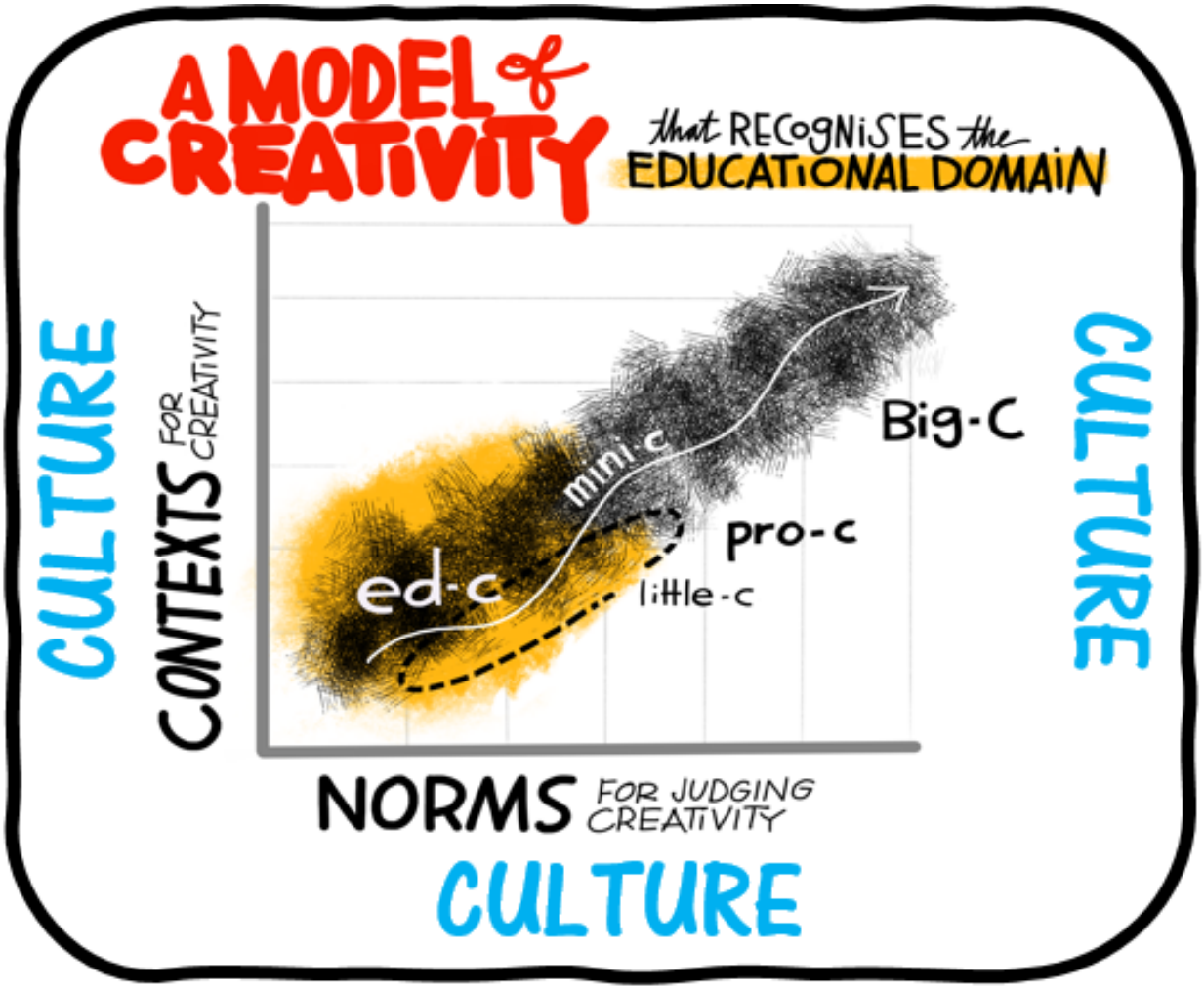
creative academic magazine

CAM 15 January 2020



EXPLORING & EXTENDING the 4C MODEL of CREATIVITY

RECOGNISING the VALUE of ed-c

Editor: Norman Jackson
Illustrator: Sita Magnuson

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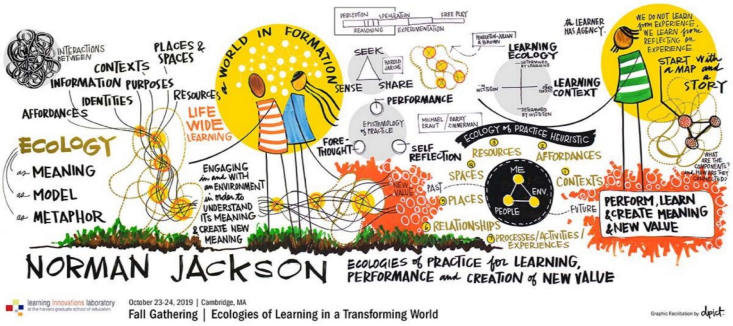
CONTRIBUTORS

Norman Jackson

Norman is Emeritus Professor of Higher Education at the University of Surrey, co-founder of Creative Academic and Editor of Creative Academic Magazine. His book ,'Developing Creativity in Higher Education: an imaginative curriculum' provides a foundation for his current work on creativity.

Sita Magnuson

Sita is an artist/graphic facilitator, entrepreneur, community catalyst, and self-proclaimed futurist with two decades experience in the fields of process design, facilitation and visualization. Her practice lives at the intersection of *Social Infrastructure* (how we connect and co-create), *Environment, Space & Place* (how we hold humanity and possibility in built environments), and *Cognitive Evolution* (how we think and learn, elastically—individually and collectively).



Sita is the lead designer of the Easthampton Futures Project, an initiative focused on citizen-driven community development in Easthampton, Massachusetts. She is the co-founder of Fort Future–a space for intergenerational curiosity, and co-founder of Mass Collaborative, focused on designing and facilitating local collaboration in Easthampton, MA. She co-founded the Easthampton Co.Lab in 2015 to support affordable and accessible community co-working and learning. She is also the co-founder of **Dpict**, an organization that employs visuals, environments, and collaborative processes to facilitate learning, socialize understanding, and enable action.

Dr Carly Lassig

Dr Carly Lassig is a Lecturer in the School of Early Childhood and Inclusive Education in the Faculty of Education at Queensland University of Technology. She has a passion for social justice, equity, and inclusion. Her research and teaching interests include: creativity, inclusive education, gifted students and gifted education, students with disability, differentiation Universal Design for Learning and grounded theory research methodology. Her background is as a primary and middle school teacher, having taught nationally and internationally. She has also worked as an Australian Curriculum project officer with Independent Schools Queensland.

Carly's PhD, "Perceiving and pursuing novelty: A grounded theory of adolescent creativity" used grounded theory methodology to research student voice in relation to young people's experiences of creativity within and beyond the school environment. Through this work she realised that the 4C model of creativity was inadequate to explain adolescents' creativity and proposed and additional educational domain (ed-c) which we endorse in this issue of the magazine.

