interleaved practice received moderate utility assessment as the benefits generalize across some variables, but the evidence for their efficacy is only now being systematically explored.[44]

Restudy versus retrieval practice research insight

A recent study compared the effectiveness of two learning strategies for learners with low versus high prior knowledge of certain scientific text passages. The two strategies were restudy (i.e., focused restudying of examples or key ideas) and retrieval practice (i.e., short answer practice questions with detailed feedback). Retrieval practice led to greater overall performance (i.e., about +10%) and these benefits were similar for learners with low and high prior knowledge. The researchers claimed that this indicates that retrieval practice is more effective than restudy when learning complex, educationally relevant information. They further maintained that learners with lower and higher levels of relevant prior knowledge will similarly benefit from retrieval-based learning.[45]

Emerging learning techniques on our watchlist

It is hard to assess whether our learning techniques have an impact on the development of twenty-first century skills and continue to innovate aspects of our pedagogy. Below, we suggest three emerging approaches that are on our watchlist to help us innovate and continue to provide impactful learning experiences.

Watch parties

One innovative aspect of pedagogy to emerge from the recent pandemic is watch parties.[46] The combination of learning from videos with the social experience of watching with others, whether together or dispersed, can make for an effective learning experience. This is particularly true as learners are becoming increasingly diverse in terms of where they live and where their learning provider is based – which might be in a different country altogether.

Like any complex pedagogy, watch parties require careful preparation.[47] For example, using 'signalling' to highlight key concepts, such as applying coloured text or changing the contrast on the screen, or using short out-of-video text to give further details on the context or learning objective, are thought to be effective. Similarly using shorter videos, or 'chunking' longer videos, to increase the sense of presence and social partnership, as well as including interactive questions within the video are suggested techniques to improve effectiveness.

Pedagogies of the home

Given the need to create learners who are citizens of the future and impact their community, an emerging approach worth considering is the pedagogies of the home. Pedagogies of the home seek to investigate the types of informal teaching and learning practices that occur in a home environment, as well as culturally specific ways of learning – such as through the local community.[48] By using different sources of knowledge gained both at home and in their wider communities, learners may be better equipped to challenge any discrimination they may face. On a broader level, it is hoped that a better understanding of home pedagogies will allow educational policies and practices to be developed that value and build upon household knowledge.

Flexible hybrid learning

During the pandemic, learning was conducted outside the normal classroom environment. As a result, new types of hybrid learning models have been explored, particularly in post-secondary education. Through these models, learners are given the option to alternate between attending classroom sessions and participating synchronously and/or asynchronously online during the period of a course's delivery.

Synchronous participation takes place at prearranged times. These could be at the same time as the classroom session or at another time, using video conferencing platforms or live chat. Asynchronous participation takes place in online forums or chats, within defined timeframes but at the learner's own pace.

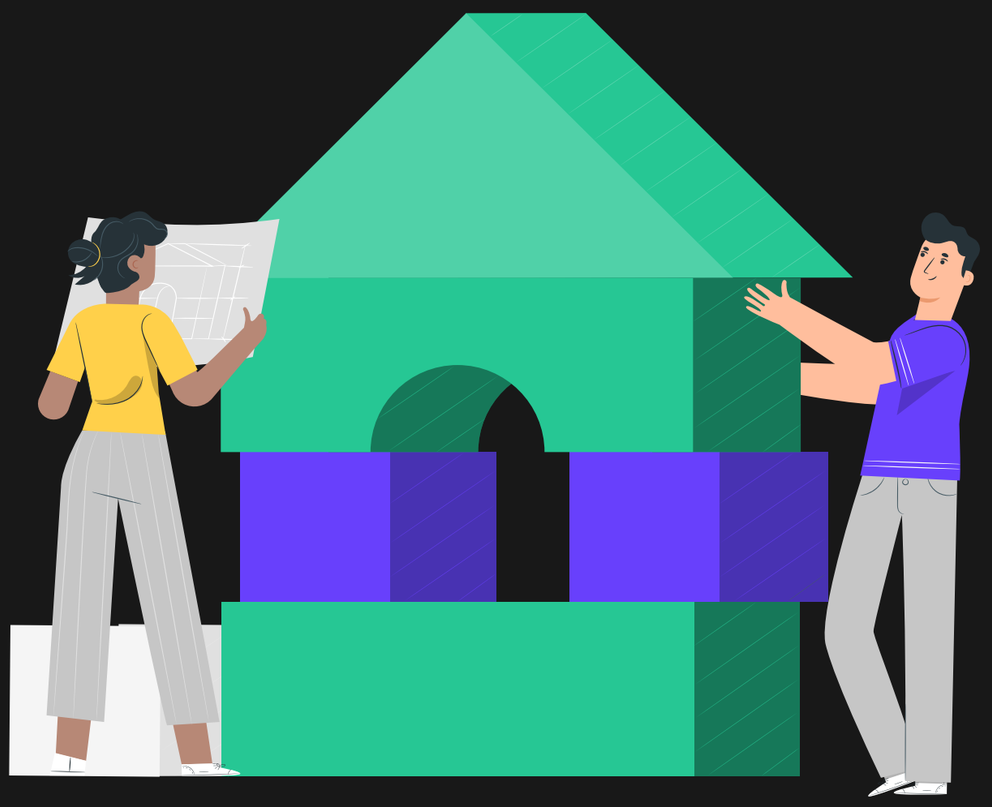
Whilst it is hard to imagine its implementation in primary and secondary education at present, this approach to hybrid learning opens the possibility for cross-cultural learning well beyond the boundaries of a local community.[49] It prioritises learners' preferences and constraints, offering the maximum possibilities to keep the pace of the course and increase their chances of success. On the other hand, this demands complex course design to tailor content, activities, and pathways to ensure that all learners have an equal chance of reaching their full educational potential.[50]

