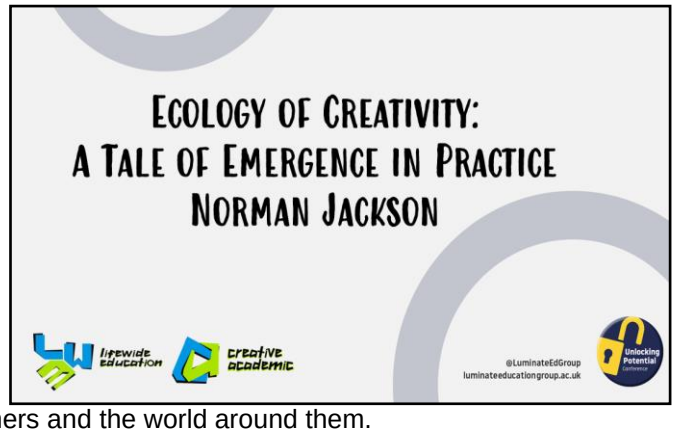
UNLOCKING POTENTIAL

NARRATIVE
Ecology of Creativity: A Tale of Emergence in Practice
Norman Jackson

Introduction

1 I am delighted to be given the opportunity to make a contribution to your conference which is addressing the important theme of 'unlocking the potential' of learners. This goes to the heart of the moral purpose of education and I interpret it to mean the educational practices and environments that will enable learners to develop as fully as possible their potential to achieve and sustain themselves as healthy, capable, confident, adaptable and creative people throughout long, complex and challenging learning lives. With the will to not only create better versions of themselves but to bring about positive changes in the lives of others and the world around them.



A common criticism of the way we traditionally approach formal education is that we don't try to develop people as whole people, rather we value academic achievement at the expense of other important qualities that are necessary to survive and flourish in a turbulent fast changing world. For many years I've argued that there is an opportunity for higher education to do more to develop learners in a more holistic way and in particular, encourage their creative development, and I will try to weave these two themes together in my talk.

There are five parts to this narrative. The first describes my holistic view of learning and education which sets the scene for what I am calling two mega-challenges facing young people today as they prepare for long complex learning lives. The third part offers some perspectives on creativity as a precursor to exploring how learning, practice and creativity can be understood as ecological phenomenon. I believe the time has come to consider the ecological nature of learning in our higher educational practices and in the final part I provide three general principles for curriculum design and pedagogical practices to encourage a more holistic approach to students' development, including unlocking their creative potential.

My educational philosophy

2 Between 2006-11 I led an educational development project at the University of Surrey aimed at exploring and giving meaning to the idea of *a more complete education*. A few months after we began we drew this picture on our wall in an attempt to make sense of the world we were trying to prepare our students for. We felt we were tackling the universal wicked challenge of all higher education systems. The question is not just how do we prepare learners for the first step of their career but how do we enable them to develop themselves for a lifetime of learning in a very messy and unpredictable world that is in continual formation. A world in which everything is changing and if we don't change with it we run the risk of being left behind.

Barnett (2004) coined the term supercomplexity to describe the condition of the world in which everything is connected and in a state of flux. He began an exploration into what a learner might need to deal with this world. He argued that it was fairly pointless filling students' heads with knowledge that had little relevance to the world of supercomplexity and identifying a set of skills that would equip learners for uncertain futures was also a fairly futile act. Instead, he argued *the pedagogical task is ontological – it is one of enabling learners to be and become the version of themselves they want or need to become*. It's this project that drives our deepest motivations born from our ambitions for the future. So rather than a knowledge or skill-based curriculum we need a curriculum that also engages deeply with the ontological dimension of being human, of being human in a world of great uncertainty that is constantly reforming, and of undergoing – of becoming different as we engage with this constantly emerging world.

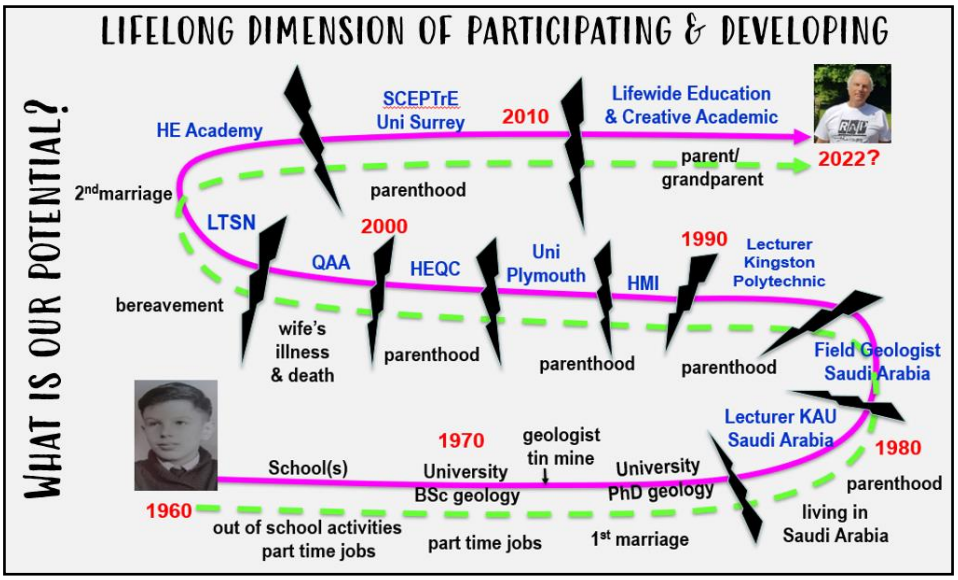
We agreed with Ron Barnet believing that the traditional focus on academic content and skills was not enough and we concluded that we needed to think about education and learning more holistically and ontologically in the way that pioneering adult educator Eduard Lindeman (1926) did a century ago when he said - 'the whole of life is learning therefore education can have no ending.' His vision became the vision for our exploration of the idea of a more complete education.

Our drawing shows the learner embedded in their world. I didn't realise it at the time but this picture is deeply ecological - full of relationships, interactions and interdependencies. The world and our participation in it provide us with our contexts and situations, resources, problems and challenges, opportunities and affordances – the possibilities for us to act, achieve, create. Our world and the things in it stimulate our imaginations and our emotions creating powerful feelings that motivate us to do all manner of things including trying to be creative.

Our relationships and interactions with the world around us are fundamental to our learning, our identity and continued development as a person throughout the whole of our life. It's our relationships with the ever changing world that creates the will to learn and to keep on learning or conversely suppress our desire to learn. And it's our relationships and interactions with the world that are the source of our creativity.

3 We don't know what our potential is? As a 10 year old I had no idea what I was capable of doing or achieving. It's only realised as we take on new situations and challenges and learn how to deal with them. Whether we are successful or not we learn from them, but the most important thing is to try. In this way we can see that our potential is always a work in progress – it is what we are capable of doing and achieving. but we don't know this until we try. It requires self-efficacy – a belief in self and an orientation to growth that values personal and professional development. It makes us seek out opportunities, sometimes taking risks, and making the most of them even if they are not successful and it's a never ending process.

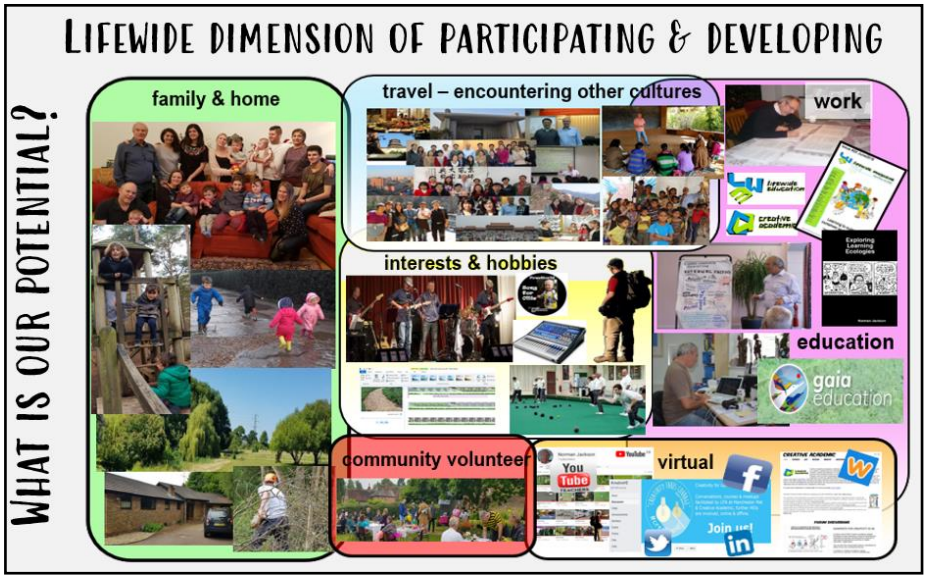
We get a sense of how we have used our potential when we look back on our own life and map the twists and turns as we reflect on the decisions we made to pursue particular jobs or careers, form relationships and perhaps get married and raise a family, relocate and experience traumas such as bereavement, illness or major setback.



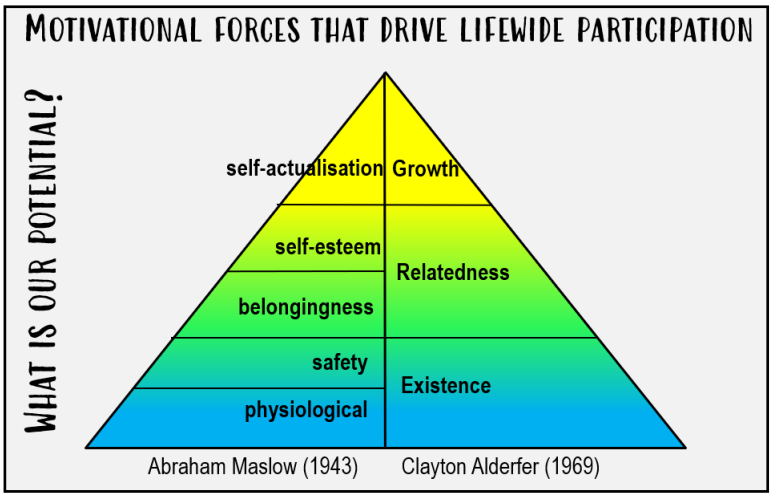
When we look back this longitudinal or **lifelong dimension** gives us a sense that life is a journey, more accurately an entanglement of several journeys and many transitions from one role, identity or set of circumstances to another. It reveals that although we like to think we are in control of our own destiny we often aren't. We do

things to the world and it does things to us. The map also makes explicit just how important and all-encompassing learning and development – often incremental but sometimes transformative, has been to enable us to get from A to B.

4 But there is an important dimension to lifelong learning that is never explicit. It's the horizontal or lifewide dimension of everyday life in which we are participating in many different environments more or less simultaneously. It is in the multiplicity of environments we inhabit where our potential as a human being is being realised as we try to participate in a myriad of relationships, contexts and situations – including education and work but much more.



5 Through our participation in the lifewide dimension of our life we try to satisfy our psychological and physical needs (Maslow 1943) and Alderfer (1969). Clayton Alderfer developed Maslow's Hierarchy of Needs into a three factor model of motivation known as the ERG model. In this model the letter E, R, & G each stand for a different human need: existence, relatedness and growth. Alderfer's model says that all humans are motivated by these three needs and they are the most important forces that drive our participation in every part of our life. The most concrete and motivating of Alderfer's three needs is existence, which really relates to physical and psychological survival. The next level is the need for relatedness, a sense of community and a good relationship with yourself. The least concrete, but the most important, from the perspective of unlocking our potential in the ERG model, is growth, which relates to self-development, fulfilment and the sense of achieving our potential.

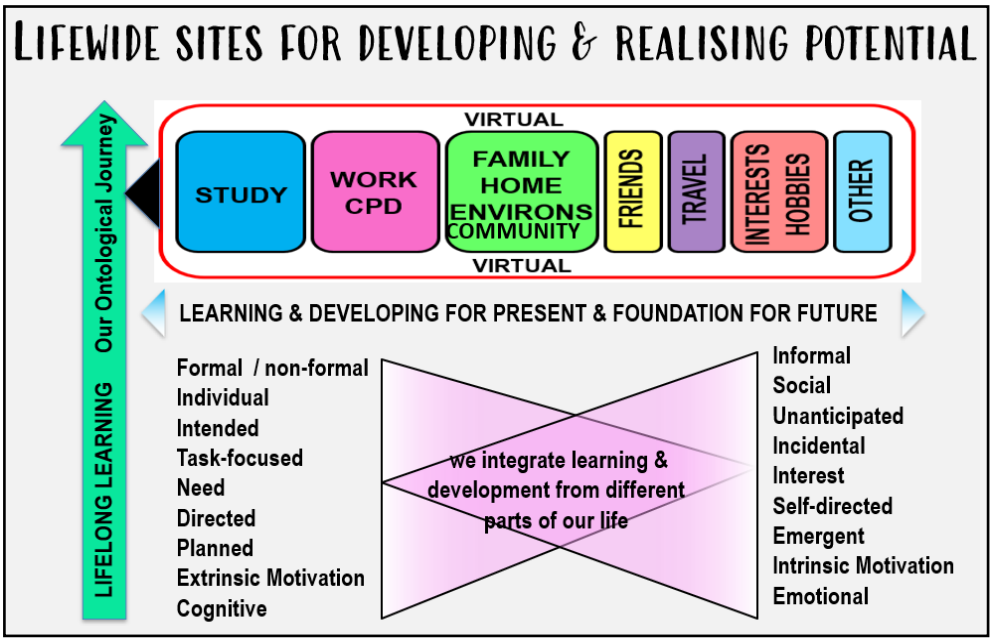


6 I contend that this holistic view - the whole of us and the whole of our lives should be the focus for a higher education that is preparing learners for long and uncertain learning lives in a complex, continuously changing world. This quote from a Foresight report (Knowledge Works Forecast 4.0) resonates with the idea of developing learners as whole people which is at the core of my ideas. *"Higher education institutions need to strike a balance between helping learners enter the current job market while at the same time helping them lay the foundation for 'future readiness'. Future readiness focuses on helping people develop uniquely human aptitudes and practice resilience rather than on training them for specific jobs or skills…. The core of the foundation for readiness lies in developing* ***a strong inner self*** *that is resilient, reflective, and able to see, develop and value positive connections and relationships [with the world]."*

This strong inner self is the motivational force that drives us to develop and achieve our potential for better or worse and enables us to navigate through setbacks and adversity. I believe that the strong inner self (we used to call it character – the mental and moral qualities of a person) is only developed as we experience

the whole of our lives - not just formal education. This is how the lifewide dimension of learning and developing became the focus for our work as we sought to give meaning and expression to a more complete education at the University of Surrey.

Research we undertook at Surrey revealed that students typically recognise 4, 5 or 6 different parts of life where they fulfil different roles and purposes, do different things with different people, and learn, develop and achieve in different ways. Who they were as a person was the integration of all these aspects of themselves throughout their life history (Jackson 2011a).



Lifewide learning adds important detail to the lifelong learning pattern of human development by recognising that most people, no matter what their age or circumstances, simultaneously inhabit a number of different spaces - like work or education, being a member of a family, being involved clubs or societies, travelling and taking holidays and looking after their own wellbeing mentally, physically and spiritually. So the timeframes of lifelong learning and the multiple spaces of lifewide learning will characteristically intermingle and who we are and who we are becoming are the consequences of this intermingling. So recognising lifewide learning is important is important for understanding our ontological journey. We learn, develop (become) as a person in every part of our life and our ontological journey of becoming is made up of our becoming across these domains of our life.

The concept of lifewide is the most comprehensive and inclusive framework within which we can understand learning and personal development which makes it the most useful and powerful concept for education. The lifewide dimension contains all the circumstances of our current life and determine who we are. But because we can influence them we can change or add to these circumstances in this way it is the lifewide dimension that enables us to be who we are and become who we would like to be. In other words this is the dimension we need to focus on when we talk about unlocking potential.