CONTRIBUTORS

Dr Alexander Carter

Alex is a Bye-Fellow at Fitzwilliam College, and is Academic Director for Philosophy and Inter-disciplinary Studies at the University of Cambridge, Institute of Continuing Education where he has designed and delivered courses in philosophy, ethics and creativity theory.

Dr Gillian Judson

Gillian cares passionately about encouraging learners and teachers to use their imagination. She is a Lecturer in Education and Executive Director of the Centre For Imagination In Research, Culture, & Education (CIRCE) (www.circesfu.ca) at Simon Fraser University, Canada. Her research and teaching are primarily concerned with the role of imagination in all learning. Gillian is an important ally and partner in Creative Academic's work and a regular contributor to the magazine.

Dr Chrissi Nerantzi

Chrissi is a passionate and creative academic developer. She works as a Principal Lecturer in Academic Continuing Professional Development at Manchester Metropolitan University. Her approach is playful and experimental and underpinned by scholarship and research. She is a National Teaching Fellow and co-founder of Creative Academic and founder of the #creativeHE community and a frequent contributor to the magazine.

Dr Jenny Willis

Jenny's career in education began as a languages teacher in inner London areas of social deprivation. This experience inspired her through middle and senior management of schools to teaching for the Open University. She held a fellowship in the Surrey Centre of Excellence in Teaching and Learning (SCEPTrE), researching professional and personal development and creativity. She is a founder member of Lifewide Education and was a former Executive Editor of Lifewide Magazine and Creative Academic Magazine and a frequent contributor.

Professor John Cowan

John entered academia after a successful career as a structural engineering designer and became the first Professor of Engineering Education in the UK. at Heriot-Watt University, Edinburgh. His passion for and professional interest in student-centred learning now spans over 50 years and he has inspired many higher education teachers. In reviewing his book 'Becoming and Innovative Teacher' Professor John Biggs wrote *"the whole book is driven by a cycle of questions, examples, strategies and generalizations from the examples. In all, it is the clearest example of practise-what-you-preach that I have seen."*

Professor Paul Kleiman

Paul trained and worked as a designer before 'stumbling' into teaching in higher education. He was one of the founding tutors of the Liverpool Institute for Performing Arts (LIPA) and then, from 2000-2011, co-led PALATINE, the LTSN/HEA Subject Centre for dance, drama and music. He now works as a consultant in higher education. His research and work on creativity and assessment is cited widely in books and journals across a range of disciplines and informs the assessment approaches in a number of institutions and HE programmes.

Dr Christopher Wilson

Chris is a member of the Academic Team in the Centre for Learning Innovation and Professional Practice at Aston University with specific responsibilities for professional development of academic staff and management of institutional projects. He leads the Creativity Special Interest Group at Aston and publishes and presents on the subject in the UK and internationally as well as supporting related research activities across disciplinary areas. Chris is a classically trained musician and creative practitioner.

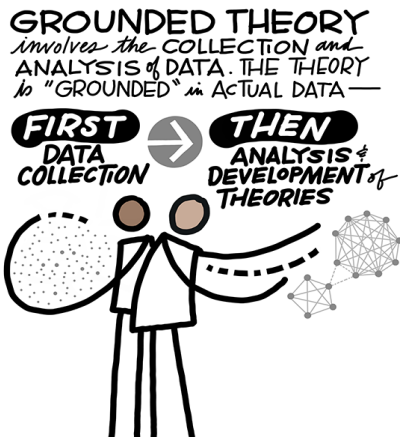
Dr Douglas Cole

Doug is Deputy Director of Employability at Nottingham Trent University. Doug has over fourteen years' industry experience and ten years in higher education. He is a Senior Fellow of the Higher Education Academy (HEA) and Fellow of the Chartered Institute for the Management of Sport and Physical Activity in the United Kingdom. In 2012 he developed the concept of a framework for employability with a particular focus on curriculum design.

Recognising Education as an Important and Distinctive Contextual-Cultural Domain for Creativity and the Development of Human Creative Potential

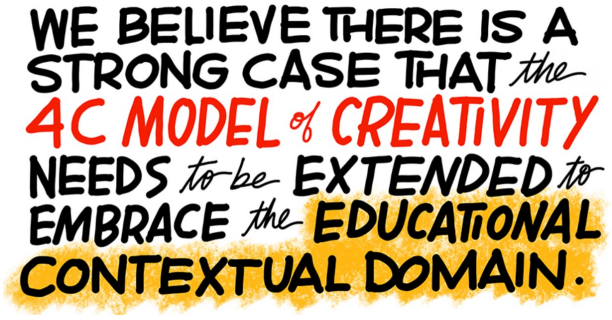
Norman Jackson (Editor)

In this issue of Creative Academic Magazine we tackle an issue that engages with the very reason for Creative Academic's existence namely, recognising the pivotal role played by education higher in encouraging and enabling learners to use their creativity and develop more of their creative potential. In higher education at least, it can be argued that the development of creative potential in learners who are engaged in cognitive and practical apprenticeships in vocational subjects will enable learners to perform creatively in the professional domains they will eventually inhabit. The argument for a direct link between development of creative potential at the subject level in schools and creative performance in work or tertiary education environments, is more tenuous because we have lacked detailed understandings of creative processes and practices in different subject domains.



Once in a while our advocacy is boosted by research and scholarship that opens up new ways of thinking. This happened to me about 6 months ago when I discovered the doctoral research study of Carly Lassig[1] who has developed a Grounded Theory of Adolescents' Creativity and from this theory proposes an educational domain (ed-c) for creativity.[1] In doing so Carly is drawing attention to the particular contextual, motivational, relational, interactional and outcome features that characterize education and set it apart from other domains of work (study and learning being the purpose of work in the formal educational setting). Although Carly's work is focused on high school her research and ideas have wider application, including higher education.

Creative Academic supports the assertion that because education is such a significant context and environment in the lives and ontological histories of most people – their becoming a different more knowledgeable, skillful, critical and creative thinking person, any general model of creativity such as the 4C model proposed by James Kaufman and Ron Beghetto[2] should recognise this. Furthermore, we contend that in vocationally oriented disciplinary fields learners are developing the foundational values, qualities and dispositions, knowledge and skills that are necessary to perform creatively in their future work domain – the Pro-c domain in the 4C model[2]. We believe there is a strong case, supported by research, to argue that the 4C model of creativity needs to be extended to embrace the educational cultural-contextual domain[3].