Build higher-order skills

The final thread in the knitting of impactful learning, is how we prepare learners to work in today's globalised world. We are helping them to engage as citizens who can create positive ripples in their ecosystem, as well as to explore their learning in the context of their peers, family, and community. Understanding is driven by the learner's natural interest and curiosity, and rooted in their real-world experiences. Unfortunately, this does not occur serendipitously.

Dialogue

Firstly, building higher-order capability requires the development of dialogue skills, so as to be curious and engage with the works and thoughts of those around you.[51] Not only that, but dialogue helps develop the habit of collaboration and of working with, and through, a community.



Notice

Be deliberate about paying attention. What stands out? What do you notice? Try to be as specific as you can.

Probe

Ask for more details. Inquire further to help you get a better sense of someone else's thoughts and perspectives.

Connect

Make a connection between something you have seen/heard and your own experiences/ interests/ feelings.

Name

Name the aspects of your identity, experience or place where you live that are influencing the way you see things.

Point of view

Express your point of view. By explaining your position on something, you help facilitate a deeper understanding.

Thinking routines

Secondly, by understanding how they think about – and interact with – content, learners come to know it better and develop the cognitive process needed later in life.[53] Just like learning to dialogue, building our capacity to think must be purposeful. We can reveal our own thinking through the use of pictures and artefacts. Through practising thinking routines and protocols, we can deepen them, and thereby stretch our thinking (and impact) to other contexts.

A way of nurturing and developing thinking routines has been created by Harvard's Project Zero.[54] A thinking routine is a set of questions or a brief sequence of steps used to scaffold and support a learner's thinking.[55] These routines are designed to support specific kinds of thinking, so it's important to choose the right tool for the type of thinking skill to be developed or nurtured. Like developing physical fitness, thinking routines need to be repeated and practised to develop certain types of thinking. Rather than using a different thinking routine with every artefact, the creators suggest using the same thinking routine (such as See, Think, Wonder) with multiple artefacts.

See, think, wonder

What do you see? (Make lots of observations), What do you think about that?,What does it make you wonder?

Creative questions & sentence starters

Brainstorm a set of questions about a learner's post. Use these question-starters to help you think of interesting questions: Tell me more about..., I wonder if..., Help me understand..., I was surprised by.... I connected to..., What I found interesting was..., I learned from your post that..., One sentence you wrote that stands out for me is...

Connect, extend, challenge

Connect: How do the ideas and information presented connect to what you already know?
Extend: What new ideas did you get that extended or pushed your thinking in new directions?
Challenge: What is challenging or confusing for you to get your mind around? What questions, wonderings or puzzles do you now have?

Circle of viewpoints

Consider the diversity of learners in your class. Before you share your work or comment on someone else's work, use this routine to explore how it may be interpreted from a variety of perspectives. Your process may involve the following steps: Identify the perspectives you are considering: "I am thinking of this...from the point of view of..." Take on the viewpoint, drawing on what you know (and being mindful of what you don't know). Consider any questions, concerns, or insights that may come from this viewpoint.