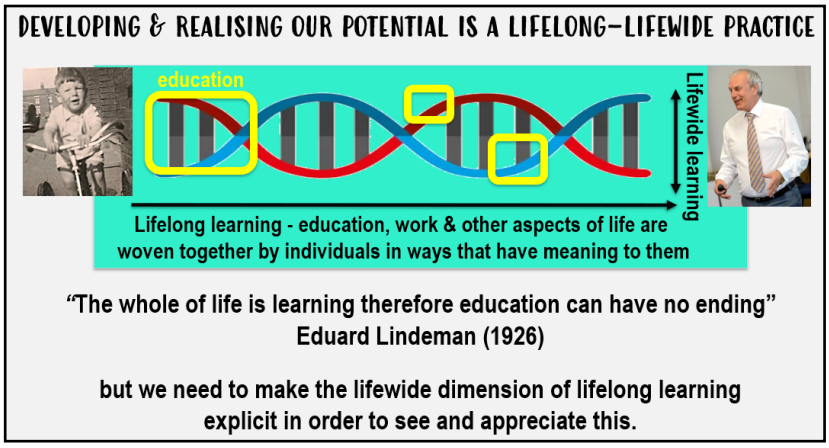
The learning experiences that an individual undergoes at the scale of a day will themselves be associated not only with different timeframes but with forms and spaces of learning that have different rhythms. For example in the space of 24 hours we might inhabit spaces relating to work, the classroom or self-study, we might inhabit a family environment or our own home, we might go shopping, socialise with friends, travel on public transport or by car, play some sport and do any number of things in different sorts of spaces, not to mention the virtual spaces we access through our smart phones, computers or other devices.

Each of these activities has their own rhythm; fast and slow time jostle and compete and we have to manage our time and determine priorities as the various responsibilities are heeded. So lifewide learning helps us develop capability to manage ourselves and our lives. Banks et al in a report for the NSF Funded Life Centre Learning In and Out of School (2007) tell us that lifewide learning includes: *'experience in the management of ourselves and others, of time and space, and of unexpected circumstances, turns of events, and crises. This learning brings skill and attitudinal frames for adaptation. Here we figure out how*

to adapt, to transport knowledge and skills gained in one situation to another, and to transform direct experience into strategies and tactics for future use.'

So it is through our lifewide activity and experiences that we learn to manage our busy lives, cope with the unexpected, adapt to situations as they emerge and transfer our understandings and capabilities between different contexts, and use this self-knowledge in planning for the future. So the timeframes of lifelong learning and the multiple spaces of lifewide learning will intermingle and who we are and who we are becoming are the consequences of this intermingling.

7 These perspectives on lifewide learning provides a foundation for my educational philosophy and the ideas of ecologies for practice within which learning and creativity are embedded, have grown out of this way of seeing our ontological journey through a world in formation. Some people might argue that lifelong learning subsumes lifewide learning. But the fact is that in subsuming it we deny its existence. By articulating and exploring it conceptually and practically, we can use it in our educational thinking in a way that talking about lifelong learning does not help us. I believe we need a vision and concept of lifelong learning and action that embraces consciously and explicitly the lifewide dimensions of learning in everyday life and its fundamentally ecological character (Jackson in press).

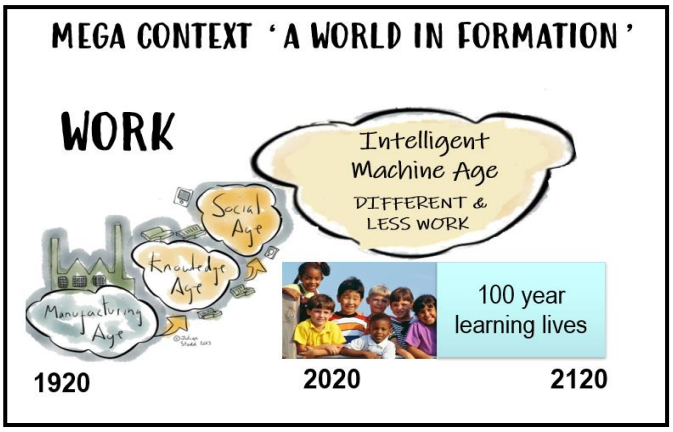


Mega challenges facing students in education

Today's children and adolescents are likely to live well into the next century and the education they experience today must provide the foundation for 100 years or more of learning to adapt to a world that is in continuous and rapid formation: a world that will be profoundly different to the world we know today. How we prepare people for long complex learning lives in a world in continuous formation, is the core challenge for educational policy makers and practitioners who are concerned about the distant rather than the near future. There are two mega challenges that the learners of today are going to have to contend with in the mid to later parts of this century.

8 ***The future challenge of work***

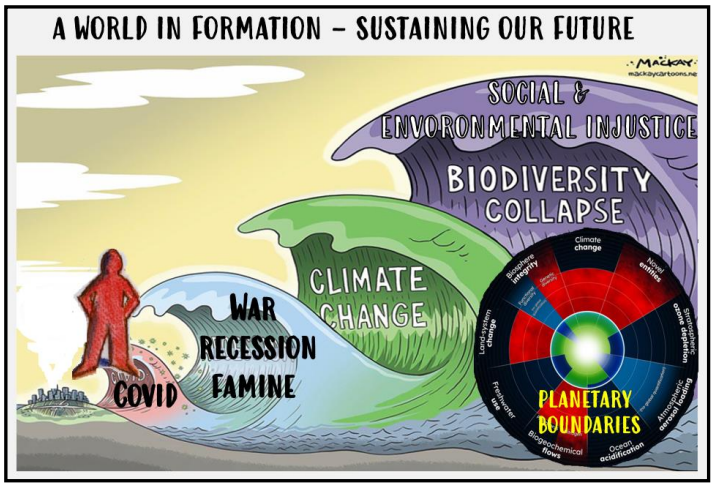
A world in formation is an apt metaphor for the fluidity and turbulence of the world of work – someone in 1920 would not have predicted how work would have evolved over the next 100 years. I was born in the manufacturing age - as a boy I grew up within sight of a working cotton mill on the banks of a canal in Manchester – one foot firmly in the industrial revolution. I entered university as the knowledge and information age began to unfold (I had access to a mainframe computer but electronic calculators had yet to be invented), 10 years later I had a desk top computer at work. Another 10 years and I carried my laptop around and used the internet for communication. Then came wifi and mobile and smart phones and social media all of which have profoundly impacted on the way I learn, work and communicate. Ahead of us we are facing our greatest challenge as we enter the 'intelligent machine age'. We are already



living alongside intelligent machines. AI will become increasingly important to the point where humans themselves may become part machines within the learning lives of our current students.

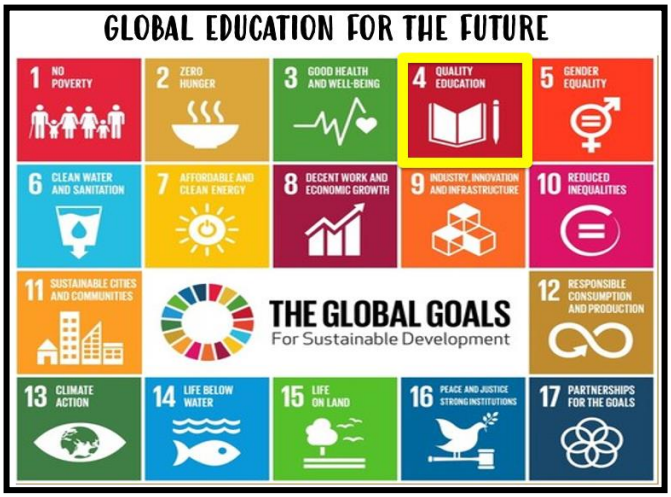
But there is another profound challenge in forecasts for the future of work. According to futurist commentators like Daniel Susskind there will be a lot less work for humans and large parts of a population will not have access to employment in the ways which we currently understand? We had a foretaste of this scenario with the furlough scheme during covid lockdowns, although at that time people were highly restricted in what they could do. A world with less work speaks to developing people as whole persons able to access affordances which give them meaning, purpose and fulfillment across the whole of their lives, not just work. In such circumstances creativity may become even more important to sustaining wellbeing.

9 ***The challenge of sustaining our future***
A second mega challenge relates to the wicked set of problems that we have created for ourselves that poses a threat to our very existence as a species namely, the sustainability of the planet that supports all life. As we exceed key planetary boundaries upsetting the fragile balance that has characterised our modern existence, we are creating for ourselves the most challenging and costly wicked problems humanity has ever had to deal. The hope for humanity resides in this generation of young people who will need to help humanity make the transition to a new ecological era.



10 The wicked problem of humanity's future survival and flourishing is framed by the United Nations 2030 Agenda for Sustainable Development, which offers 17 Sustainable Development Goals (SDGs) with 169 associated targets which are integrated and indivisible (UNESCO 2015).

Education has its own goal - SDG#4 'Ensure inclusive and equitable quality of education and promote lifelong learning opportunities for all'. Education is viewed as key to delivering all the SDGs together with a culture of lifelong learning – to enable individuals and societies to learn how to sustain themselves and regenerate their world and to apply their learning.



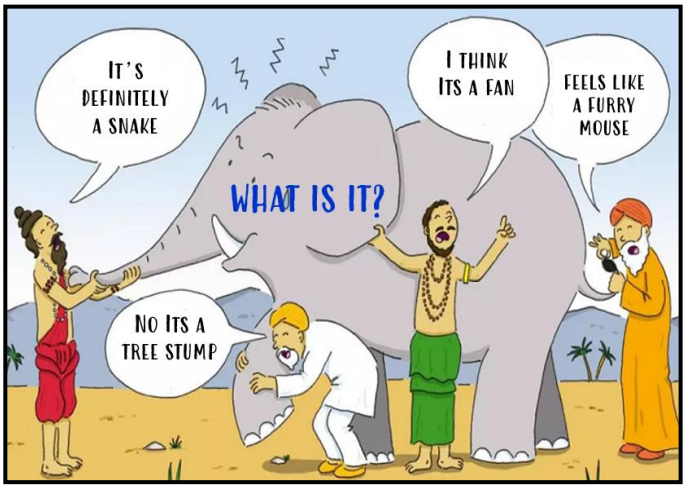
To meet this challenge we will also need to draw on our individual and collective creativity. According to Hans d'Orville (2019) Special Advisor to the Director-General of UNESCO, *"Creativity is at the heart of sustainability. Creativity is rooted in sustainable social, economic, environmental and cultural practices. It can mean anything from humanity's ability to transform itself to tackling specific problems."*

We need to change the way we live if we are to have a future and that involves changing the way we think about ourselves in relation to everything else. Optimistic views of the future guide us towards a new Ecological Age (Berry 1988) an emergent Ecological Civilization (Lent 2021) and a universal culture of lifelong learning and education (UNESCO 2020) in which there is a commitment to learning for a sustainable regenerative future. But we will not be able to make this transition unless we are able to adopt a world view through which we see ourselves as ecological beings or interbeings (connected to everything else) living in and with an ecological world. I believe that developing an ecological perspective on learning is essential to achieving this transformation (Jackson in press).

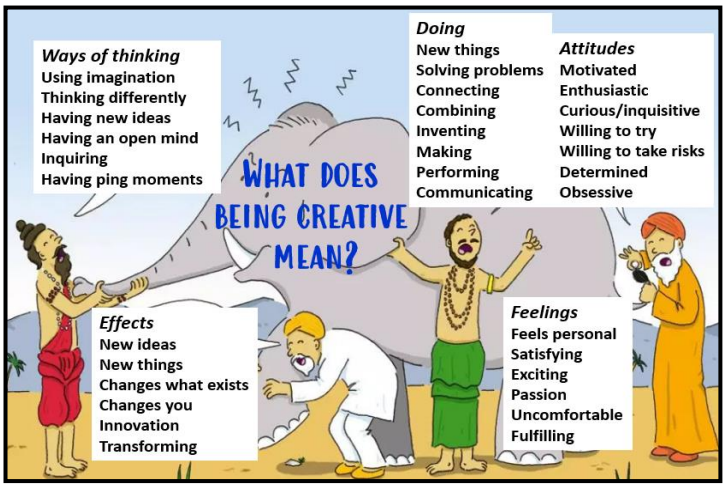
Some perspectives on creativity

The future world I am imagining will require human beings to draw upon all their resources and creativity will be key to the ways in which people create meaning, purpose and a sense of wellbeing and fulfilment in their lives. This is the context for creativity that I will try to address.

11 The first thing to say about creativity is that it is subjective: it manifests in many ways and our perceptions and interpretations are influenced by our own experiences and culture. The parable of 'the blind men and the elephant' is relevant here. A group of blind men who have never come across an elephant before and who learn and imagine what the elephant is like by touching it. Each blind man feels a different part of the elephant's body, but only one part, such as the trunk, tusk, ear, tail etc. They then describe the elephant based on their perceptions of what they experienced – of course their descriptions of the elephant are different from each other. The moral of the parable is that humans have a tendency to claim absolute truth based on their limited, subjective experience as they ignore other people's limited, subjective experiences which may be equally true.

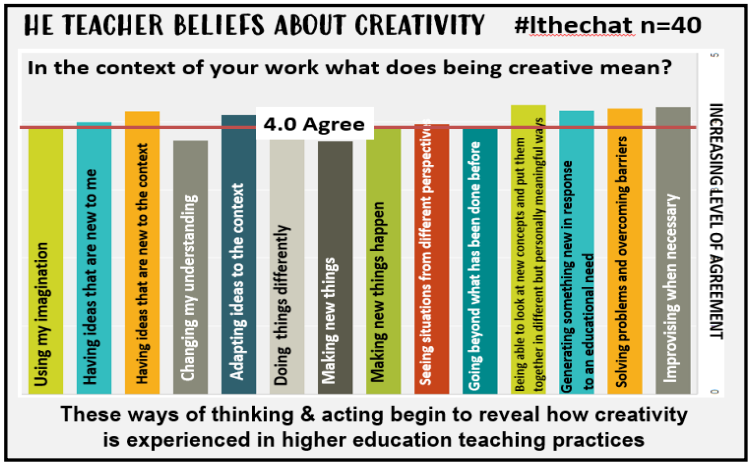


12 A question like what does being creative mean to you? engages our subjective experience and many answers emerge that reflect different perspectives on the same phenomenon. They include - ways of thinking and feeling, attitudes and dispositions, doing things in certain ways and achieving certain things. Taken together they build a comprehensive picture of what being creative means as experienced by participants in their everyday lives.