The indivisible totality of people, their purposes, creativity and environment

The American philosopher, educator, and social critic John Dewey suggested that acts of creativity are driven by an 'impulse,' 'a sudden strong and unreflective urge or desire to act'. Dewey believed that action and creativity are brought together through human experience, defined precisely by the interaction between a person and their environment: *"When we experience something, we act upon it, we do something with it; then we suffer or undergo the consequences. We do something to the thing and then it does something to us in return."*[4 p46] Dewey developed his argument into a model to describe what happens when a person interacts with their environment to create new value. A visual interpretation of this model is shown in Figure 1.[5]

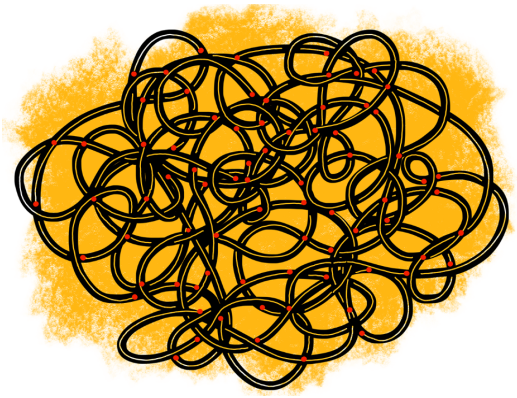
"For Dewey, what brings action and creativity together is human experience, defined precisely by the interaction between person and environment and intrinsically related to human activity in and with the world. …Action starts….with an impulsion and is directed toward fulfillment. In order for action to constitute experience though, obstacles or constraints are needed. Faced with these challenges, the person experiences emotion and gains awareness (of self, of the aim, and path of action). Most importantly, action is structured as a continuous cycle of "doing" (actions directed at the environment) and "undergoing" (taking in the reaction of the environment). Undergoing always precedes doing and, at the same time, is continued by it. It is through these interconnected processes that action can be taken forward and become a "full" experience."[5 p2-3]

Figure 1 Summary of Dewey's model of human experience within which human creativity emerges. Adapted from[5].

How well these ideas chime with anthropologist Tim Ingold's appreciation of our relationship with our environment.

"Every organism has an environment: the organism shapes its environment and environment shapes the organism. So it helps to think of an indivisible totality of "organism plus environment" - best seen as an ongoing process of growth and development"[6].

Carl Rogers captures the ecological dynamics of how an individual's creativity emerges through this indivisible relationship in his 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"* [7 p.350]. This is a highly situated concept of creativity in which an individual's agency is stimulated or inspired by the affordances (directly perceived or imagined opportunities for action) they can find as they try to achieve something they value in particular contexts and situations, in their particular environment.



What is missing from John Dewey's insightful heuristic is the detail of individuals' actions, interactions, and emergence of effects and repeated undergoings - that is left for each of us to complete. Here we enter the domain of what anthropologist Tim Ingold calls – the 'life of lines'[8] (Figure 3).

"the pathways or trajectories along which improvisatory practice unfolds are not connections, nor do they describe relations between one thing and another. They are rather lines along which things continually come into being. Thus, when I speak of the entanglement of things I mean this literally and precisely: not a network of connections but a meshwork of interwoven lines of growth and movement."[9 p.3]

Education - a significant context & cultural/material environment for creativity

If, as these great thinkers claim, creativity results from unique interactions between a person and their environment as they pursue their goals, needs and ambitions – it stands to reason that the material and cultural human-made environments we call (formal) education, contain particular features, characteristics and affordances that influence individuals' creative responses to the problems and challenges they encounter. Teachers are the key human agents in shaping the context and cultural-material environment and they can encourage, discourage or be ambivalent towards creativity in their thinking and actions.

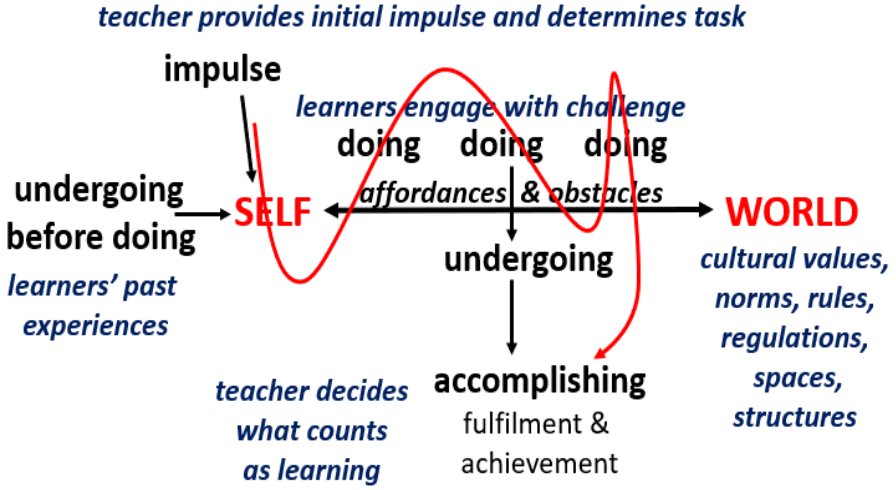


Figure 2 Summary of Dewey's model of human experience within which human creativity emerges adapted for the educational environment

Using Dewey's model (Figure 2) and Carly Lassig's doctoral study[1] as reference points, the experience of the learner as they engage in projects demanding their creativity is profoundly shaped by their teacher and peers, the institutional/instructional environment and other factors. The impulse to be creative is contextualized within an educational environment that contains a programme of study usually in one or more subjects and an assessment regime that requires learners to perform in particular ways. Through their pedagogical and assessment practices the teacher motivates learners in ways that may or may not stimulate their intrinsic motivations[1]. So, in education, learners' impulses to try to be creative are driven by both external and internal motivational forces.

In the educational environment, completing the task with all the complexity entailed, within an environment that many educators believe to be constraining, is both the challenge and obstacle to learners' utilizing their creativity. In a powerful critique of anglophone higher education environments as places that foster creativity, Robert Nelson wrote[10]:

> *I denounce the contemporary academy in all anglophone countries for its structural aversion to creativity. In our learning and teaching culture, coursework programs are set up according to the doctrine of constructive alignment, where delivery and learning activities must align with stated learning outcomes and the assessment is solely designed for students to demonstrate that they have met the learning outcomes. Although logical and well-intentioned, this formula discourages imagination and is only good for uncreative study. The reasons are not simply that learning outcomes incline us to definable and measurable terms, unlike creativity and imagination. Even if definitions and measurement tools lay to hand, the reason that constructive alignment kills creativity is this straitening chain:*
>
> - *Learning outcomes must describe capabilities that the lecturer effectively teaches*
> - *We can never accept a learning outcome for something that we do not actively teach*
> - *It is difficult to teach creativity (though it can be fostered, just as it can be discouraged)*
> - *Because we cannot claim that we teach creativity, it is shameless to include it as a learning outcome*
> - *Creativity can be included as a learning outcome only by stealth or in defiance of constructive alignment*
> - *Creativity is a liability for teachers, because they can be accused of assessing something that they have never effectively taught.*
>
> *Alongside this constrictive demand only to assess the things that are taught and only to teach the things that are assessed, the reign of learning outcomes entails a ministry of criteria, resources and marking rubrics that encourages students to see their studies as a set of checklists, which they mechanistically scope and strategize toward the highest marks. Deviating from the learning outcomes…is a risk that few students are foolish enough to take.*[10 p10]