Thinking routines not only to build learners' capability but also provide rich insight. For example, learners might document their ideas and questions, or these ideas and questions could be shared at the end of the learning experience and in subsequent class sessions. That way, both the instructor and the learners can see how their thinking and understanding are developing.

Summary

We recognise the three threads necessary to create impactful learning. First, the need for a learning journey that captures the learner experience. Secondly, using evidence-based learning techniques that are fit for twenty-first century needs. Finally, the development of learners who can think critically and explore with others. Ultimately, the goal is to equip learners to work – and create ripples – in today's complex world.

05.
How do we know what good looks like?

When the ripples of learning spread outside of the classroom we know that our work has been effective. Our aim is to help develop learners who are equipped with the skills and belief to change the world.

Assessment is a critical aspect of pedagogy. How do we know the impact of our interventions? The key is to not argue over the distinction between whether an assessment is formative or summative, but what kind of inference is being drawn about the learner. Are we considering the learner's potential or their current status?

Summative assessment literally means that it "sums up" what a learner has achieved. This might be done by the educator or the learner themselves through a written test, observation, conversation or activity. Whether recorded in writing or using other audio-visual means, what comes out the other end is a score, grade or comparative indicator. This is obviously imperative if we want to measure knowledge or understanding of a topic, monitor progress or inform others, such as parents or school governors. But, it is important to remember that it is done for a specific purpose at a certain point in time. It is not meant to show everything the learner knows or can do on a topic.

Assessment for learning

For an assessment to function formatively, it considers the actions that would best facilitate learning.[57] Formative assessment (also called assessment for learning) is about allowing educators and learners to shape the learning process as part of the day-to-day in a classroom. It is about checking in on what learners know or can do, and finding the gap to plan a learning journey. It also allows the educator to extend learning or reinforce certain aspects.

Formative assessments can be as simple as questions, through to observation or tasks.[58] They can be learner-to-learner, educator-to-learner or educator-to-class, and they recognise the uniqueness of the learner and their environment. We focus on the key features of formative assessment.

Eight key features of assessment for learning

1. Creating an environment in which pupils can learn from each other

2. Creating informal opportunities to assess peoples knowledge and understanding

3. Explaining learning objectives success criteria or negotiating them with pupils

4. Giving constructive feedback

5. Giving time for learning to be absorbed

6. Using assessment to inform future actions

7. Using questions and dialogue to promote deep learning

8. Encouraging pupils to reflect upon their learning and to monitor their own progress

Options for assessment

Of course, if learners learned what they were taught, then assessment would be unnecessary. But in real life, that is not the case. We have to develop processes to understand what learners have in fact learned.

How might we approach assessment if we were to tie together our thinking? From our highest-level assumptions about how learners learn, to creating inclusive learning, to developing the learning journey – how do we know that we are producing learners who are fit for the twenty-first century? What does this mean for assessment?

One option is to encourage several assessment options and multiple learning paths. If we assume learners differ in how they best express themselves and demonstrate learning, we can ensure several assessment options are available. Where learners are exposed to multiple learning paths, various means of expression, and numerous opportunities for engagement, assessment can include:

Marking based on supporting learning, with the nature varying according to the task, learning objectives, and school approach.