HE teacher perspectives

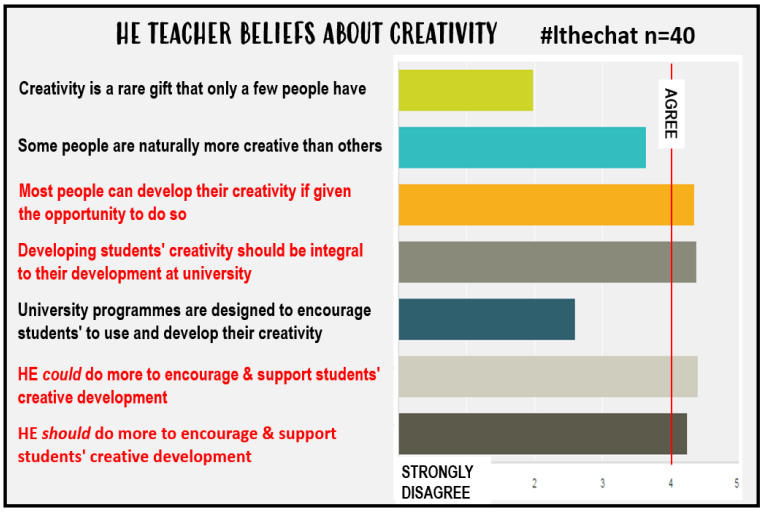
13 Creativity cannot be understood without an appreciation of the contexts and cultures in which it is constructed and enacted. When we contextualize abstract notions of creativity in the world of a higher education teacher, through a question like *'what does creativity mean in the context of your work'* the answers begin to reflect how creativity is encountered and experienced. Teachers give more nuanced meanings when the idea of designing a course is introduced '*what does being creative mean… when you design a course?* '' (Oliver et al 2006):



- creativity as personal innovation – something that is new to individuals. This is often about the transfer and adaptation of ideas from one context to another;

- creativity as working at and across the boundaries of acceptability (the norms) in specific contexts: it involves taking risks and to connect and do things with what has been learnt and to utilise this knowledge to learn in other situations;
- creativity as making sense out of complexity, i.e. working with multiple, often conflicting factors, pressures, interests and constraints;
- creativity as a process of narrative-making in order to present the 'real curriculum' in ways that conform to the regulatory expectations of how a curriculum should be framed

Building on these conceptions of what it means to experience being creative as a higher education teacher, Paul Kleiman (2008) argued that *"for those engaged at the whiteboard, engaging in creative processes and producing creative outcomes is very much about personal transformation and professional fulfilment, and escaping from, or at least resisting, the constraints and frustrations of daily academic life."*

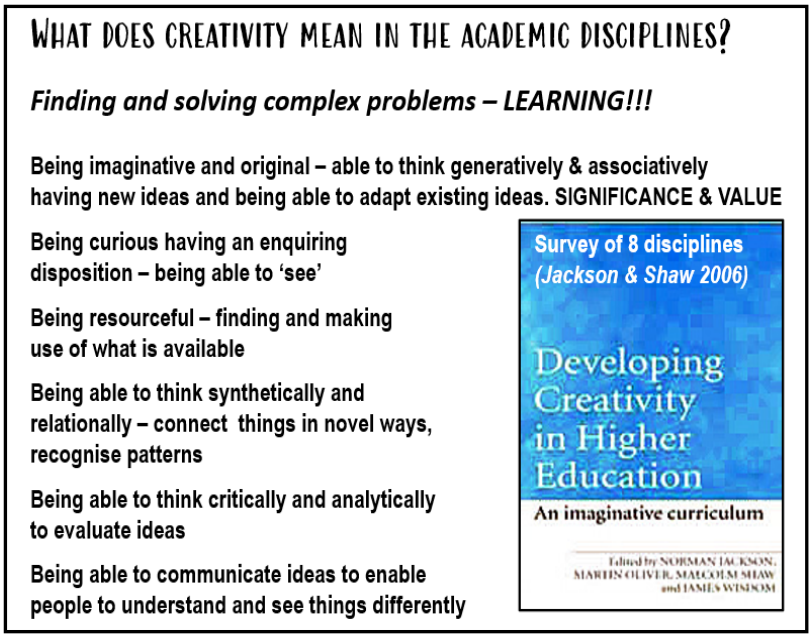


14 The good news for learners is that most teachers do not believe that creativity is a rare gift most agree that it is possible, with the right opportunity and encouragement for people to develop their creativity. These perceptions tally with Terasa Amabile's research into creativity in organisations which show that *'although some people have extreme levels of talent, everyone with normal human capacities is capable of producing creative work under the right conditions'* (Amabile 2006). Most importantly, a majority of higher education teachers believe that the development of learners' creativity is important and that universities should do more to encourage its development.

15 ***Disciplinary perspectives on creativity***

In higher education, the dominant culture within which normative understandings of practice and achievement are developed – within which an appreciation of what might be deemed creative is also developed, is the discipline. Following surveys of 8 different disciplines Jackson and Shaw (2006) reveal that academics associate a number of features with creativity regardless of disciplinary, pedagogic or problem working context. For example:

Being original – is understood as creating something new and useful to the discipline. For most academics this is embodied in the processes and products of research many of whom are active contributors. The idea is also connected to invention and innovation. For example in history this could mean: new approaches to solving historical problems; new techniques to gather and analyse data; new approaches to validate evidence; new interpretations of evidence; new forms of history and new forms of communicating historical information.



Originality embodies: • the quality of newness for example: inventing and producing new things or doing things no one has done before; • being inventive with someone else's ideas

– recreation, reconstruction, recontextualization, redefinition, adapting things that have been done before, doing things that have been done before but differently and • the idea of significance/value/utility.

Engaging with complexity – the engine of academic creativity is **intellectual curiosity** – the desire to understand, explain, prove or disprove something in methodologically appropriate ways. Curiosity leads academics to find questions that are worth answering and problems that are worth solving. It reflects a willingness to work beyond what is currently known.

Thinking with complexity involves:

Being imaginative – creating and using of mental models and asking what if. It is a source of inspiration, stimulates curiosity and sustains motivation. It generates ideas for creative solutions and facilitates interpretation in situations which cannot be understood by facts or observations alone. Disciplinary problems and concerns provide an essential context for the use of imagination.

Being able to think critically and analytically in order to distinguish useful ideas from those that are not so useful and make good decisions.

Being able to synthesise, make connections and see new patterns and relationships is important in sense-making (interpreting and creating new mental models) and working towards better understandings and possible solutions to difficult problems.

Being resourceful – using your knowledge, capability, relationships and resources overcome whatever challenge or problems are necessary to overcome

Being able to represent and communicate ideas to others - the communication of ideas, knowledge and deeper understandings are important dimensions of creativity in the discipline. The symbolic language and tools and vehicles for communicating are all part of the disciplinary heritage. Story telling is an important dimension of communication. Disciplinary cultures are largely based on writing using the conceptual and symbolic language and images that have been developed to communicate complex information. Story-telling and writing are important sites for academics' creativity.

While these characteristics of creativity in disciplines are widely recognised it is how they are woven into complex practices, in particular situations to engage with particular problems, to perform particular roles and perhaps make specific artefacts through which creativity is manifested and recognised by others.

Surveys of academic teachers in different disciplines reveal that sites for creative thinking and action are available in most aspects of disciplinary practice. Sites for creativity can be connected through the idea of disciplinary inquiry, investigation and problem solving while design and performance are also important sites in some disciplines. In other words, creativity is deeply entangled with learning as people grapple with things that are significant in their field and in their own work.

Conceptions shape our perceptions
16 Creativity researchers are concerned with researchable definitions about what creativity means. There are over 100 definitions of creativity so it is not surprising that there are many understandings of what it means.

The standard psychological definition of creativity contains two ideas – originality and value which often takes the form of usefulness (Runco and Jaeger 2012). The notion of originality/novelty has come to dominate western thinking

Creativity – as originality

In psychology the "standard *consensual* definition," of creativity consists of "**effectiveness and originality**." (Runco and Jaeger 2012).

[But there are] two ambiguities. Firstly, the definition leaves open the choice of the **context** and **norms** against which to measure originality and effectiveness. Secondly, it does not discuss the possible role of a subjective judge (Colin 2019).

Creativity is a phenomenon whereby something new and valuable is formed (*Latin creō "to create, make"*).(Wikipedia).

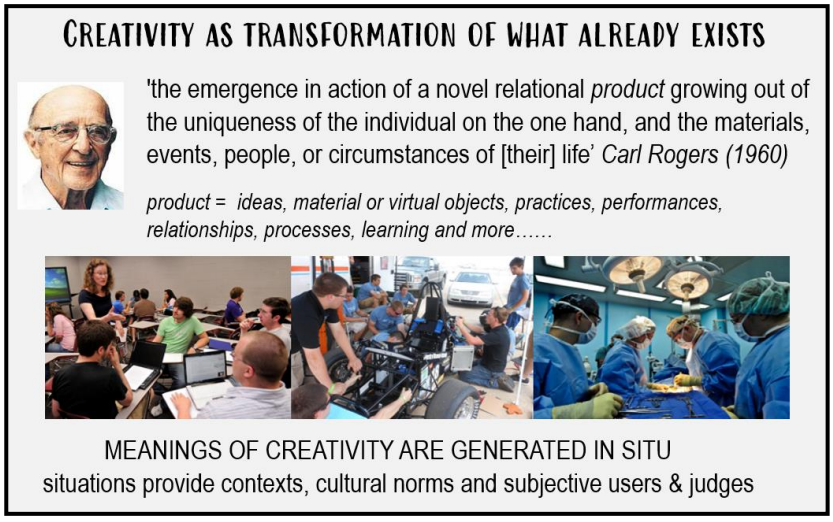
The [something new] may be intangible (such as an idea, a scientific theory, a musical composition or a joke) or a physical object (such as an invention, a literary work or a painting).

There are over 100 definitions of creativity but one of the most useful definitions is offered by Wikipedia. **Creativity is a phenomenon whereby something somehow new and somehow valuable is formed**. The created item may be intangible (such as an idea, a scientific theory, a musical composition, or a joke) or a physical object (such as an invention, a printed literary work, or a painting).

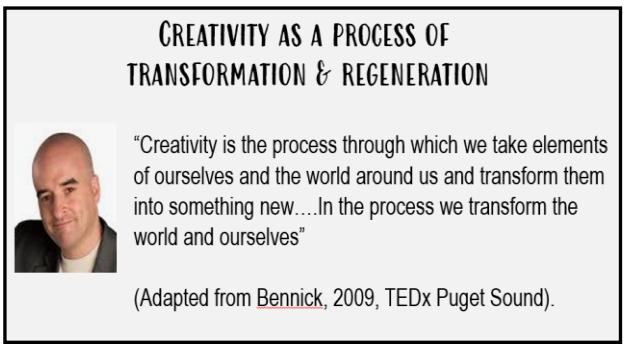
These ways of perceiving creativity focus attention on product in which the idea of *originality* is dominant in artistic and scientific contexts and the idea of *innovation* dominates in contexts such as business, industry, technology, engineering and education.

17 I want to try to open possibilities of another way of thinking about creativity - namely as **a concept of transformation -** a process of thinking, action, interaction and relationships to transform situations, materials, ideas, people and anything else into new forms that have utility or other forms of value in the particular situation.

Carl Rogers' concept of a creative process "the emergence in action of a novel relational product growing out of the uniqueness of the individual on the one hand, and the materials, events, or circumstances of their life" (Rogers 1961:350) is a good fit with the transformational idea. I would however stress that product should not only be viewed as material objects, rather they should be viewed as products of effort which could take many forms for example – a conversation, a dance or other performances.



18 Greg Bennick expresses similar ideas in a slightly different way but adds to Rogers concept by showing how we weave ourselves into the environment and our creation and in the process we are changed. "*Creativity is the process through which we take elements of ourselves and the world around us and transform them into something new….In the process we transform the world and ourselves"* (adapted from Bennick, 2009 1min 20s).



The power in the transformational concept of creativity is that it embraces products, processes and the uniqueness of human beings to the everyday lives of people as they interact with their environments. It is an ecological concept of creativity in the sense that it emerges through the relationships, interactions and interdependencies.

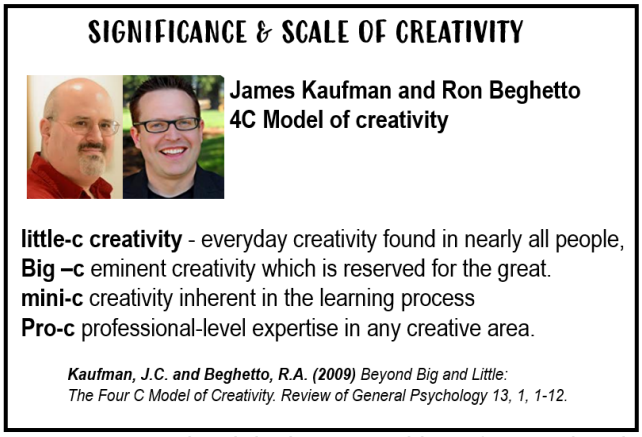
Creativity as a personal, educational, professional cultural phenomenon

When we talk about creativity in a cultural sense the achievements of great artists, scientists and technological innovators come to mind. Such people transformed the way we see and understand the world. But we all experience feelings of being creative in our everyday lives with more modest effects on the world, so there is the matter of scale and significance to consider. James Kaufman and Ron Beghetto (2009) tried to address this in their proposal for a 4C categorisation for creativity

19 The **4C model for creativity** has four categories that are not uniform in character. Two of the categories might be viewed as meta-contexts within which particular situations and physical social-cultural environments are located.

Little-c personal everyday life situations and contexts for creativity can be present in any aspect of a person's life A person's everyday life is a meta-context containing many different domains of activity and experience that hold potential for imagination and creative action alongside and integrated with thoughts, actions and experiences that would not be considered creative. Little-c actions or outcomes are considered creative by people in the relevant everyday context. For example, a new dinner recipe could be deemed creative by family members.

The professional **Pro-c** meta-context contains a multitude of domains and work situations in which people with significant experience and expertise practice and create. The word 'professional' is misleading. More accurately this is a domain in which people have invested significant time and effort in developing themselves to the point where peers would consider them to be expert in their knowledge and performance. Thus, it does not have to be a professional work environment for example serious hobbyists may have invested as much time and committed practice as someone who earns a living from their own expertise.

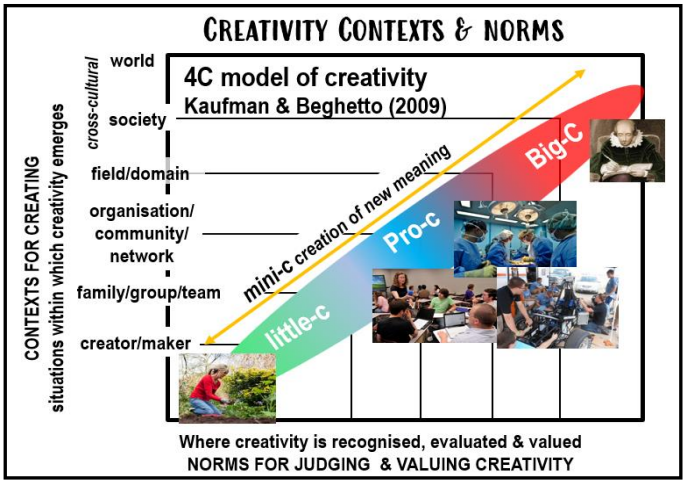


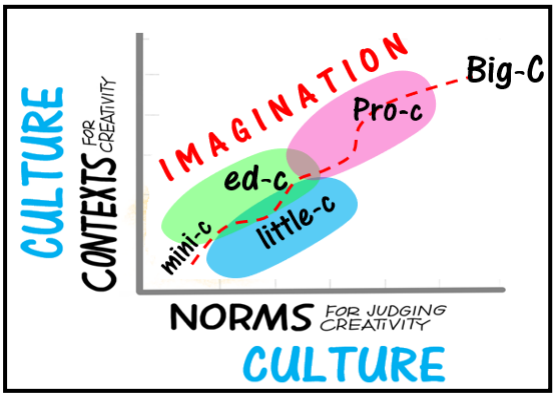
Big-C A third category of eminent creativity is not a meta-context, rather it is the recognition of exceptional achievements or performances that impact on culture in any context or domain where expertise is required. The eminent accomplishments of great inventors in artistic, scientific, technological or political fields inhabit this domain. Artists like Picasso, musicians like Mozart, scientists like Darwin, engineers like Brunel, writers like Shakespeare and leaders like Ghandi inhabit this category. Often the significance and value of an individual's accomplishments are only recognised after a considerable time has elapsed since their creativity was manifested. It typically takes two to three decades before someone receives a Nobel Prize for their ground breaking work.

mini-c Is present in little-c, Pro-c and Big C, it refers to the cognitive and emotional process of constructing personal knowledge within a particular sociocultural context in order to develop/change understanding. It is a mental process associated with activities and experiences in the three other categories of creativity described in the framework, and in all stages of human development and activity, from the imaginings of a child that transforms his everyday world into a magical and mysterious world of giants and monsters, to the most sophisticated conceptual thinking necessary for breakthrough science.