In spite of the challenging environment many teachers do try to encourage learners to use their creativity through the tasks and assignments they create to engage them in learning. In order to engage with a task the learner will already have 'undergone' (i.e. they have developed relevant and sufficient knowledge, understandings, skills, disposition and values to engage with the task in ways through which they are more likely to express themselves creatively). The role of education in developing senses of value cannot be underestimated since without it judgements as to what is or isn't creative cannot be made.[11]

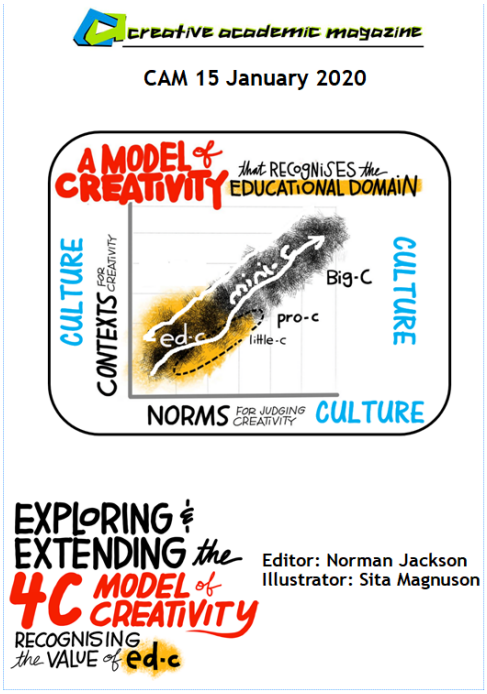
Through her grounded theory[1] Carly Lassig shows that adolescents' creativity involves a process of perceiving novelty (in the context of a disciplinary task or challenge) and then pursuing it, through a range of strategies, in order to be different from others or create something different from the norm. By pursing novelty that they perceive and immersing themselves wholeheartedly in the task they create ideas, processes, performances and products for themselves and develop themselves (undergo) as they fulfill their goals. While the learner will make their own judgements about the process they created and the outcomes that emerged from their process, in the educational environment the teacher and examiners are the most significant judges of the quality of students' as they mark or grade the outcomes in line with criteria set for the task and their own experiences and opinions.

The Figure 2 version of the Dewey model is contextualized for education. The red line represents the traces of a learner as they perceive novelty and then pursue it, in order to be different from others and/or create something different from the norm. The significant contribution that Carly Lassig makes through her research study and grounded theory of adolescents' creativity is that it provides deeper insights into the 'lines' that learners make, and how they make these lines as they interact with the educational world in which they are immersed. Another way of representing this process would be the ecology that individuals create in order to weave the things that matter to them in the context of their work and the environment they inhabit.[12]

Bringing things to life: the story of this magazine

I can draw on Dewey's heuristic to make sense of my experience of producing this magazine – a process that I relate to Rogers' concept of a creative process. Unconstrained by an institutional/organisational environment that controls what I can and can't do, I am driven to express myself through my impulses. However, what I am constrained by are the responses of my environment to what I try to do necessitating me to adjust my actions and intentions. "We do something to the thing and then it does something to us in return."[3 p46]

Producing an issue of Creative Academic Magazine is inspired by two things: 1) my commitment to sustaining the Creative Academic enterprise and continually looking for new ideas and content that I think will



be of value to our readers, 2) things that happen to me in my life that cause me to think about something or think differently about something. Such events trigger an emotional response that stimulates my imagination and motivates me to commit the time and energy necessary to produce the magazine. Once I have decided I then have the problem of turning the rough idea into something tangible. It is my engagement and struggle with the problem (my performance) through which I gain the necessary awareness to pursue courses of action that eventually lead to the production of the magazine. Because I have undertaken this journey many times before I have the belief that eventually I will be successful – but I have no idea what the end result will look like until its form begins to emerge as the journey has already partly unfolded.

Figure 3 Schematic representation of the trace of an individual's actions, interactions, effects and undergoing within Dewey's heuristic

In my experience an impulse to engage with a problem or opportunity is often not an instant unreflective reaction. Rather it grows as certain ideas and situations become connected in an idea that generates excitement and interest. Perhaps this is the slow version of an impulse. The impulse to produce this magazine began as an imagined idea that was triggered by two unconnected events in May 2019. The first involved me in facilitating an on-line conversation in the #creativeHE Forum in our 'Lets Get Creative' festival.[13] During the conversation I introduced the 4C model of creativity as a tool to help us interpret our own creative involvement in the festival.[4]

While the on-line discussion was in progress I participated in the UK Creativity Researchers conference at the University of Central Lancashire where I enjoyed a talk given by Thomas Colin, a doctoral researcher at the University of Plymouth. During the talk he showed a representation of a 2x3 grid for understanding creativity with 'norm' and 'context' as the labels for the two axes. When I saw this diagram I assumed it related to the 4C model of creativity. On the train home from the conferences I redrew my 4C framework diagram and shared it with Thomas to find out how I might give him due credit for his idea. He subsequently sent me an article he had written[14] which explained the background to his diagram.

I had assumed that Thomas had connected his ideas to the 4C model of creativity but he informed me that he hadn't made the connection to the 4C model but he could see how it was relevant, *"in my talk I didn't relate this 2-D approach to the 4C model or to any other, but I think you're right in pointing out analogies, and I like your version of the graph."* Colin kindly sent me a copy of a published article he had written in which he elaborated his views on the ambiguity contained in the standard definition of creativity.[14]

I began to share my ideas in the #creativeHE forum and one of the participants drew my attention to the work of an Australian academic Carly Lassig, highlighting her proposal for an educational-c (ed-c) domain which most people experience, in which creativity is both encouraged and constrained by the physical and cultural environment. I searched for and discovered Carly's doctoral dissertation[1] and was immediately engaged and inspired by her synthesis grounded theory for adolescents' creativity and the idea of extending the 4C model to include ed-c as a specific and important domain for creativity. If I had to declare a single moment when the impulse to produce this magazine became overwhelming it was when I dipped into Carly's thesis and recognised the potential in the idea to change the way we view creativity in higher education. Thanks to the internet, it was easy to find her and I emailed her to see if she would like to share her ideas through our Magazine. She responded positively to my invitation to collaborate and I am delighted that she agreed to share her understandings through the magazine. This was the point at which I was able to commit to the production of this magazine and my actions then focused on the 'obstacle' - the production of the magazine.