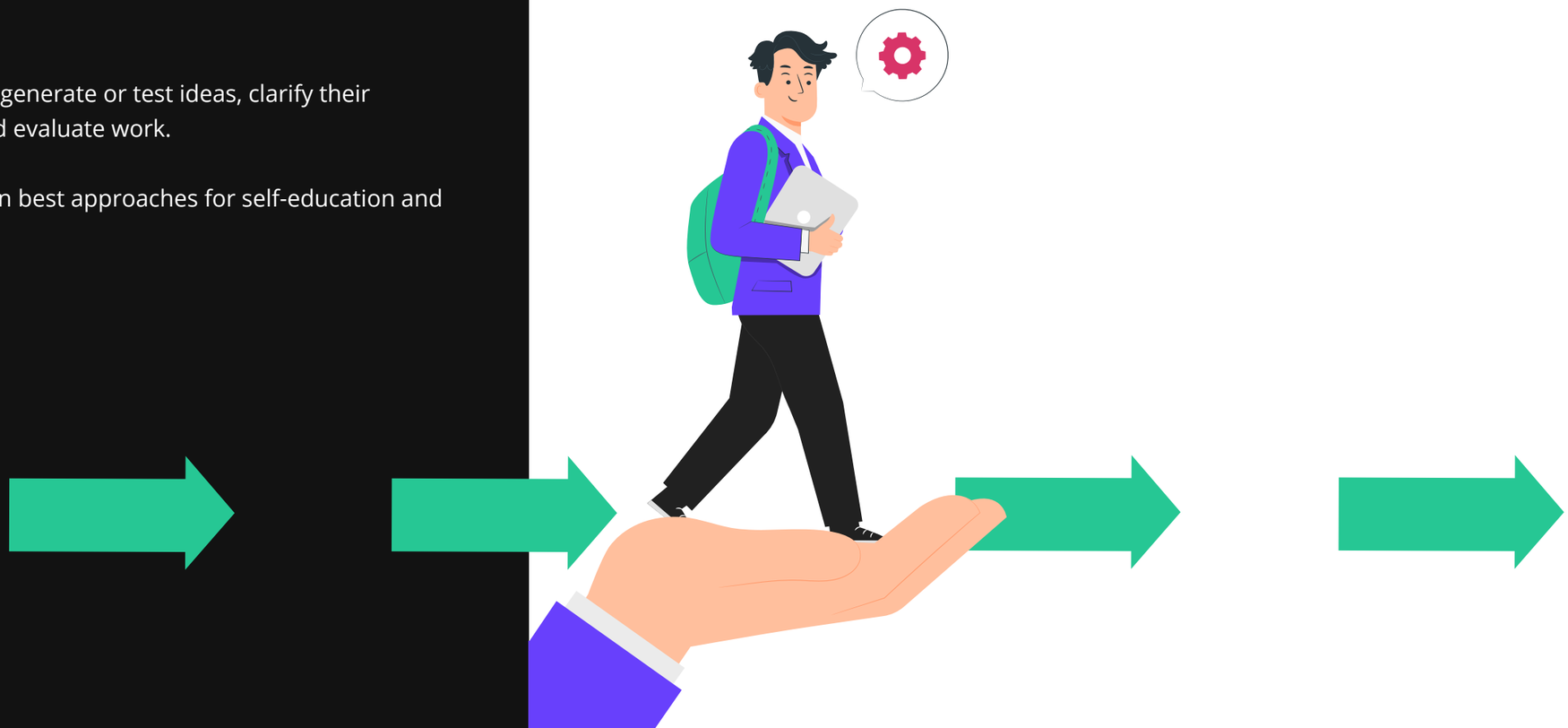
Verbal and written feedback that can be used by the individual to affect their future performance.[60]

Response partners, with learners working in pairs to generate or test ideas, clarify their understanding, create a joint response, or assess and evaluate work.

And at the extreme, learners who recognise their own best approaches for self-education and sustainable learning.[61] [62]

Key strategies in teacher assessment

	Where the learner is going	Where is the learner right now	How the learner will get there
Educator	1. Clarifying learning intentions and criteria for success.	2. Improve discussions and tasks to assess student understanding.	3. Provide constructive feedback that moves learners forward.
Peer	1. Understanding and sharing learning intentions and criteria for success.	4. Activating Learners as instructional resources each other.	
Learner	1. Understanding learning intentions and criteria for success.	5. Activating learners as the owners of their own work.	



This approach to formative assessment provides a sound basis for assessment. However, we believe we need a further step – what is the impact of the learning beyond the immediate circle of influence of the learner themselves? Learning is successful when learners take it back into the world.

A second suggestion, therefore, is an assessment that makes the learning visible, not just to the classroom, but shared into the learner's wider circles of influence. Making visible images of learning and being together in a group is a way to foster identity and learning, promoting conversation and deepening understanding about a learning experience. It can serve as a memory of learning in the classroom, allowing children and adults to reflect on, evaluate, and build on their previous work and ideas.

Making learning visible can take many forms: a photocopied sheet of paper, words repeated back to learners, work brought back to a small group or put up on a wall, or a carefully arranged panel. These might be immediate and "in-the-moment" to more fully shaped.[63] We know to take this step at the inflection points in our teaching, such as[64]:

When we notice a pattern in behaviour, confusion, or ideas that we want others to notice

When an "Aha!" moment seems to be happening for an individual or group

When we want to tell or help a child to tell a story of learning

When we are working on a specific skill, strategy, or routine and need evidence to assess progress

When language or memory is a weakness for one or more learners

Sometimes after the experience (notes can be jotted down from memory or photos re-enacted) to travel back in time and facilitate retrieval

When groups (small or large, successful or unsuccessful) are working together without educator facilitation

For us, the final measure of success is when learners can expand into their environment, including their family, to make their learning visible. This might be through interactions between families and learners both in and outside of the classroom, by turning unused community spaces into physical learning spaces, through newsletters, parent walls for writing messages or communication books. The assessment measure needs to be relatively binary to clearly show if they take this knowledge to positively impact someone or something outside of themselves.