"mini-c creativity is not just for kids. Rather, it represents the initial, creative interpretations that all creators have and which later may manifest into recognizable (and in some instances, historically celebrated) creations" (Kaufman and Beghetto 2008 p4)

20 *Contexts & Norms framework* Jackson and Lassig (2020) used the 4C model to create a framework within which the contexts for the emergence of creativity and the normative behaviours and understandings of people who use and experience the outcomes of creativity are judge and valued. This framework enables particular acts of creativity to be mapped.





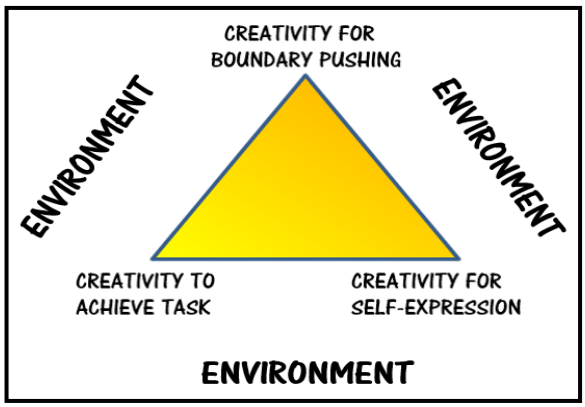
21 *5C model for creativity.* Jackson and Lassig (2020) add a fifth category to the framework namely **ed-c** an educational domain. There are compelling arguments for recognising ed-c as an important contextual and cultural domain within which a person learns to use, apply and develop their creativity. Firstly, education, at least in the developed world, is something that every person experiences for between 10 or 11 years and many people experience it for up to 15 or 16 years. Secondly, it's a generic domain in which people have to conform to and

behave within strong cultural norms, values and rules that impose strong constraints on the use of imagination and creativity. Indeed, education's preoccupation with such things as 'one right answer', 'the correct way of doing something' and 'only valuing and measuring what can be predicted', may well inhibit or stifle creativity in many aspects of education. Education in fact, is a domain in which learners' natural tendency to creativity in a way they might experience in their everyday lives, is often severely restricted or curtailed.

You will notice that in the 5C model both imagination and mini-c (changes in understanding) are associated with the little-c, ed-c, Pro-c and Big-C contexts.

Orientations of creative effort and achievement

22 Lassig (2012, 2020) noticed that within educational contexts (and beyond), the creative efforts and achievements of adolescents are oriented towards either: creative personal expression, creative boundary pushing or creative task achievement. The figure shows three orientations for creative efforts and achievements (Lassig 2012, 2020). When displayed in this format it becomes a generic tool for evaluating and understanding creative efforts and achievements.



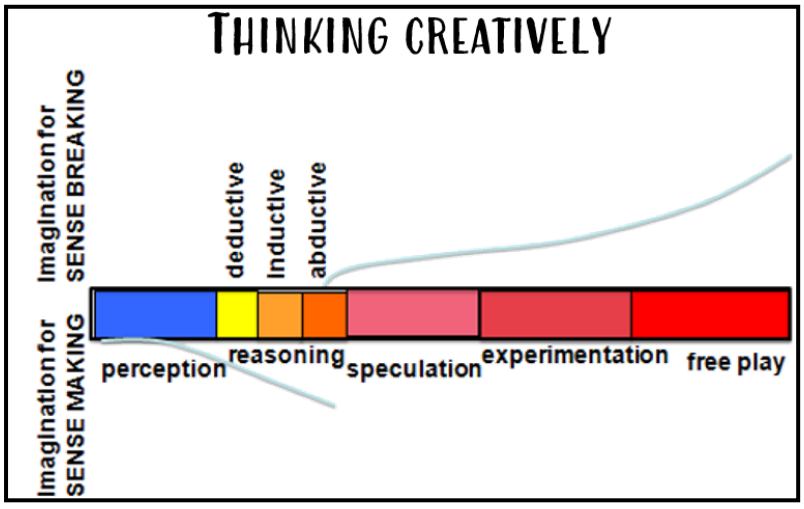
Creative task achievement was most common and refers to students using creativity to achieve a particular task or external demand. This was common in schools because much of students' learning is extrinsically motivated by learning tasks and assessments. **Creative personal expression** involved students expressing their personality, emotions and ideas in novel ways. **Creative boundary pushing** involved students extending the limits of typical and expected knowledge of adolescents in order to be unconventional and pursue new understandings and outcomes (Lassig 2012).

Creative acts and achievements may well involve a combination these different orientations which may also evolve over time. We can use the framework to locate an individual act of creative effort or a series of related acts. Each act will be embedded in one or more environments and interactions with the environment will shape the nature of the creative efforts.

How do we think creatively?

23 The academic world values the ability to think critically and analytically in order to grapple with complex problems and situations and there is general acceptance that creativity is often located in activities such as problem solving. But thinking creatively involves the whole of our cognitive capability. It involves being imaginative, being able to think critically and analytically and being able to synthesise, make connections and see new patterns and relationships. It involves being able to see affordances – opportunities for action that others can't or don't choose to 'see' and being motivated to take action. In other words our perceptions engage with our emotions to inspire action.

Concepts of creativity invariably emphasise the generation of new ideas with the implicit assumption that imagination is involved. Pendleton-Jullian and Brown (2016) provide a useful aid to help us visualise how we think, in particular they explain how imagination is involved in our thinking. The initiation of a person's interaction with the world is always via perception – we perceive and try to comprehend our world through the flows of information we access through our senses. In this process of perceiving and comprehending we engage the whole of our cognition – perception,



reasoning and imagination which work together in a pragmatic way with our memory to try to understand the situations in which we are immersed

When we explore and try to understand and solve a challenging problem or encounter a situation that is new to us, we use our perception, reasoning and imagination in a productive interplay. This can be represented as a continuum in which imagination has the potential to connect to both perception and reasoning in a pragmatic and productive way (Pendleton-Jullian and Brown 2016).

They identify three forms of reasoning within their model of pragmatic imagination.

- *Deductive* reasoning starts with a proposition or fact and proceeds to a guaranteed specific conclusion. If the original assertions are true then the conclusion must also be true.
- *Inductive* reasoning begins with observations that are specific and limited in scope, and proceeds to a generalized conclusion that is likely, but not certain, in light of accumulated evidence. Much scientific research is carried out by the inductive method: gathering evidence, seeking patterns, and forming a hypothesis or theory to explain what is seen.
- *Abductive* reasoning typically begins with an incomplete set of observations and proceeds to the likeliest possible explanation for the set. Abductive reasoning yields the kind of daily decision-making that does its best with the information at hand, which often is incomplete. A medical diagnosis is an application of abductive reasoning: given this set of symptoms, what is the diagnosis that would best explain most of them?

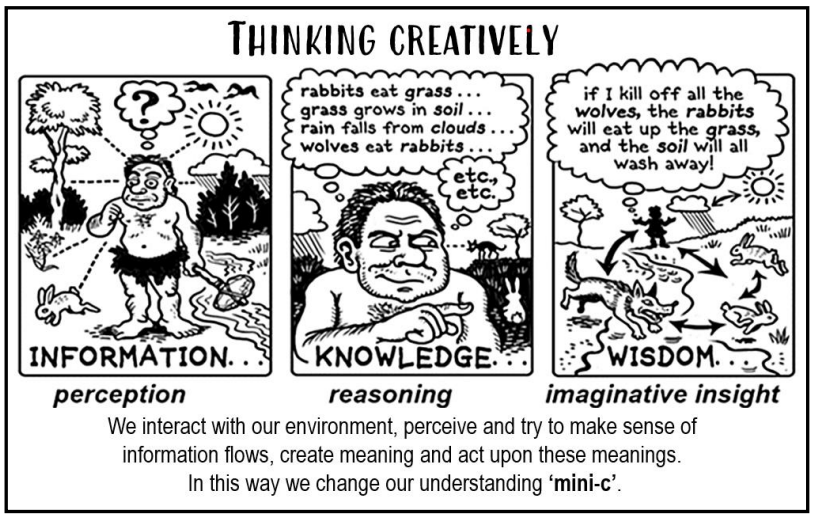
Imagination suffuses the whole spectrum. In the perception and reasoning part of the spectrum it is used to make sense of situations and problems, and beyond this part of the spectrum it engages in speculation, experimentation and playfulness that create entirely new senses and meaning. We also use imagination to create visual memories in order to reperceive and analyse them to trying to try to learn through reflection

It is likely that different disciplines and professional roles utilise different parts of the imagination spectrum – for example some professional roles encourage experimentation and improvisation while others do not.

The cognitive continuum conceptual framework helps us understand the way in which perception, reasoning and imagination are entangled in a productive dance that enables us to have creative ideas or mental visualisations, evaluate them and make decisions about how to act upon them. Through this process we become motivated to act in particular ways and then try to execute our rough plan adjusting to what happens and reflecting on the whole experience in order to learn deeper lessons. In this way creative thinking and action follow what Eraut & Hirsch (2008) call an epistemology of practice. *"When someone encounters a new situation they 1) Assess it 2) Decide what to do 3) Do it monitoring effects and adjusting where necessary and 4) Reflect on and learn from the whole experience."*

It is not surprising that creativity is so difficult to pin down when it involves the integration of all our cognition coupled to strong emotions that are triggered by the thinking process.

24 The abstract model described above is given meaning by cartoonist Tom Chalkley. His brilliant cartoon shows how our ancient hunter-gatherer ancestor made sense of his world as he experienced it through being and acting in it by taking in information through his senses, using his reasoning and imagination to connect, integrate, synthesise and make sense of and see beyond the obvious to create wisdom that he could share with others. In this way knowledge gained through personal experience becomes cultural knowledge shared by others. The cartoon reveals the ecological nature of thinking in the sense that new meaning is related to



We interact with our environment, perceive and try to make sense of information flows, create meaning and act upon these meanings. In this way we change our understanding '**mini-c**'.

and drawn directly from our interactions with our environment and our past experiences of interactions as we reflect and draw out deeper meanings.

The complex world we are immersed in is only going to get more complex in the future and the key meta-skill for surviving and flourishing has to be our ability to think with sufficient complexity to be able to understand the situations and contexts we are involved in. Such thinking is deeply ecological in the sense that it involves us being immersed in and being able to access and process the information flows from the environment of which we are a part. This diagram provides a neat way of summarizing the complex interplay between our perceptions as we access and try to make sense of the information flows. How we reason to create knowledge from these flows of information. How we make use of our imagination to extend our understandings. Most importantly, it is in these mental processes that are stimulated through our interactions with our environment and the people and materials in it, that our creativity lies. Our creativity is going to be essential for survival and flourishing in non-routine cognitive work domains in the future and also for learning how to live in a sustainable regenerative way.

One final comment about this inspiring cartoon: it reveals the nature of our **interbeing** (Hanh 1992). thinking and acting in an ecological – relational and interdependent manner with the world around us. Such interactions and relationships connect us physically, cognitively, emotionally and spiritually to the living and non-living things in our environment and enable our imagination and creativity to perceive new affordances and generate new possibilities.

Vietnamese monk and poet Thich Nhat Hanh (1992) expresses the profound idea of interbeing in this poetic way.

If you are a poet, you will see clearly that there is a cloud floating in this sheet of paper. Without a cloud, there will be no rain; without rain, the trees cannot grow; and without trees, we cannot make paper. The cloud is essential for the paper to exist. If the cloud is not here the sheet of paper cannot be here either. So we can say that the cloud and the paper inter-are. 'Interbeing' is a word that is not in the dictionary yet, but if we combine the prefix 'inter' with the verb 'to be,' we have a new verb, inter-be.

If we look into this sheet of paper even more deeply, we can see the sunshine in it. Without sunshine, the forest cannot grow. In fact, nothing can grow without sunshine. And so, we know that the sunshine is also in this sheet of paper. The paper and the sunshine inter-are. And if we continue to look we can see the logger who cut the tree and brought it to the mill to be transformed into paper. And we see wheat. We know that the logger cannot exist without his daily bread, and therefore the wheat that became his bread is also in the sheet of paper. The logger's father and mother are in it too. When we look in this way, we see that without all these things, this sheet of paper cannot exist.

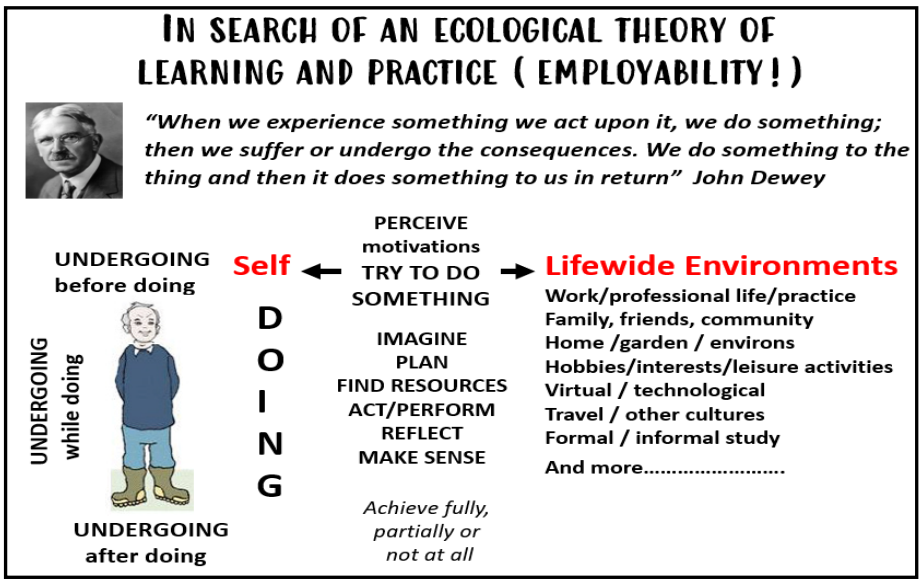
We cannot point out one thing that is not here – time, space, the earth, the rain, the minerals in the soil, the sunshine, the cloud, the river, the heat. Everything co-exists with this paper. That is why I think the word inter-be should be in the dictionary. 'To be' is to inter-be- we cannot just be by ourselves alone. We have to inter-be with every other thing. This sheet of paper is, because everything else is.

I have thought a lot about the wisdom in this story and what it means for me and my relationships with the world and concluded that higher education rarely tries to develop learners' ability to see the way the world is so deeply and profoundly connected preferring to develop a more reductionist analytical world view.

For most of my adult life I have participated in a professional world that values the analytical, reductionist worldview aimed at understanding what some little bit of the world might mean. But, in the same way that Thich Nhat Hanh's story creates a synthesis of meanings, so do we in the worlds we inhabit as we connect and integrate bits of knowledge to gain deeper understanding or wisdom. From this vantage point I can see that working as a geologist 30-40 years ago I was trying to understand the nature of interbeing. It's only now that I realise that geology as a science is founded on the concept of interbeing, although I don't think you will find the word in any geological text. If you are a geologist [with knowledge of how rocks and minerals form], you will clearly see in any piece of rock the formation of the earth and the universe. Without an Earth formed over 4.5 billion years there can be no rock. Without a universe formed over nearly 15 billion years there can be no Earth. So we can say that the rock, the Earth and the Universe inter-are. The idea of interbeing enables us to see more clearly our connections and relationships with everything else.

In search of an ecology for learning, practice and creativity

When we engage in professional practice – such as a teacher might engage in everyday, we place ourselves in the practical and conceptual territory of learning through the experience of doing something in order to achieve something that is professionally valuable. Through their doings teachers share a common moral purpose namely to improve the lives of the learners they are serving.