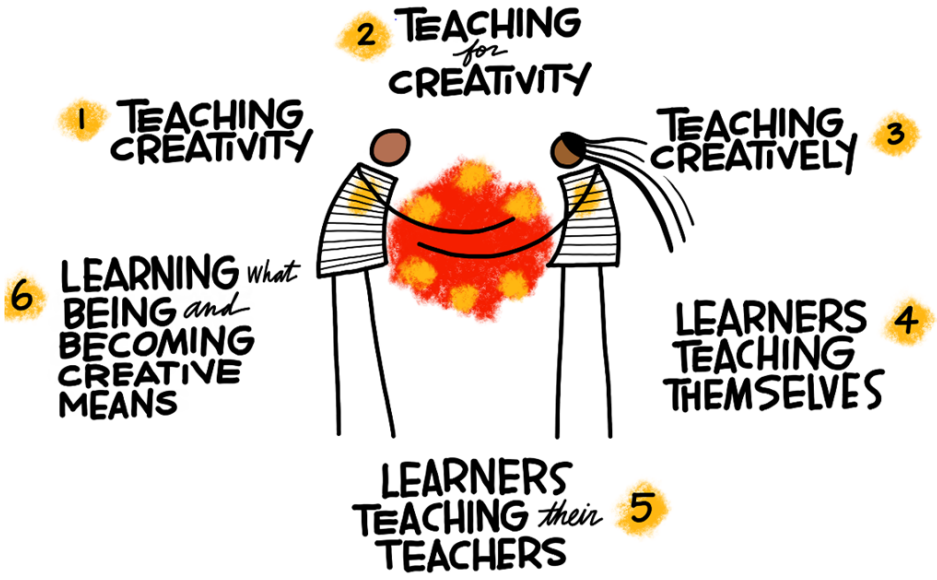
I wrote the first draft of 'Exploring and Extending the 4C model of Creativity' and shared it with James Kaufman one of the architects of the 4C model and this led to a skype conversation with James during which we explored some of the dimensions of his model.

In October 2019 I was invited to participate in a meeting of Harvard University's Learning Innovations Laboratory (LILA) where I facilitated a couple of sessions on the theme of learning ecologies. My talk was brought to visual life by Sita Magnuson a talented graphic facilitator. I asked her whether she would be interested in future collaboration and she said that she would. So in late November as the magazine began to take shape and it's form was revealed I contacted her to see if she would be interested in illustrating the content of this magazine and I was delighted to receive an enthusiastic response and so she and her work became an important part of this story.

I began producing the magazine in November when I was paying my annual visit to my mum in Australia. In fact, as I wrote these words I was sitting in the most inspiring location any writer could wish for close to Mollymook beach. [Little did I know that less than a month after returning to the UK this area was ravaged by bush fires and the bush I had enjoyed walking through had been destroyed].

While I was in Australia I received an email from Professor John Cowan sharing an article he had co-written with a group of engineering students at the University of Limerick in which they talked about the way one of their modules had encouraged them to be creative. I told him I liked the article, a few days later he emailed again to tell me that the article had been rejected for publication. I emailed back and invited him to consider submitting it to this issue of the magazine which he did and after a bit of toing and froing his article emerged.

This narrative might have lulled you into thinking that all the elements that led to the production of this magazine fell neatly into place, but I can assure you they didn't. After investing a lot of time in November I was forced to change my ideas and imagine quite a different form for the magazine. In other words, the obstacle that was my pathway to production forced me to reassess and reimagine what might be and caused me to change my thinking and actions and produce a very different result to what I first imagined. This change coincided with being sent a link to a short but thought provoking article by Alex Carter ***'You can't teach creativity but you can learn it?'***[15] which I posted in the #creativeHE discussion forum and I was delighted to see that it stimulated an interesting discussion which is curated in this magazine. Towards the end of the conversation I tried to synthesise my thoughts and offered these perspectives that I think reveals something of the complexity in the relationships between 'teaching', 'learning' and 'creativity' in educational environments.



it seems to me that there are at least six related and interconnected ideas entangled with the ideas of 'teaching', 'learning' and 'creativity' in educational environments: 1) teaching creativity- the inference that a teacher can encourage learners to think about what creativity might mean and through their enhanced understanding guide them towards being creative in certain ways and in certain situations 2) teaching for creativity - the inference that teachers can encourage and nurture learners to be creative in their own ways and situations 3) teaching creatively - when a teacher expresses themselves creatively through their own creative practices in situations that they create in order to engage learners and reveal the nature of their creativity to learners 4) learning what being and becoming creative means when teachers encourage and enable learners to think and talk about their own practices and effects and through this reflective process recognise and value their own creativity in particular situations 5) learners teaching themselves to be creative by engaging in thinking and acting that enables them to express themselves in unique ways to produce results and effects that are new to them for the situations they are in 6) learners teaching their teachers what creativity means to them as they share their understandings of how their practices, processes, products and performances were formed and teachers experience and observe learners in creative action. These relationships reveal that the creativity and creative development of teachers and learners in an educational environment involves partnership and collaboration and they are deeply entangled in a pedagogical-heutagogical dance either by accident or design.

In late December I came across an article[17] by Chris Wilson and Michael Brown in which they tackled the issue of value and creativity and given the important role played by education in the development of understanding of value. I invited Chris to make a contribution to the magazine[11].

"Creativity and culture are intertwined: the former uses the signs and tools made available by the latter to produce new cultural resources that go on to facilitate future creative acts"[18 p.2]

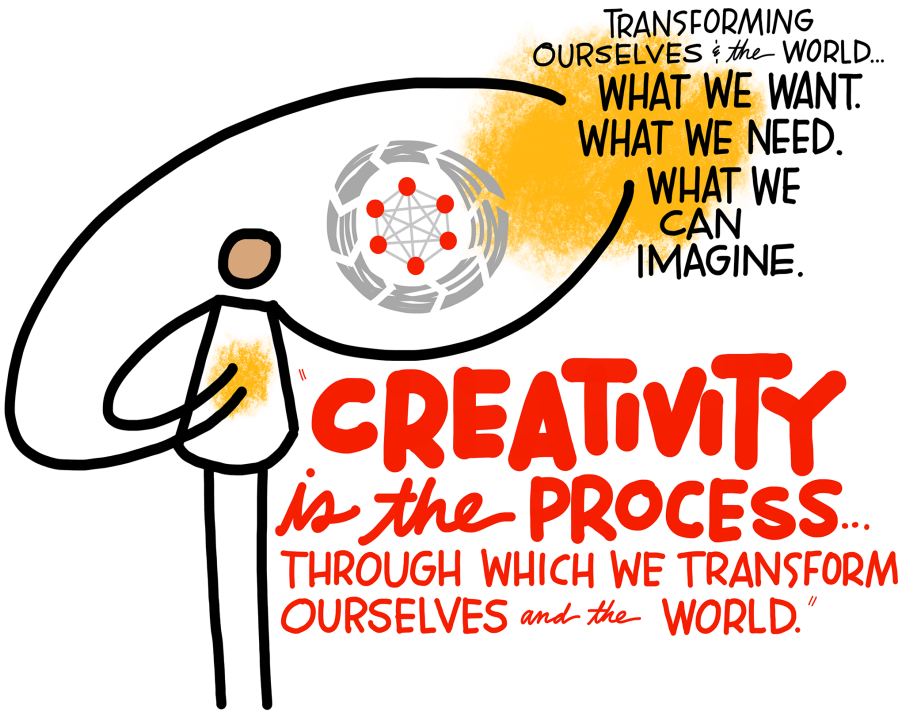
Once I had a complete article I could use it as a cognitive tool to draw others in to offer their perspectives. For example, I made good use of the curated Facebook conversation to invite Gillian Judson, Chrissi Nerantzi, Alex Carter, Paul Kleiman, Jenny Willis and Doug Cole to offer their perspectives on what was discussed.