Summary

With a mission to equip learners to have an impact on their families, community and the wider world, we evaluate our interventions based on the actions the learners take as a result. Learning has an impact when the learner uses their knowledge and harnesses it to put something back in the world. With a mission to equip learners to have an impact on their families, community and the wider world, we evaluate our interventions based on the actions the learners take as a result. Learning has an impact when the learner uses their knowledge and harnesses it to put something back in the world. With a mission to equip learners to have an impact on their families, community and the wider world, we evaluate our interventions based on the actions the learners take as a result. Learning has an impact when the learner uses their knowledge and harnesses it to put something back in the world.

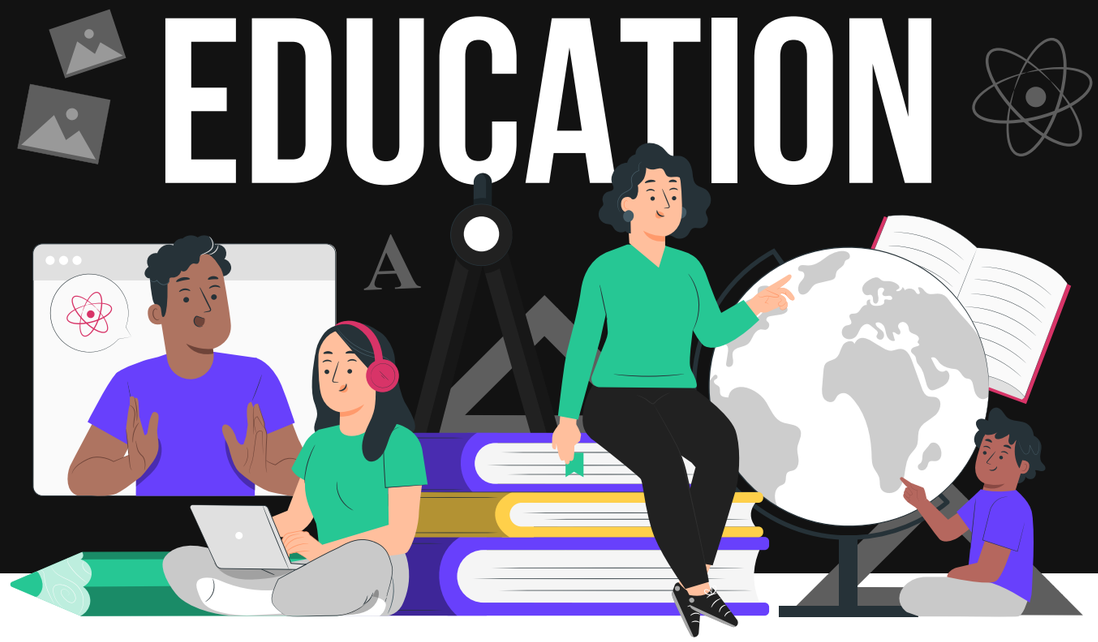
Conclusion

We are passionate about creating a purposeful approach to learning in today's global, dynamic and uncertain world.

We recognise that learners are not islands. They come to us with their prior experience. Their lives are nested within their families, their community and the wider society. Similarly, they influence these nested spheres through the actions they take because of their learning. These two presumptions provide the scaffold for our approach to creating impactful learning.

We wish that there was a level playing field in terms of learners' experience, inclusion and access to learning. Unfortunately, this is not the case and so creating the environment and designing flexibly for inclusion are the capstones of our approach. At its heart, we create learning that encompasses the complex web of factors that influence the quality of learning. This includes the learning journey, using evidence-based tools, and developing higher-order thinking and dialogue, all to ensure that the learning we provide is relevant, innovative, and equips learners to be global citizens.

Learning does not stop in the classroom. At the end of the day, when the ripples of learning are spread outside, we know that our work has been effective. Our aim is to help develop learners who are equipped with the skills and belief to change the world.



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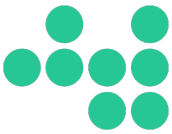

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