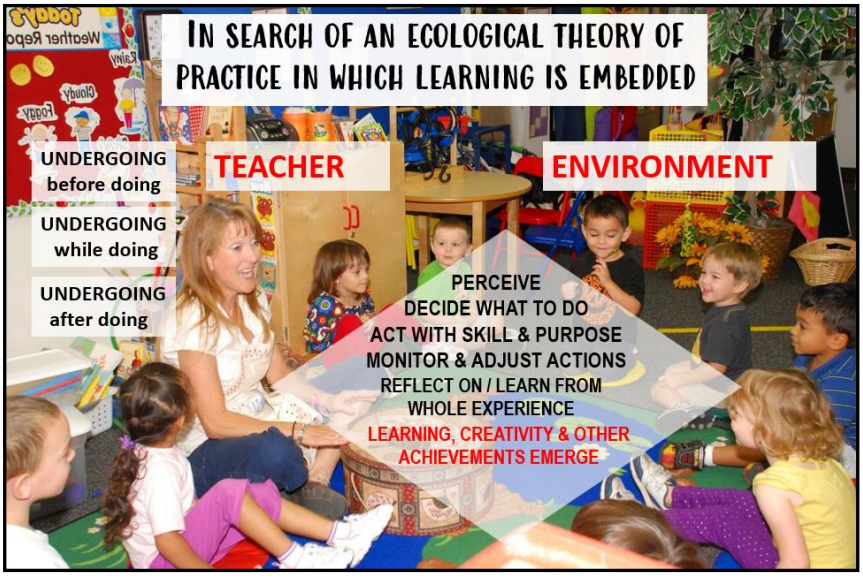


25 Dewey understood our intimate relationship and interdependency with our environment. The diagram summarises his interactional model of experience and the changes (which he calls undergoing) that result in the person through their interaction (Dewey 1916, 1934). He explains that experience is always a dynamic two-way process, *"An experience is always what it is because of a transaction taking place between the individual and, what at the time, constitutes the environment"* (1934 p.43). "*When we experience something we act upon it, we do something; then we suffer or undergo the consequences. We do something to the thing and then it does something to us in return"* (1916 p.104). Dewey argues that experience involves both 'trying' and 'undergoing'. 'Trying' refers to the outward expression of intention or action. It is the purposeful engagement of the individual with their environment or in Dewey's words, *"doing becomes trying; an experiment with the world to find out what it is like"*. Through action an attempt is made to have an impact on the world. 'Undergoing', the other aspect of the 'transaction' in experience, refers to the consequences of experience on the individual. In turn, in attempting to have an impact, the experience also impacts on us. This transactional view of experience involving people situated in and interacting with their environment, using resources that are accessible to them and modifying their environment and themselves in the process, provide the foundational ideas for the ecological perspective on learning and action. We can see that creativity plays into this interactive model through the individual's unique history, agency, ways of seeing the world, their values and beliefs that drive motivations, their environments for action and the nature of their actions and interactions.

26 How might this model of human-environment interaction be applied to real practice? Here we have the wonderful sight of a teacher in her classroom with her children immersed in an activity for the purpose of learning. She is clearly living the moral purpose of education and there is real joy on the faces of all participants.

The teacher perceives her environment and makes sense of the situation. Through years of training and practical experience she has undergone to be in this situation. Furthermore, she will have planned her lesson before she enters the classroom.

Through formal training and lived experience she has undergone before entering this situation. From her learned repertoire of actions she selects the actions that are most likely to engage her students, she

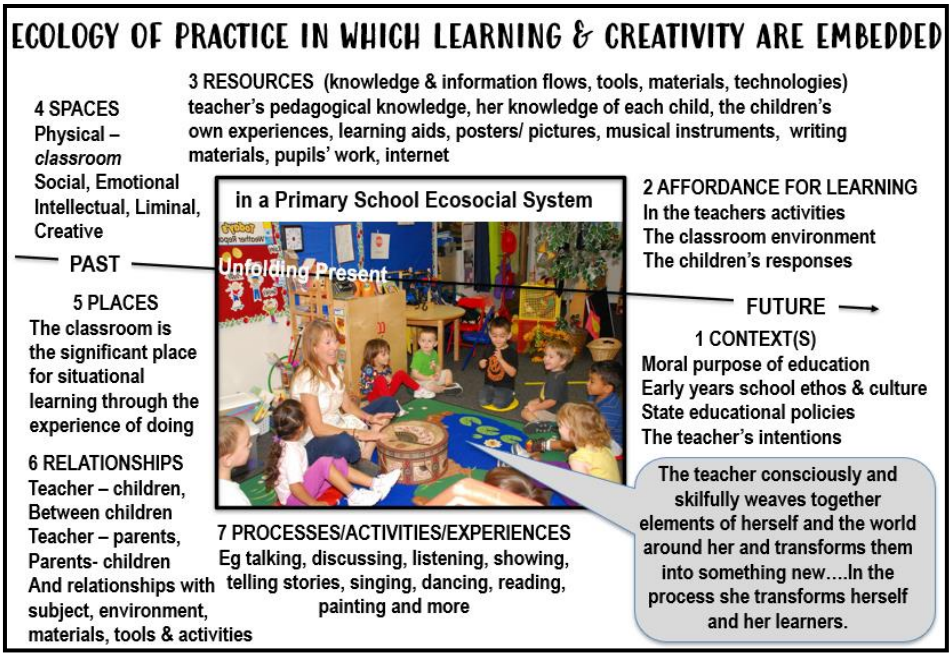


monitors the effects and adjusts her actions where necessary. Learning and other achievements – like creative thinking, actions and products emerge through the interactive process. After the class she might critically reflect on her actions and their effects and learn from her reconstructed experience and imagined possibilities. Through the totality of these experiences she continues to learn and undergo.

Her actions are consistent with Eraut's epistemology of practice. When someone encounters a new situation they 1) Assess it 2) Decide what to do 3) Do it, monitoring effects and adjusting where necessary and 4) Reflect on and learn from the whole experience.

27 By studying the nature of the relationships and interactions we can create a map of the dynamic world the teacher is inhabiting and changing and gain insights into the way she interacts with her environment. I am calling this presence, relationships, interactions and effects - an ecology of practice (Jackson 2016, 2019, 2020a).

Her ecology of practice has a past – her own life experiences and particularly those experiences that have enabled her to undergo and become a teacher. The knowledge and skills she brings to the situation is the result of her past undergoing. Her ecology of practice has a present as it unfolds in her classroom as she causes or interacts with each new situation. In her near future she is likely to reflect on her experiences and learn from them. And in her more distant future she will draw on the experience and what she learns as she plans new actions.

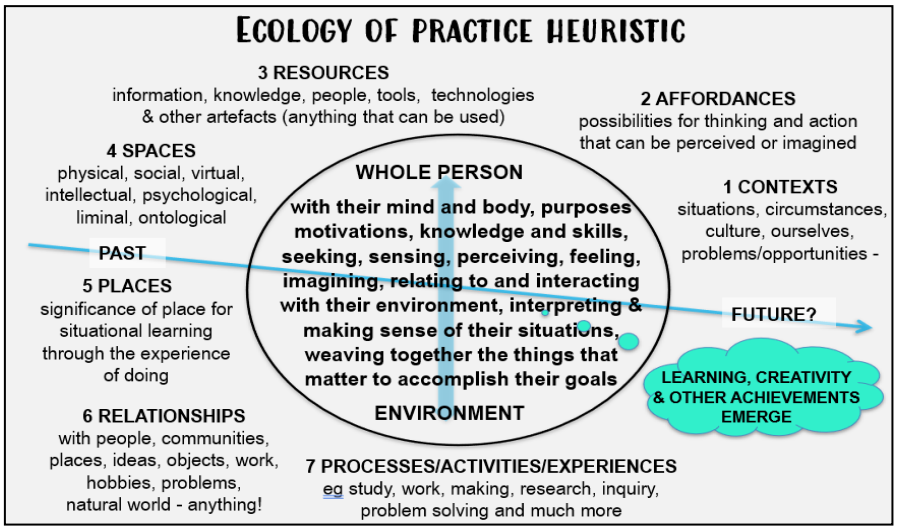


The teacher's thinking and actions are shaped by many things. She is embedded in a number of contexts- for example the ethos and culture of the school, the various policies that affect what and how she teaches and the particular educational context of what she is trying to achieve. She takes in the information flows resulting from activity through all her senses, she perceives new affordances – opportunities for action in real time as the children participate in the activities she has created. There are abundant resources in this environment to stimulate and support learning but the most important resource is the teacher and the children. The classroom is a special place for learning in a school that is also a special place for learning. The children expect to learn when they come to this place. They co-inhabit a physical space but the teacher also creates cognitive, psychological, emotional and playful spaces for interaction and learning.

Everyone and everything in this environment is related and these relationships are used and developed through the particular activities that are orchestrated and facilitated by the teacher. Activities that are intended to cause interactions that will lead to learning.

The components of this ecology for practice in which the intentional outcome is learning and development, are woven together by the teacher in a part deliberate, part opportunistic act. The teacher is creator but she only comes to understand the effects of her ecology as it unfolds and so she monitors the effects and adjusts her actions where it is appropriate. Through her actions, the tools she uses and the feedback she gains through her senses, the teacher extends her mind and body into his environment so that she becomes indivisible with it and the ecology she is creating. Within the ecology meanings are shared and co-created and the totality of the experiences enable both the teacher and the children to UNDERGO – through this ecological process they are becoming incrementally different people.

28 From this simple example of practice we can devise a tool or heuristic that we can use to examine and interpret any practice within which learning emerges (Jackson 2016, 2020a).



The creator of an ecology of practice draws on and weaves together aspects of themselves and their environment. Their ecology of practice enables them to extend their mind and body into their environment, a process that is assisted by the tools they use. It is the means by which they become indivisible with their environment or as Tim Ingold so eloquently put it, *" 'organism plus environment' should denote not a compound of two things, but one indivisible totality", "this totality is not a bounded entity but a process in real time: a process, that is, of growth or development".*

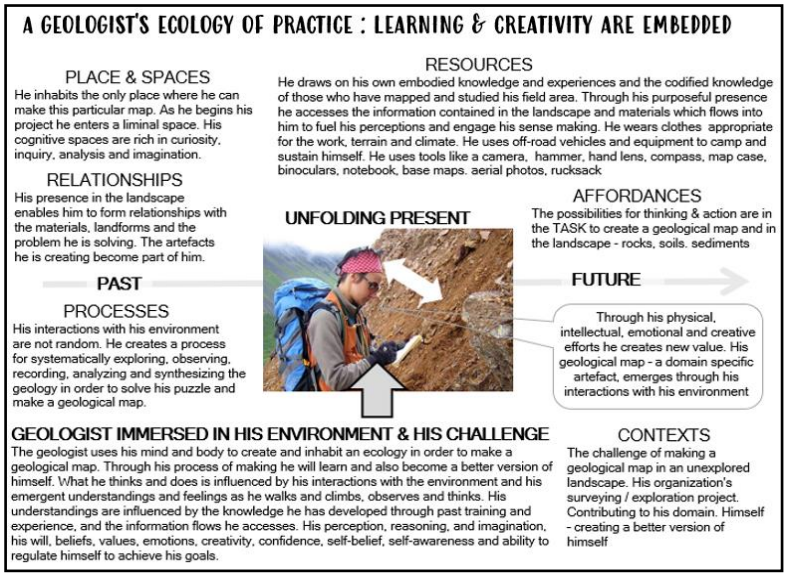
This heuristic provides the foundation for an ecological perspective on practice, in which learning and creativity are embedded. For learners involved in education their practice is essentially directed to learning, whereas for professional practitioners practice is directed to having a particular effect on the environment or situation and they learn through the experience of trying to achieve.

The heuristic acknowledges that we are fundamentally ecological beings – thinking and acting in an ecological – relational and interdependent manner with the world around us – and our existence and wellbeing depends on this.

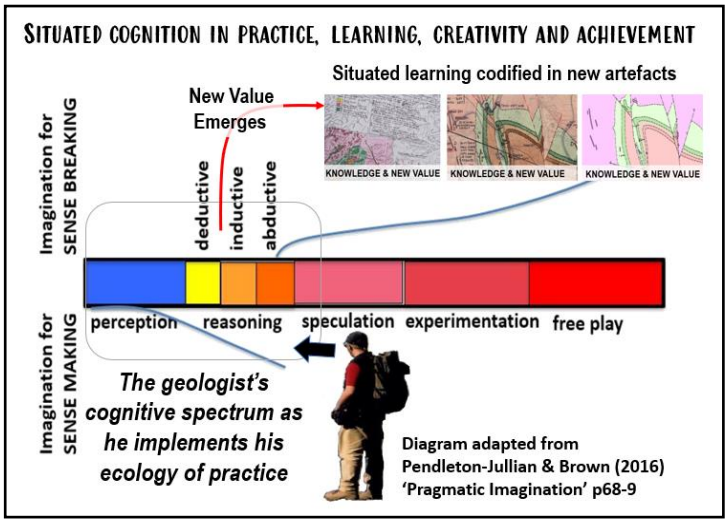
29 I would like to share a second illustration of applying the ecological heuristic to show how someone who works in the non-routine cognitive domain, in this case a geologist, makes new artefacts within which their learning and creativity is embodied.A geologist's ecology of practice is to enable him/her to access and understand the geology of a particular landscape to create a geological map that codifies what the geologist has learnt (Jackson 2020b).The geologist may enter his field area knowing very little about it. He has to extend his body and his mind into the environment using specific tools to access the information flows that enable him to work with his problem. He perceives and makes sense of what he observes through his reasoning. He records his observations building a picture as he goes. His imagination helps him speculate and conceptualise his problem to help him understand and solve his problem. Each step determines where he will go next. His domain specific artefacts emerges through this unfolding process.

30 His ecology of practice comprises himself, his mind and body and all that he can bring to the situation as he relates to and interacts with his environment. His ecology includes elements of himself – his knowledge, skill, emotions and past experiences. He makes reasoned and emotional choices as he perceives and interacts with a unique physical environment – the only place in the whole world where this

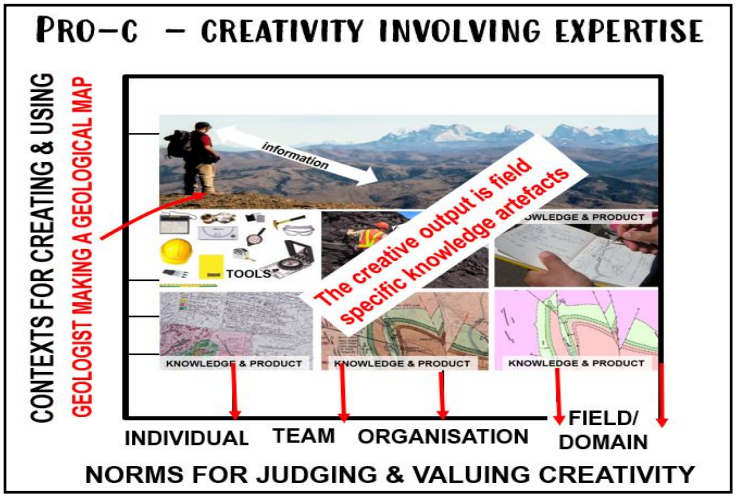
particular map can be made. It also contains the materials (rocks) and other resources including the tools he needs to make the map.



When he begins his project he enters a liminal space with all the uncertainty of not knowing. His emergent ecology of practice affords the means of working in this liminal space and all the other intellectual and psychological spaces he needs to inhabit in order to progress to a higher level of understanding. His ecology of practice includes his work activities and the methods and processes he employs using specific tools and technologies. His main source of information is the environment itself – the landscape, rocks and structures he is able to observe. Before he enters the field environment he will conduct research into what is already known. He gathers the resources he needs, such as aerial or satellite photographs and topographic maps, and uses these to make preliminary assessments of the geology. In the field environment he physically covers the ground, observing, gathering and processing lots of information through skillful actions like locating the position of a rock or structure on a map or photograph..