Similarly, I used my exploring the 4C framework article to invite James Kaufman to offer his perspectives on the idea of ed-c.

So that is the story of my lines along which this magazine and my understandings continually came into being. Not through a "*network of connections but a meshwork of interwoven lines of [relationships and interactions] growth and movement.*"[9 p.3] My lines took me roughly in the direction I felt I needed to go without a clear and detailed view of what the magazine would eventually look like. My lines did not always take me where I thought I was going, sometimes they branched out in another direction as I experienced a steady emergence of form as I interacted with my material, social and cultural environment and my environment interacted with me. Through this process I sensed or guessed what needed to be done at each step of the way for this is the nature of an ecology for creative practice that is founded on enquiry and sense making.

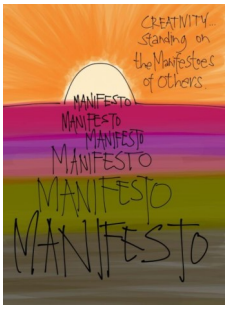
My experience and understandings of how the form of this magazine came into being aligns well with Tim Ingold's view of creativity *"to read creativity 'forwards', as an improvisatory joining in with formative processes, rather than 'backwards', as an abduction from a finished object to an intention in the mind of an agent."*[9] All the social constructs and practices entangled with the ideas of 'teaching' and 'creativity' are about providing opportunities for learners to develop themselves and for learners to act on these opportunities in order to appreciate and realise this truth and this is perhaps the main justification for highlighting the significance and value of the ed-c contextual domain in any model of human creativity.

Forever the optimist, I sense that there is an opportunity to advance the cause of creativity in higher education. In May 2019 Creative Academic facilitated discussion about the value of personal manifestos for teachers aimed at setting out how they could and would help create the conditions for their students' creative development. The process culminated in the collaborative production of a general manifesto. During the discussion I argued[16] that the creative challenge of the higher education teacher with their specialist knowledge and pedagogical expertise, is to enable learners to transform themselves an important dimension of which is to develop their creative potential. I also argued that 'Transformation' NOT 'Originality' is the core concept for a definition of creativity that education can appropriate for itself and form new practices around. Such a shift would move creativity to the heart of the educational process. After watching a TEDx talk by Greg Bennick[19] I adapted the definition he used and offer it as a starting point for discussion.

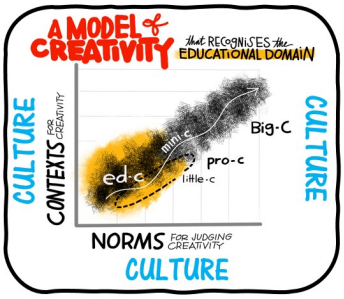


"creativity is the process through which we take elements of [ourselves and] the world around us and transform them into something new that reflects what we want, what we need what we can imagine [and in that process we transform ourselves and the world]"[19 video 1min 30s]

Carly Lassig's call for an ed-c domain makes perfect sense to me. It connects deeply to my ongoing process of undergoing which is slowly changing the way I think about creativity in education and human development and reinforcing my belief that we need to do more to draw attention to the meaning, significance and relevance of creativity in education and the importance of education in developing the creative potential of people and sustain and enrich our culture.



Creating personal manifestos to encourage creativity through teaching[17], refining our understanding of creativity as a transformative process at the heart of learning and performance[17], making a case for an ed-c domain within the well known and widely used 4C model of creativity[1,21] and recognising the important role played by teachers in creating small -world cultures within which imagination and creativity are able to flourish[22] are all steps towards advancing the cause of creativity in education and particularly higher education. They are all tools aimed at encouraging the culture of education to change.



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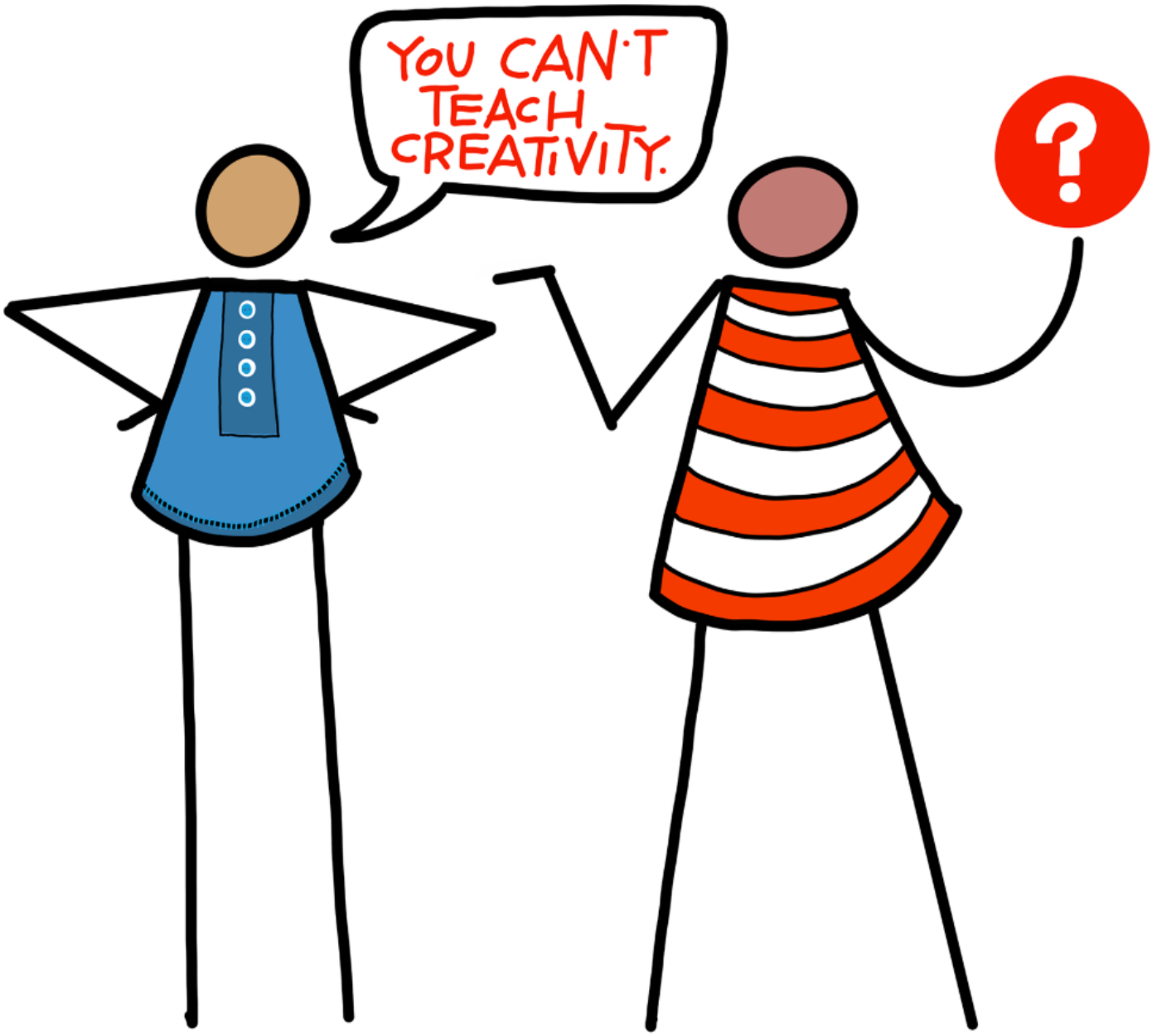

Editor

From time to time I come across an article which I know will make a good trigger for discussion in our #creativeHE Facebook forum. In early December I was sent a link to an article by Alex Carter with the provocative title 'You can't teach creativity but you can learn it?' I popped it into the forum with the invitation 'Any thoughts?' and over the next few weeks an interesting conversation was had. Alex kindly agreed to let us republish his article in the magazine.