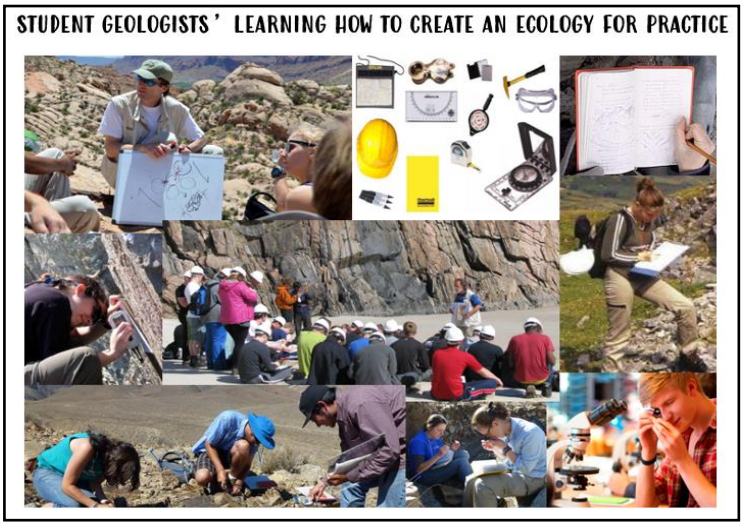


31 A geologist's ecology of practice provides him with access to the materials and information he needs to accomplish his task. His cognition is situated in the field environment. He uses all his senses to access the information flows and his perception, imagination and reasoning work together in a merry dance to make sense of his experiences. His patterns of thinking reflect enactive cognitive processes triggered by his interactions with his environment. The knowledge he develops is embodied in his actions and codified in new disciplinary artefacts - his maps which are the new material objects he brings into existence and embody his learning. His creativity emerges through this complex interactive process.



32 The example of a geologist making a geological map provides us with an illustration of creativity associated with specific expertise and experience – the Pro-c domain in the 4C model. The ecology of practice shows us how the geologist weaves himself and parts of his environment to transform information into knowledge and the means to communicate that knowledge through a geological map. His creativity

is judged by peers with the knowledge to appreciate and use the product of his efforts – his geological map.

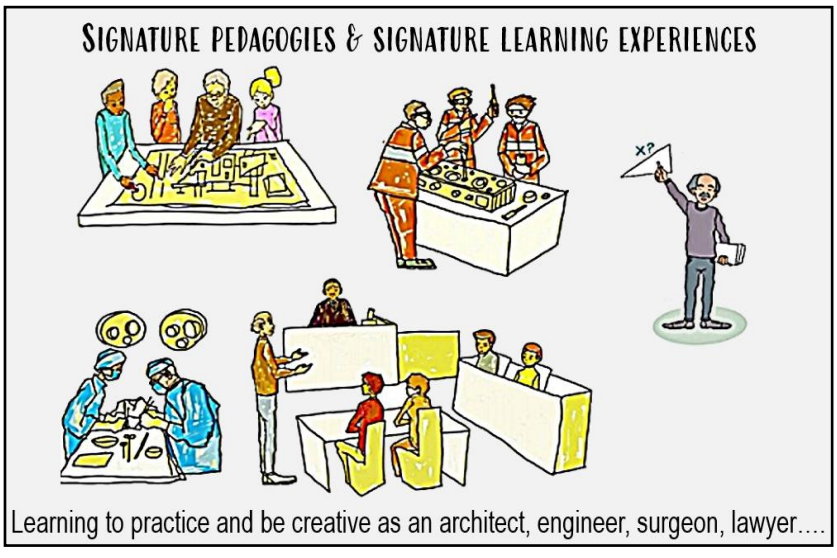


33 So how does a person learn to fulfil the role of a geologist which includes the ability to create a geological map? We come back to the idea of an ontological curriculum that enables a person to be and become a certain sort of person, in this case a geologist. In order to think an act like a geologist a person must become a geologist through education and training they develop sufficient knowledge to be able to identify rocks and structures and know what they mean, they are placed in the field environment where they are shown how to observe and record features and then under supervision they try to make their own geological map – making many mistakes along the way until they have the expertise and confidence to do it by themselves. This way of teaching people to think and act like a geologist and ultimately to be creative like a geologist is a sort of apprenticeship and it is known as a signature pedagogy.

Implications for higher education

I offer three principles to guide educational designers who are concerned with developing learners' creative potential. The first is a focus on signature pedagogies and signature learning experiences in which learners are laying the foundations for future practice, learning and creativity in specific discipline-based fields of work or perhaps through internships. The second is a focus on pedagogical practices that give learners the autonomy and freedom to invent or co-create their own ecologies for practice, for example through enquiry-rich, problem-based or project-based learning or perhaps co-curricular activities that enable learners to participate in community-based projects. The third is the adoption of a lifewide curriculum and the means to value and recognise learning, creativity and creative development in any and every aspect of a learner's life including extracurricular activities that they participate in or create for themselves.

34 ***Signature Pedagogies:*** Learning to create ecologies for practice within which learning and creativity are embedded is an unrecognised feature of signature pedagogies, which are the modes of teaching, used in the preparation of people for a particular profession such as law, medicine, engineering, teaching or being an architect or geologist. Signature learning experiences are the activities and situations learners engage in as a result of signature pedagogies.

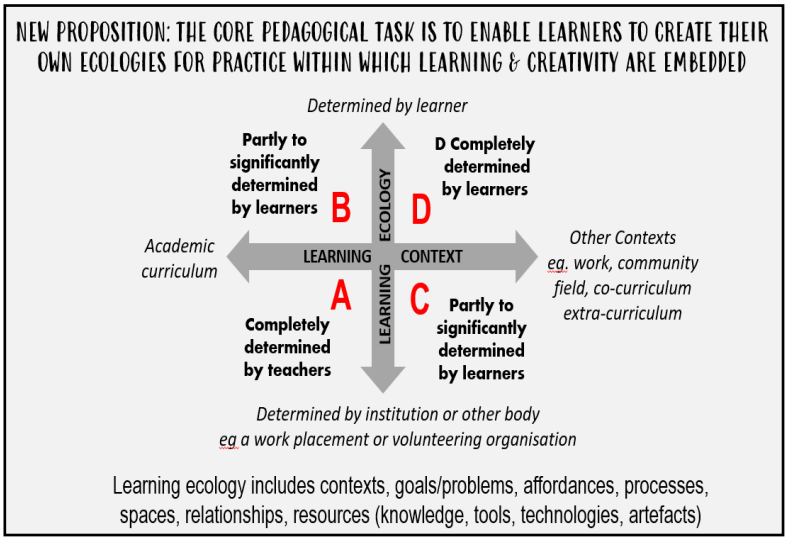


Shulman (2005) defines signature pedagogies as "the types of teaching that organize the fundamental ways in which future practitioners are educated for their new professions". They involve 'close to real world simulations' and on-the-job training and learning in professional workplace situations and environments – like the student geologists in the example above. Signature pedagogies and associated experiences comprise a synthesis of three apprenticeships—a cognitive apprenticeship wherein one learns to think like a

professional, a practical apprenticeship where one learns to perform like a professional, and a moral apprenticeship where one learns to think and act in a responsible, ethical and value-based manner that integrates across all three domains.

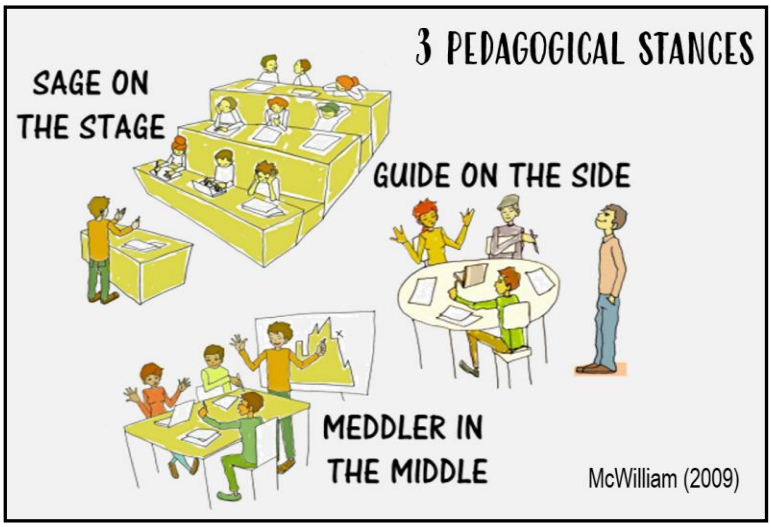
Gurung et al (2009) and Chick et all (2012) argued that signature pedagogies are not unique to professional/ vocational education and training: academic disciplines also have distinctive habits of mind that are reflected in the pedagogic practices adopted by teachers in the discipline. These authors explore how 29 disciplinary and interdisciplinary fields foster deep learning and help students think like disciplinary experts. These "signature pedagogies" reflect the deep structures of the discipline and attempt to answer questions such as: "What does our pedagogy reveal, intentionally or otherwise, about the habits of head, hand, and heart as we purport to foster through our disciplines?"

35 These ecological ways of viewing practice, learning and creativity in the non-routine cognitive domain lead to the proposition that higher education is the place where the foundations are laid for developing the capability to create ecologies for practice. That higher education is already doing this is apparent so the argument is for making this more explicit within the design and teaching process.



This simple tool enables us to see where, in the totality of a students' experiences they are able to create and implement their own ecologies for practice in which learning and creativity are embedded. It shows 4 domains in which learners have either little or no control, partial to significant control and complete control over the elements that make up an ecology for practice where learning is the purpose of practice (Jackson 2020a).

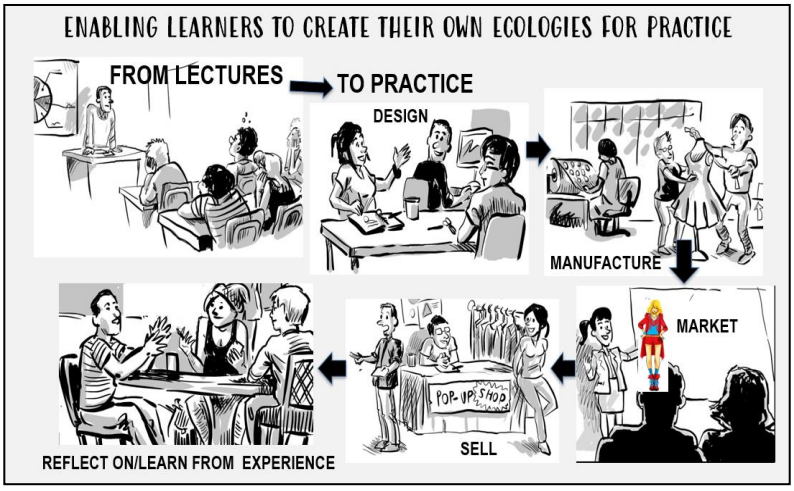
36 Teachers create their own ecologies for practice aimed at encouraging and supporting learners to learn. Certain pedagogical practices are more likely to encourage learner autonomy and enable them to create their own ecologies for practice within which learning and creativity are embedded. McWilliam (2009) captures a sense of this in her threefold characterization of pedagogic orientations 1) *sage on the stage* – where the teacher adopts a transmission approach, 2) *guide on the side* where the teacher acts as a facilitator and advisor to learners engaged in their own learning enterprises and 3) *meddler in the middle* – where the teacher is a co-learner in the process.



A complex ecology for learning and creative achievement might contain all three of McWilliam's pedagogic stances. The sage on the stage corresponds to the A domain of slide 35 with little or no affordance for learners to create their own ecologies for practice while the guide on the side and meddler in the middle

correspond to the B domain of slide 35 with plenty of opportunities for learners to co-construct their own ecologies for practice within which learning and creativity are more likely to emerge.

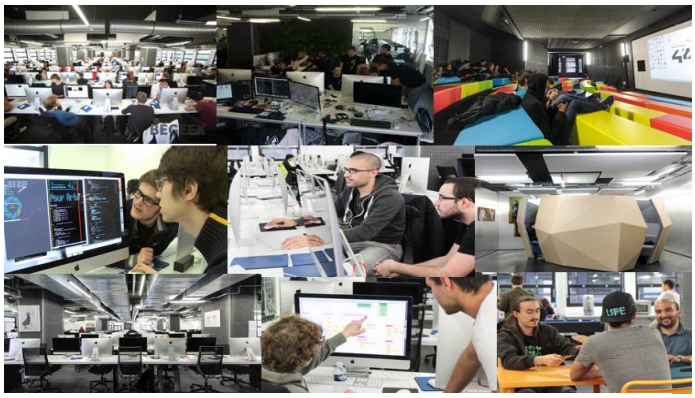
37 Here is an example of how two HE teachers working in a University Fashion School transformed their didactic teaching into opportunities for experiential learning with the help of seed funding from the university (Baker et al 2014). In doing so they enabled learners to co-create their own ecologies for learning and encouraged them to be creative in the design, making, manufacturing, marketing and selling of a collegiate range of student ware. The teachers had experience of the fashion industry and worked alongside their students so that they could observe their practice and their creativity as they worked. In making this transformation the teachers moved their practice from the domain A to domain B in slide 35 and shifted from sage on the stage to meddler in the middle pedagogic stances in slide 36.



More examples of student designed collaborative ecologies for practice in which learning and creativity are embedded.

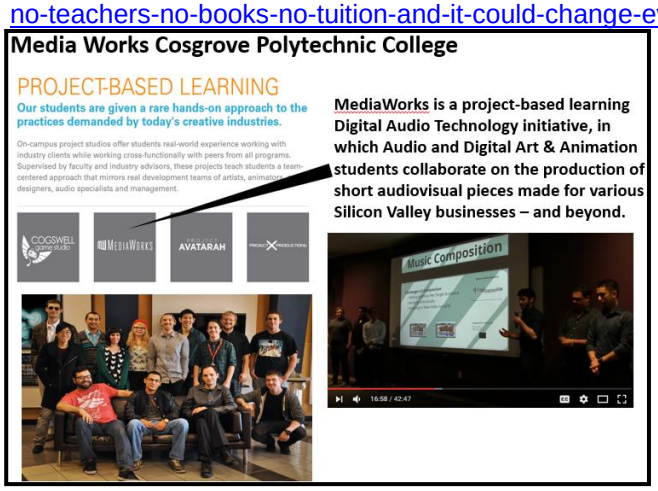
École 42 The basic idea is to bring together 800 to 1,000 highly motivated tech savy students into a single building in the heart of Paris, give them Apple computers with large screens and throw increasingly difficult programming challenges at them. The students are given little direction about how to solve the problems, so they have to turn to each other — and to the Internet — to figure out the solutions. All of École 42's projects are meant to be collaborative, so the and self-organise work in teams of two to five people. At first glance, the École's classrooms look a little bit like a factory floor or a coding sweatshop, with row after row of Aeron-style chairs facing row after row of big monitors. But a closer look reveals that the layout is designed to facilitate small-group collaboration, with the monitors staggered so that students can easily talk to one another, on the diagonals between the monitors or side by side with the people next to them. Students can come and go as they please; the school is open 24 hours a day and has a well-appointed cafeteria in the basement. Students share all of their code on Github (the world's largest open source platform and community). They communicate and collaborate with one another, and receive challenges and tests, via the school's intranet. Everything else they figure out on their own, whether it means learning trigonometry, figuring out the syntax for C code, or picking up techniques to index a database.

École 42 Innovative approach to Inquiry/Problem-Based Learning



Tests are essentially pass-fail. A team either completes the project or it doesn't. The no-teachers approach makes sense, as nearly anything you need to know about programming can now be found, for free, on the Internet. Motivated people can easily teach themselves any language they need to know in a few months of intensive work. But motivation is what's hard to come by, and to sustain — ask anyone who has tried out Codecademy but not stuck with it. That has prompted the creation of "learn to code" bootcamps and schools around the world. École 42 takes a similar inspiration but allows the students to generate their own enthusiasm via collaborative (and somewhat competitive) teamwork.

Tweney D (2014) Ecole 42 Available at: http://venturebeat.com/2014/06/13/this-french-tech-school-has-no-teachers-no-books-no-tuition-and-it-could-change-everything/

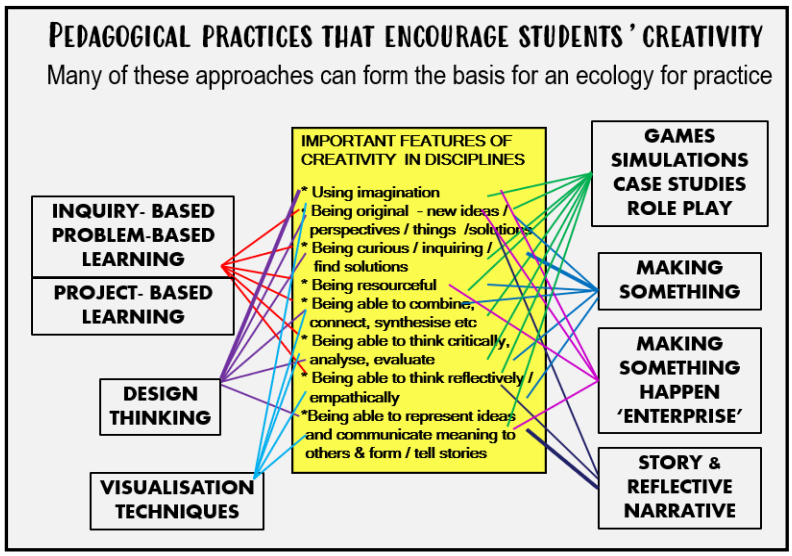


Cosgrove Polytechnic College in Silicon Valley has adopted project-based learning involving students working with industry. The teams work collaboratively to produce original audiovisual pieces under the guidance of the Audio and Visual Directors. The results are industry-quality "media works." The produced pieces include sound design, original music, animation and live action footage. The projects involve real-life client meetings, creative brief and concept generation, participation in the approval process, project and time management, deadlines and full-scale production by students working individually, in teams and cross-team. The production follows the current industry pipeline and delivery standards.

Team Academy is a novel approach to real world learning by supporting learners through a coaching model to develop and run their own businesses and learning what they need to learn in the process.

https://www.youtube.com/watch?v=szfLM4T_ldU

38/39 Teaching for creativity A systematic review of peer reviewed articles relating to pedagogical practices aimed at encouraging creativity in students aged 0–18 years in formal educational settings (Cremin & Chappell 2019), revealed that seven interrelated features characterise creative pedagogical practice, namely generating and exploring ideas; encouraging autonomy and agency; playfulness; problem-solving; risk-taking; co-constructing and collaborating; and teacher creativity. These characteristics would be expected within a pedagogical stance that encouraged learners, either individually or collaboratively, to create their own ecologies for learning e.g in the B&C domains of slide 35).



From the above it is clear that some pedagogical practices and curriculum designs are more likely to nurture students creativity by providing them with the autonomy and freedom to take risks, improvise and learn through the experience of trying to perform, make something or accomplish something by themselves or with peers. Slide 38 & 39 summarises a number of pedagogical and curricular practices that encourage learners to use and develop their creativity.
These are all pedagogies that might be associated with domain B in slide 35.

A curriculum to encourage creative development

OPPORTUNITY
- for independence/autonomy/choice/negotiation
- to create own processes or ecologies for learning
- to take risks without being penalised for not succeeding
- to grow understanding about personal meanings of creativity
- to gain recognition for learning and development regardless of context

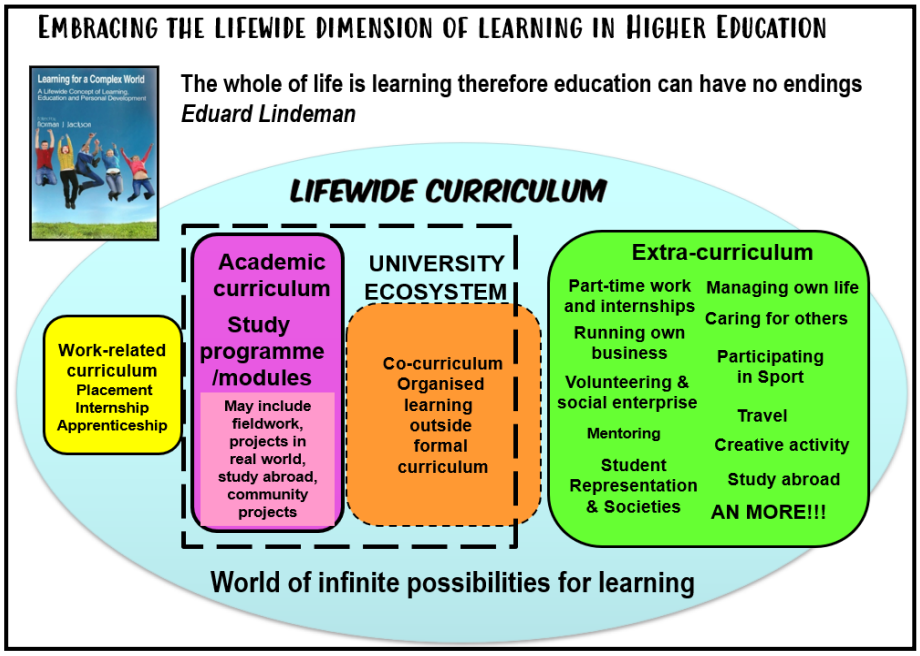
CONTEXTS
- that stimulate intrinsic motivation
- provide challenging situations and tasks
- experiences that have real world relevance & immersive experiences
- encourage inclusion of unfamiliar contexts
- encourage enquiry-rich collaborative approaches to problem working
- are rich in formative conversation and peer2peer interaction
- emphasise creating/co-creating meaning not just mastery of content
- involve teacher as participant /co-creator

Fundamentally teachers have to believe that their students' creativity is worthy of development and that it can be developed. An analysis of twenty-eight accounts of teaching that was deliberately trying to encourage students to be creative in a range of disciplinary contexts (Jackson, 2015) revealed the things that higher-education teachers do to promote students' creativity. They:

- give students permission to be creative
- encourage them and value their efforts to be creative
- provide time for students to be creative
- provide safe spaces where they can try new things out
- give students the confidence to take risks
- develop students' self-confidence to work in unpredictable situations
- promote the development of self-awareness and reflective learning
- provide situations for learning where there are no right answers
- provide real-world learning situations
- provide activities that are meaningful to participants
- provide learning situations that are both fun and challenging
- demonstrate their own creativity : provide a role model
- are prepared to take risks themselves
- are prepared to reveal something of themselves in the teaching process
- act as guides and facilitators
- adopt a questioning approach to learning
- create opportunities for problem- or enquiry-based approaches to learning
- provide opportunities for collaborative working and discussion
- are sensitive to the balance between challenge and reinforcement
- are sensitive to the balance between freedom and control
- are responsive to students as a group and as individuals and adapt their teaching as new possibilities emerge.

40 ***Lifewide education and a lifewide curriculum*** Another way of meeting the challenge of redesigning higher education to enable learners to develop and recognise their own ecologies for practice within which learning and creativity are embedded, is to adopt a lifewide approach to education, learning and development. To engage with lifewide education a university needs to adopt a holistic view of learning, invest in new infrastructure to support and recognise such learning, and develop a culture where students can see that their efforts to learn and develop in spaces and situations outside the academic curriculum are valued.

A decade ago I was involved in an experiment at the University of Surrey to develop and apply the idea of lifewide learning to demonstrate how a university my encourage, support and recognise learning and development gained by learners across the whole of their lives (Jackson 2011a).



We adopted a lifewide curriculum (Jackson 2011b) and designed a Lifewide Learning Award (Jackson et al 2011) to encourage and recognise learning and development in every aspect of a student's life. It was not dissimilar to some of the Employability Awards that many institutions offer but the emphasis was on all forms or learning and development which included employability/work related. The award was underpinned by a lifewide curriculum to encourage learners to appreciate where, how when and why they are learning in all parts of their life and to appreciate learning as an ecological phenomenon – in contrast to the linear programmatic, outcomes- based approach they are familiar with in education. Learners engaged in a self-regulatory process personal development planning (PDP) process to identify aspects of themselves they would like to develop and identify where in their life they can see opportunities for such development. Step three involves implementing their plan being sensitive to their learning and the contexts and situations they are learning in. They document this and create narratives that convey their becoming in a world in formation and an appropriate process is put in place to assess/validate claims.

41 An ontological curriculum requires learners to record and make sense of their journey and make claims for their own development. Creating ecologies to learn, develop and achieve something significant is identity work. The process of recording, reflecting on and narrating the experience and what was learned reveals the nature and extent of 'undergoing'. At Surrey we adopted the position that students could simply fill a shoe box with artefacts that represented their learning and development and as long as they could communicate their journeys and the transformations that they made we would validate and recognise their learning and development through an award – Surrey Lifewide Learning Award. Students chose a variety of media but one of the favourites was a scap book. They wanted something material and physical to touch as they recounted their stories. In this way students were learning to develop a learning biography. The whole process could be conceptualised as a type of PDP (personal development planning) in which identity development is central.

Life as an ontological curriculum – one learner's story

42 As so often happens in higher education some students continually strive to develop better versions of themselves through their own lifewide curriculum in which they can develop their own ecologies for practice within which their learning and creativity are embedded.This is especially the case when developmental opportunities within their course are limited. I would like to finish with a story of how one student created his own lifewide curriculum and his own ecologies for practice in order to pursue his ontological journey towards becoming the archaeologist he wanted to be.

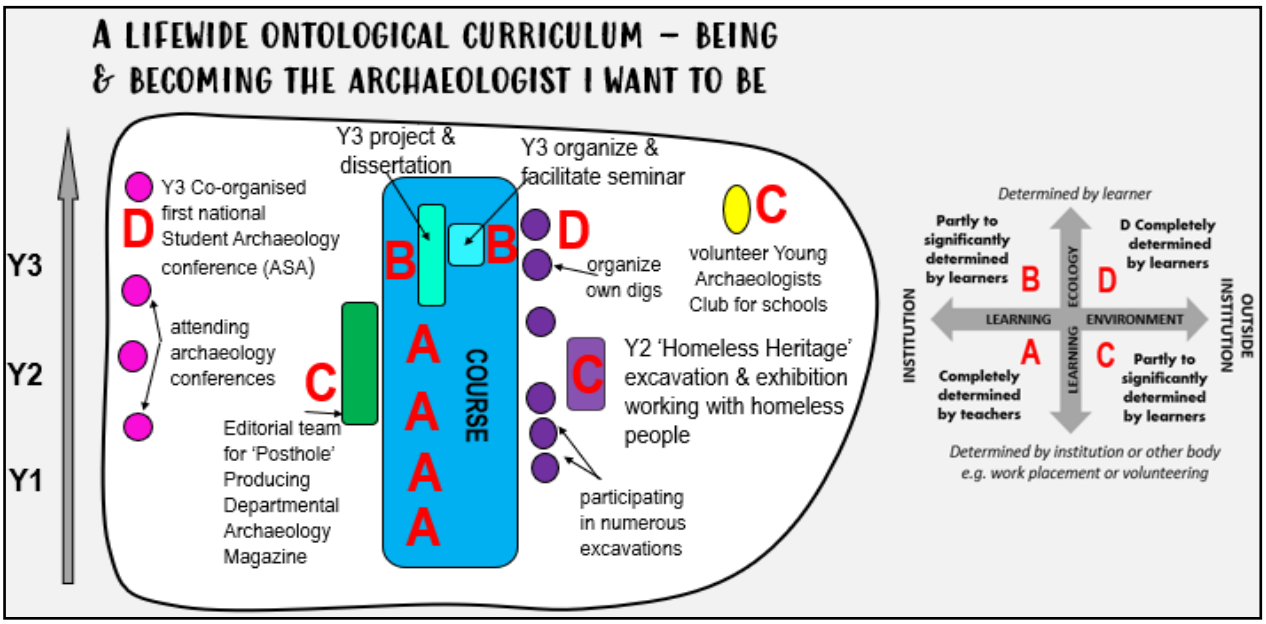
[In going to university] I wanted to become an archaeologist and that ambition caused me to get involved in many things outside my course that I thought would help me become an archaeologist. The most obvious process I engaged with to learn archaeology was the timetabled and structured course. This involved the reading of set course material much of it accessed through on-line journals and participation in lectures. This structure that was designed and taught by my teachers allowed me to follow a very clear process of learning, helping me to fully understand what information I had to know within the course. My degree course formed the backbone to my learning about archaeology. It provided me with contacts with people who were also interested in my subject and enabled me to develop a mind-set that encouraged me to engage with archaeology in many different ways.

The one experience in my course where I feel I had to create my own learning process was my final year dissertation which required me to create a project around something I found interesting and challenging. I had taken a module in my second year which involved a technique called ZooMS for analysing collagen in animal bones to identify animal genus. The academic responsible for developing the technique wanted someone to try the technique on erasure rubbings from bones. I thought this was interesting so I wrote my proposal and created a process that involved me sourcing samples, experimenting using different rubbing and collagen extraction techniques, analysing the collagen using a Mass Spectrometer, then processing the data and writing up the results. Although the process for achieving my goal was not particularly smooth it was one that I had largely created based on my past experiences of academic research gained throughout my three years at university. A lot of different people helped me including my supervisor, laboratory technician, two of my peers who were involved in similar work, a museum curator, and a PhD student within the department. I drew on a range of resources and facilities including collections of ancient animal bones, specialist laboratory, processing software, and articles. The research process was not straightforward and I was forced to modify my process as I realised that certain methods did not give me the results I was hoping for.

Being an archaeologist involves 'digging' to expose artefacts through which we can interpret the past. Unfortunately, my course only provided a four-week introductory fieldwork course so I joined a number of 'digs', six in total run by two different PhD students, a member of the academic staff, a commercial company, and an external public organisation. I probably spent over three months on excavations which gave me valuable insights into how to organise and conduct a dig, how to conduct various types of surveys, how to prepare, identify and display artefacts and beyond this how to work as a member of a team. The commercial digs I undertook introduced me to the world of commercial archaeology and the different approaches and mindsets that are used in the commercial world.

One of these [digs] had a particular significance for me. Homeless Heritage ….. is dedicated to working with homeless communities in order to understand and value the spaces used by such communities using archaeological methods. It involved [me] working with homeless people in order to understand the relevance of what [was] found. In this way I was able to form friendships with people I would never have come into contact with in my student life. I began to appreciate the problems of homeless people and to see the world through their eyes.

Looking back over my higher education experience I can now see that my course provided me with the basic knowledge I needed but that my attempts to learn archaeology and become an archaeologist involved much more than turning up for lectures and studying the reading list. I believe that the choices I made in getting involved in these wider experiences personalised my experience and the learning I gained from it and helped me become the archaeologist I wanted to be.



This narrative demonstrates how the idea of lifewide learning and learning ecologies can be applied to undergraduate higher education. It shows that this learner's process of learning, being and becoming was not confined to an academic programme. Rather we see how his motivation to become the sort of archaeologist he wanted to be and his desire to create new meaning, form the central purpose around which he forms his own ecologies to develop himself beyond the opportunities his course offered. His goal - to learn archaeology and gain a good degree - sustained his motivation over the three years he was studying, but it was the particular projects he embarked on that gave him the opportunities to become the sort of archaeologist he wanted to be. He found opportunities to be and become an archaeologist in different contexts which grew from the circumstances of his life and the relationships he had formed.

Referring back to slide 35, we see that throughout his course he was involved in the ecologies for learning created by the teachers in his department (A in figure above) but he describes two experiences where he was essentially responsible for designing and implementing his own ecology of practice within the institutional environment (B in figure above) the most significant being his final year research project. We also see several examples of experiences outside the institutional environment where he participated in the learning and practice ecologies of others (archaeological digs C in figure above) some of which had a significant impact on him. Towards the end of his course his confidence and capability were such that he organised his own digs and lead and helped organise a national conference in which he created his own ecologies for practice containing significant learning (D in figure above).