You can't teach creativity, but can you learn it?

Alexander Carter

Alex is a Bye-Fellow at Fitzwilliam College, and is Academic Director for Philosophy and Interdisciplinary Studies at the University of Cambridge, Institute of Continuing Education where he has designed and delivered courses in philosophy, ethics and creativity theory. *"To give a little context... My "brief" for the article was to keep it accessible (i.e. it is not a journal article) and conversational—I was also limited to 900 words!"*

It is broadly accepted that, with 'Industry 4.0' in full swing, the employment landscape is changing. Increasingly, jobs are at risk of automation. Certainly, teachers like myself are not immune, with scripted artificial intelligence or AIs already being used to deliver taught content to students.

More generally, those I am teaching, and many people my own age, are looking forward to multiple-career lifetimes – each built on a raft of transferable skills. For these reasons, I have been working on a series of award-bearing and non-award-bearing courses at the University of Cambridge's Institute of Continuing Education aimed at developing the most in-demand soft skills, in particular creativity.

'You can't teach creativity?'

As a philosophy teacher, I am familiar with the idea that some learning cannot be taught *directly*. Ethics is a good example of this. No philosopher could (or should) claim to be able to "make you a more ethical person". Moreover, no curriculum on ethics can (or ought to) include the learning outcome "students will become more moral".

When it comes to developing students' creativity the story is much the same. No creativity theorist could (or should) claim to be able to "make you a more creative person". Likewise, no curriculum can (or ought to) include the learning outcome "students will become more creative".

Yet many curricula come close to saying just this. Indeed, I have studied and taught on philosophy courses that identify the "development of creative thinking" as a learning outcome. Naturally, most fall short of *guaranteeing* this – promising instead to "encourage creative practice".

But why mention it at all? Imagine if the same approach were to be applied to ethics: "By the end of this course, students will demonstrate an ability to act ethically" or "students will be encouraged to be ethical". Aside from anything else, one would hope that this might be a goal in any classroom – or any room, period.

When it comes to assessment, the question is how one can *demonstrate* that students have been encouraged to be more ethical/creative without knowing what it means to be ethical/creative. This is the 'problem of assessment' when it comes to skills. Bear in mind that 'knowing' here means 'having the answers'.

It might make sense to say that a teacher intends to encourage her students to think ethically/creatively, but this encouragement itself can only be successful (or assessed at all) if we know what we are encouraging the students to do specifically, that is, if it isn't just shouting 'be spontaneous!' (itself a paradox).

In short, the assessment of the skills in question contradicts the claim that, as skills, they can't be taught.

Confessions of a creativity theorist

If assessing creative thinking in philosophy courses is difficult (perhaps even impossible), then we can suppose that the problem is not made easier for courses dedicated to developing students' *creativity* in and of itself.

Having faced this particular challenge recently, I must confess that I have taken a cautious approach in developing my own courses in both Creativity Theory and Applied Creativity.

This amounts to a confession if only because I tell my students that creativity requires 'permission to fail' – a willingness to take chances in order to produce something new.

For instance, I began by developing courses in Creativity *Theory*, in part because of the focus on knowledge rather than skills. Moreover, the underlying disciplines – for example philosophy, English literature, history, psychology are already associated with familiar academic skills, such as creative and critical thinking, argument and analysis.

At the same time, however, I congratulated myself on choosing specific methods of assessment that would lend themselves to the development of creativity. Ensuring that students could submit essays formatively for feedback *before* they submitted them summatively at the end of the year granted the students (to some extent) 'permission to fail'; allowing them to 'try their hand' at unfamiliar disciplines or topics.

However, I have simply delayed the real challenge: of how I might assess students' creativity in general.

A fork in the road

With this as my goal, it seems that two pathways lie open to me.

The first pathway is the adoption of a procedural understanding of creativity, the basic premise of which is that: we can all learn *how* to create even if we never learn what creativity is. Assessment, in this case, involves (for want of a better word) a checklist. In creating something, has the student considered their own approach (check!), considered alternatives (check!), identified various methods (check!), and so on.

The problem here is that students are being asked, like Damien Hirst's proxies, to 'create by numbers' (albeit that students do pick from a range of possible numbers). Those who take this pathway have at least found a solution to the problem of assessment but, I suggest, not a very creative solution.

The second pathway asks us to adopt some kind of rubric or framework for assessing creativity. For instance, students who 'make use of existing concepts in familiar contexts' might be described as 'uncreative'. Those who 'make use of existing concepts in novel contexts' as 'somewhat creative'. Those who 'make use of new concepts in novel contexts' as 'creative geniuses'.

Shockingly, such rubrics do exist. Although, it seems to me, that these are intended for teachers who perhaps have no other choice but to use them. Yet, as with the first pathway, the main problem here is that the teachers' surprise, rather than the students' creativity, is what is being assessed.

And yet this might point towards a way of approaching the two pathways listed above: to take the students with us. I am not the first to suggest that the best way to develop students' creativity is to reimagine the student-teacher relationship as one of co-creation. As co-creators, it seems to me that either of these pathways could work.

For instance, the process for creating something is not something that should be imposed from without, but rather is worked on collaboratively. Likewise, the use of a creative framework is something the student and teacher can agree on – the student might propose an easy test, whilst the job of the teacher is to challenge them and push them to new heights.

In short, then, the solution to the problem of assessment means recognising that – at both ends of the creative process – the teacher does not 'have the answers'. The learning and the assessment ought to belong to the student and the teacher in concert.

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You can't teach creativity but you can learn it! Transcript of a #creativeHE on-line Discussion

Editor
Conversations about creativity in higher education are important for sharing ideas and perspectives and the development of new understanding. They are essential to making the case that education provides an im-portant context for the development of creative human beings and societies and for arguing the case that any contextual/cultural model of creativity should pay attention to the role of education in the development of creative potential.

From time to time I come across an article which I know will make a good trigger for discussion in our #creativeHE Facebook forum. In early December I was sent a link to an article by Alex Carter with the provocative title *'You can't teach creativity but you can learn it?'*[1] So I popped it into the forum with the invitation 'Any thoughts?' and this is the transcript of the conversation. So three cheers for Alex Carter for providing the catalyst for conversation.