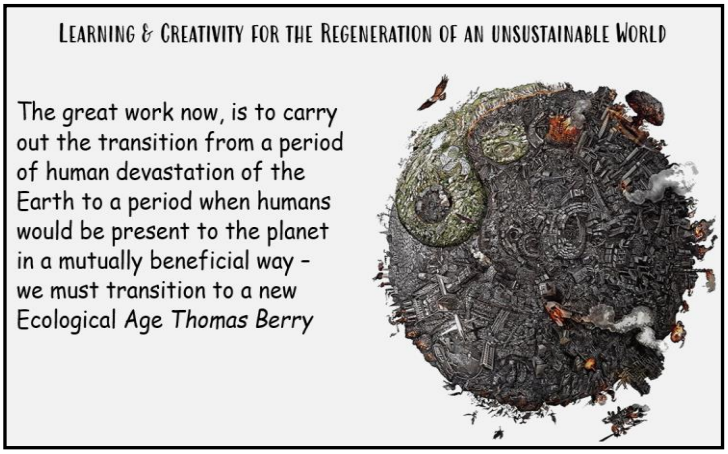
Through a combination of his course experiences and his own efforts, he participated in and created experiences for learning, personal development and achievement in all four of the conceptual spaces shown in slide 35 and inset in the figure above. He optimised his own education for the future and transformed himself and some aspects of the world in the process.

Some key points

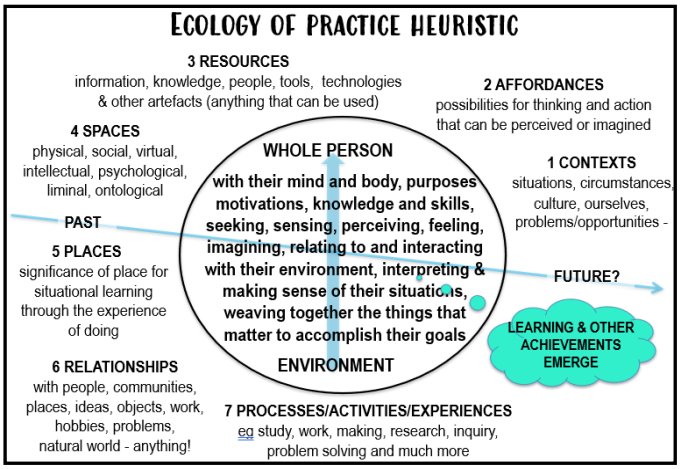
1 Creativity is a fundamental and universal quality of being a human. While nature is creative in the diversity and resilience of its life forms, humans are creative in the way we use our abilities to think to imagine then bring new things or situations into existence. Our creativity is fundamental to our sense of who we are and is an important contributor to self-expression that leads to a sense of fulfilment and achievement. In these ways our creativity helps us transform the world and ourselves.

2 Traditional western views of creativity place high value on originality and economic demands for innovation reinforce this association. But an educationally more useful conception of creativity can be formed around the idea of transformation, *"creativity is the process through which we take elements of ourselves and the world around us and transform them into something new"* (Bennick, 2009 1min 20s).

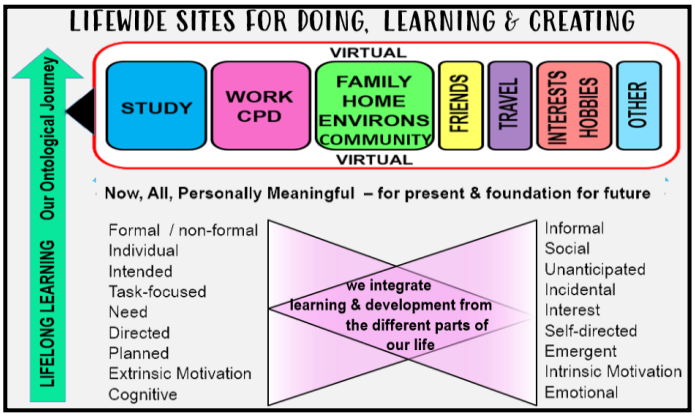
The power in the transformational concept of creativity is that it embraces products, processes and the uniqueness of human beings to the everyday lives of people as they interact with their environments. It is an ecological concept of creativity in the sense that it emerges through the relationships, interactions and interdependencies we have with our environment.



3 The biggest challenge facing humanity at the start of the 21st century is the sustainability of our planet. We have reached a tipping point and humanity as a whole will need to fundamentally change its behaviours in the next few decades if we are to continue to flourish as a species. The young people of today are the generation who will have to make the transition to a new Ecological Era and education has a pivotal role to play in enabling preparing them for this task. To achieve this cultural transformation humanity must embrace an ecological world view within which all human activities, including learning and creativity, are understood in relationship to the world in which they are enacted. We are ecological interbeings, enacting life within and with an ecological world of relationships, connectivity and interdependency. If we are to succeed in 'learning for sustainable regenerative futures', we need a vision and concept of lifelong learning and action that embraces consciously and explicitly the lifewide dimensions of learning in everyday life and its fundamentally ecological character (Jackson in press).



4 Formal education is the means by which we reproduce or bring about pervasive change in culture as each new generation is prepared for their future. We need systems of education and institutions for education that encourage and support an ecological worldview and a broader moral purpose than preparing people for the workforce, that includes learning for others and encompasses the health and vitality of our life sustaining planet. Education has a pivotal role to play in developing ecological understanding and the development of learners capabilities to create their own ecologies for practice in which learning is often the most important purpose of practice and creativity is often neglected. I offer an ecology of practice heuristic to aid understanding of how learning and creativity emerge through practice and argue that the act of designing and implementing an ecology for practice is itself an unrecognized act of immense creativity in which a person weaves something of themselves and the world together to create something new.

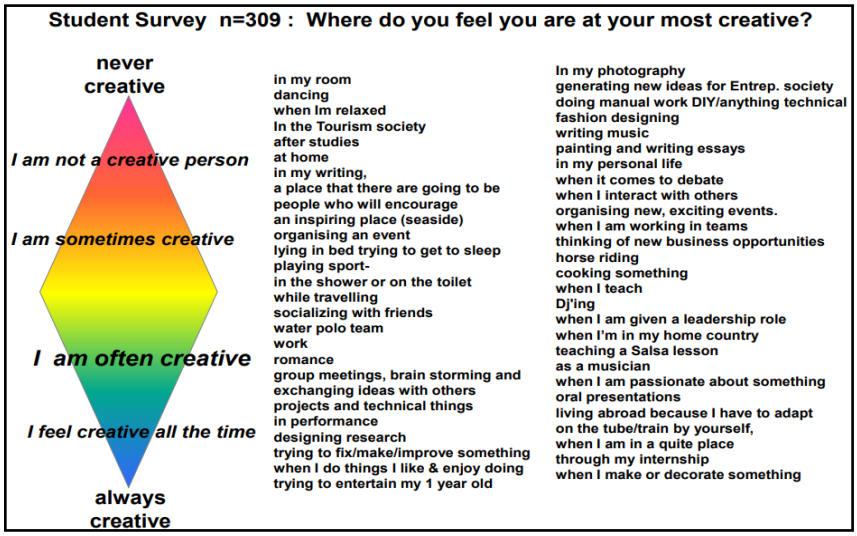


5 I offer three curriculum design principles to facilitate learners' creative development. The first is a focus on signature pedagogies and signature learning experiences in which learners are laying the foundations for future practice, learning and creativity in specific discipline-based fields of work or perhaps through internships. The second is a focus on pedagogical practices that give learners the autonomy and freedom to invent or co-create their own ecologies for practice, for example through enquiry-rich,

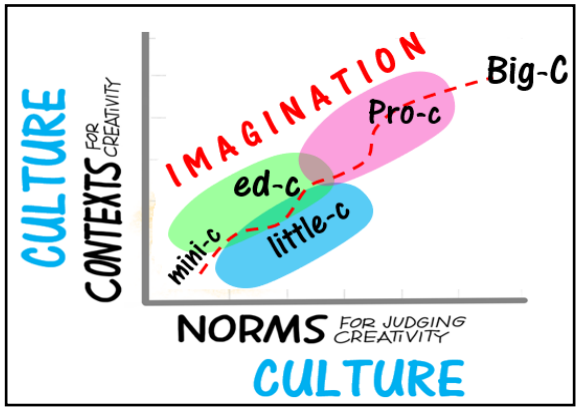
problem-based or project-based learning or perhaps co-curricular activities that enable learners to participate in community-based projects. The third is the adoption of a lifewide curriculum and the means to value and recognise learning, creativity and creative development in any and every aspect of a learner's life including extracurricular activities that they participate in or create for themselves.

Many years ago I co-edited a book called Developing Creativity in Higher Education an Imaginative Curriculum. I invited the late Professor Mihaly Csikszentmihalyi who recognized and named the psychological concept of "flow", a highly focused mental state conducive to creative productivity, to write a foreword. In it he wrote these wise words. *"I believe that if one wishes to inject creativity in the educational system, the first step might be to help students find out what they truly love, and help them to immerse themselves in the domain – be it poetry or physics, engineering or dance. If young people become involved with what they enjoy, the foundations for creativity will be in place."*

Research at the University of Surrey revealed that while most students believe they are at least sometimes creative they do not see their courses as the place in which they express their creativity most often. Surely, a lifewide curriculum holds the most potential to embrace the most environments in which learners can and do express their creativity?



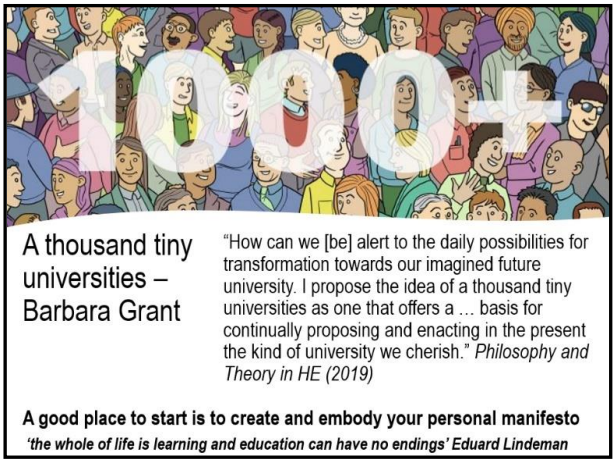
6 Education has a pivotal role to play in the development of learners' creative potential: education should have its own domain in any categorisation of creativity e.g. the ed-c domain in the 5C creativity framework proposed by Jackson and Lassig (2020). Education provides the foundation for creativity requiring specialist (disciplinary) knowledge and expertise and, through a lifewide curriculum, it becomes an agent for encouraging, recognising creativity across the whole of a person's life and valuing their own ways of creatively expressing themselves.



We can do more to enable higher education to become a more effective agent for the development of human potential above and beyond academic achievement by recognising the way learners are developing their own potentials for their future across the whole of their lives.

Epilogue: A Manifesto for Developing Creativity in Higher Education

You cannot bring about significant change without a vision of the change we want to achieve. A few years some members of the Creative Academic and #creativeHE community undertook an exercise in which they set out their personal manifestos for encouraging and facilitating creativity in Higher Education (Jackson and Willis 2019). From these an overall manifesto declaring our commitment to students; creative development in higher education was produced by Paul



Kleiman and it is reproduced below.

As teachers and educators we are all able to contribute to shaping the sort of education we believe is right for the development of our students – now in the present but also mindful of their future. As Barbara grant puts it. we all have the potential to be our own university so perhaps the place to start is for each of us to develop our own manifesto setting out the type of learning and educational experiences we want to enable in order to make an enduring difference to the lives of the learners we teach.

TOWARDS A MANIFESTO FOR CREATIVITY IN HIGHER EDUCATION

Traveller, there is no road; the road forms itself as you walk it. ***Antonio Machado***

We believe learning is an extraordinary, creative, imaginative, transformative, wonder-full, lifelong and lifewide adventure.

We strive to construct a truly creative and imaginative curriculum in and across all disciplines.

We actively pursue a creativity that constructs new meanings, new tools and new outcomes, new embodiments of knowledge, new relationships, rules, communities of practice and new connections, new social practices.

We forge the creative, imaginative path by thinking, making, doing, solving, dreaming.

We acknowledge and are willing to inhabit the discomfort zones of creativity.

We embrace the perilous leap, the getting lost, the anxious moment, the fragile courage, the stumbling with confidence, the learning at the edge of chaos, the glorious 'failure'.

We do not turn away from the creative challenge and we grasp the imaginative opportunity.

We believe criticality & questioning assumptions should dance with the capability of imagining possibilities.

We expect the unexpected and we intend the unintended. We unlearn, de-school, and we do not assume that the discourses, practices and tools of the past will serve us well in the future.

We relish the passionate inquiry, the inspirational design and the challenging experiment, and we experience it all with all our senses.

We celebrate the everyday acts of 'small c' creativity alongside the great leaps of imagination and we do not allow ourselves to become victims of the symbolic violence that blinds us to the value of our acts of creativity, however humble they may be.

We illuminate how to act with an eye to the long-term when we combine the power of imagination with the spirit of care, love, respect and justice.

We acknowledge the ecological nature of learning, creativity and practice.

We have enminded bodies/embodied minds and we do not separate the heart & the head. We and our environment are indivisible.

We live in a wonder-full and story-full world and we harness imagination with social-cultural tools to equip us to tell stories powerful enough to change the world...and ourselves.

We pursue the creative path in a way that allows individuals to have the confidence to do what they need to do when they need to do it with conviction & bravery.

We rejoice in our individual and co-operative acts of creativity and we enhance our personal and collective wellbeing through the exercise of our creativity.

We hold to the principle that through playful, ludic and thoughtful practices we flourish, blossom, find joy and discover that we are capable of so much more than we believe ourselves to be.

We resist the pressure to conform, to comply, to play safe, and we are not affronted by being challenged.

We repudiate the standardised blandishments of 'edu-speak' and we are not embarrassed to use and revel in words such as play, fun, spirit, passion, joy, adventure, excitement.

We value resilience and perseverance and we reject the 'failure'and seek to recognise and reward the learning not the 'failure'.

We recognise creativity as an innate human attribute, and we resist - through our imaginations and creative practices - pedagogies that seek to suppress and dismiss creativity and imagination.

We accept that nothing ventured, nothing gained, and that our own anxieties and our fears of breaking the rules are, often, the greatest barriers to our creativity.

We understand that some people work best under pressure, some people work best against constraints, some people work best alone, and some people work best in a group.

We endeavour to help you do your best work to become the person you want to be.

We know that pursuing the creative, imaginative path can be a very personal, emotional, indeed lonely journey, and we welcome the opportunity to share our creative adventures with others.

* * * * * * * *

We will not define creativity for you but we will help you to recognise, understand and express your own creativity so that you can make claims for it.

We will liberate the curriculum to fully realise all the contexts within which individuals seek to realise their potential and transform themselves into the person they want to be.

We will create the spaces where creativity and imagination can thrive and we will allow the time for it to flourish.

We will ensure that what we teach and how we teach, and what we assess and how we assess is fit for creative purpose.

We will encourage you to use and develop your imagination and creativity to enable you to sustain yourself through the challenges and opportunities you will encounter throughout your life.

We will act and behave ethically and with social responsibility and we will continue to develop our moral compass through the situations we encounter or create across our lives.

We will encourage and enable a willful, self-directed, self-regulated and self-aware practice to create our own ecologies for learning and achieving.

We will recognise and value our own transformations and the transformations we see in others.

Standing on the edge of chaos and wonder we launch our creative challenge to the educational stars.

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The Author

Norman Jackson is Emeritus Professor of the University of Surrey, England, and Founder of 'Lifewide Education' and 'Creative Academic'. His work as an educator has formed around the challenges of encouraging higher education to take more seriously the creative development of learners and enable them to prepare themselves for the complexities, uncertainties and disruptions of long learning lives. At the Higher Education Academy he led work on 'creativity in higher education'. As Director of SCEPTrE at the University of Surrey, he developed and applied the idea of lifewide learning and education to give meaning and substance to the concept of lifelong learning. The ideas of ecologies for learning and practice emerged from this work.

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