Kevin Byron If something can be defined, it can also be assessed by looking in the outcomes for evidence of those elements that define it. For example, one definition of creativity concerns combining existing ideas/ methods/materials/people/knowledge in a new way. In assessing creativity according to this definition it's a matter of deconstruction to identify the elements that have been combined. However there are degree of combining from simply feature addition (low level) to emergence where the sum of the elements is greater than the parts (high level). Creativity however as we know has been defined in many different ways.....

Marta Davidovich I wish the author of this article read your books Norman! He seems to be unaware there is a whole field of educators, researchers and psychologists who dedicated their careers to teaching for creativity. In my view, creativity is a phenomenon that lives on a continuum that starts with unactualized potential and ends with fully actualized potential. Humans move toward actualization across the lifespan. We are born dreaming and imagining and wired for creativity - defined as "the person-centered process of imagining possibilities and taking embodied expressive action to make our ideas real." It begins with playing with possibilities, engaging with questions and curiosity and what we find personally interesting and meaningful, and ends when the creator has met her/his objective. Creativity develops through engagement in process. Products are not creativity- they are potential artifacts of engagement with creativity. Increased feelings of well-being and joyful self expression can also be outcomes of creativity. There are countless educators who teach for creativity by creating safe environments for self-expression and awakening personal creative potential in ways the creator finds meaningful.

Kevin Byron I think the problem is in what we understand by 'Teach'. If it's only the transmission of facts then we can't teach creativity. The term 'Nurture' is often used with creativity rather than 'Teach'. As a teacher/ tutor/coach/facilitator all we can ever do is enable creativity to flourish when it is required. That means amongst other things, having an environment where making mistakes is not a problem, because creativity emerges in the midst of trying and failing. There are tools and techniques that help nurture creativity and to some extent they are taught, but it is only in the practice of them that they have value. If someone had been taught nothing factual about creativity they would be equally creative as someone who had, because it is part of what defines us as human. Can you teach breathing? well you can learn some techniques to improve your breathing if that is needed, but we can still breathe well without them!

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Norman Jackson Thanks to Alex for providing an interesting perspective. Lots of ideas to explore here. The problem I have with the idea of teaching creativity is that the teaching is often grounded in academic abstract contexts rather than real experiential situations that demand creativity. We can teach techniques that enable people to use their imaginations to generate lots of possibilities from which ideas can be selected and developed, but is that the way we really think when we are faced with some complex problem that requires us to think on our feet and use limited resources that are available to us to come up with solutions that are novel and appropriate for a particular, perhaps unique, situation. As Dewey's interactionist model of creativity shows us the invention of a creative solution has to be experienced in order to be understood. It's only through our awareness of the experience and our effects that we can recognise creativity.

This begs the question of whether a teacher can ever judge whether a learner has been creative without participating in a co-constructed process that enables them to understand the learner's creativity through their perceptions of their own experience. If creativity is socially constructed then it is necessary for learners to be involved in negotiating the criteria against which they will make claims and by which they will be judged. The extension of this logic is that the role of the teacher is to help learners develop the skills and awareness necessary to recognize and judge their own creativity, and to develop the evidence to substantiate any claims. I remember a chapter written by John Cowan 'How will I assess them?' that described an idealised pedagogical process that aimed to do exactly this.

Marta Davidovich Norman Jackson and Kevin Byron you both make great points. It really does matter how we define and understand all the terms we use. I consider teaching an experiential process of hand's on engagement along with conversations about different perspectives and components of the process - from how the brain and body work together, to all the implicit and explicit elements involved. In my classes - it seems more precise to say my students are exposed to information and experiences that help shift or transform their 'old creativity stories' into new ones.

Paul Kleiman Greetings all and thanks, Norman, for pointing this in my direction. Some initial thoughts. On one level Carter is right. Creativity is not so much a matter of teaching and learning, but more a matter of being and becoming in an encouraging, enabling environment. Or, as in the title of my PhD thesis on conceptions of creativity based on the verbs colleagues used to describe creativity in their pedagogic practice: Thinking, Making, Doing, Solving, Dreaming. In regard to assessment, the research shows that when it comes to assessing creative products (the making/doing/solving as a result of the thinking/dreaming) the inter-rater reliability is better amongst a group of experts discussing and assessing the 'product' than when that same group of experts assess the product against a set list of criteria.

John Cowan I reject the suggestion that anyone else can judge my creativity. perhaps audited by others when I tell them the data on which I base my self-judgement, the criteria against which I have made that judgement, and the consequent judgement. The auditing may or may not find flaws in my process and hence in my judgement. Feedback to that effect may assist or prompt me to revise my self-assessment. But the final assessment of my creativity will still have to be mine, based on what I know of my processes.

I am the only person with intimate and detailed knowledge of what my brain did in responding to a task. For that reason, assessment of my creativity has to be self-assessment.

Many years ago, I recall using the example which follows in response to another request from Norman Jackson. Please forgive repetition; like many boring old men I tend to retell my stories. This one recalls a request for assistance from an educational developer who had been faced with a difficult and important opportunity to run an effective staff workshop with a clearly stated aim. He described the setting, and the remit. I thought for a few moments, and then outlined what I would suggest as an effective response to his challenge. He responded positively, finding my suggestion just what he was seeking. He then enthused at my creativity in coming up with such an original plan. I politely and honestly demurred. I told him that my plan was hardly original. It was an adaptation of something that the great Graham Gibbs had once described to me, with different aims and in a very different context. I had tweaked and adapted this to simply produce an adaptation that met my friends need. Far from original creativity; and I knew that, despite how it had appeared to him. A valid assessment of my "creativity" could only come from me, myself, having access to the details of what I had done.

My response to the main question in this discussion builds on the importance of self-assessment where creativity, or any higher level ability, is being assessed. You can't teach creativity, but can you learn it?" In my view, you cannot teach creativity, nor does one learn it. I'll try to justify these standpoints in another post drawing on a recent example.

Kevin Byron I have issue with the notion that anyone has 'intimate and detailed knowledge of what one's brain did in responding to a task' .Nobody really understands how we have insights, though there are conflicting theories on this. Both theories however tell us that these processes are operating beneath our conscious awareness? With regard to assessing creativity, there clearly is creativity with and without value at least to society. The whole range of forms of intellectual property from copyright to patents, trade marks, registered design for example, sit in a legal framework that aims to identify creativity with value. That's not to say it all

ends up having value. The peer review process that underpins creativity assessment is the only way research containing original ideas can be tested reliably for value. So we can easily say everything we decide is creative really is, but society thinks otherwise!

Jennifer Willis Thank you Norman Jackson and John for this challenging question. Like other contributors, I have been addressing these related issues for many years, dating back to research we conducted at SCEPTrE in the early 2000s.

John's post highlights for me the issue of critical thinking and self-awareness. I would suggest that we can help develop these skills, as a step towards assessment of our individual creativity (i.e. creativity at the mini and small c levels in the Kaufman and Beghetto 4C model of creativity[2].

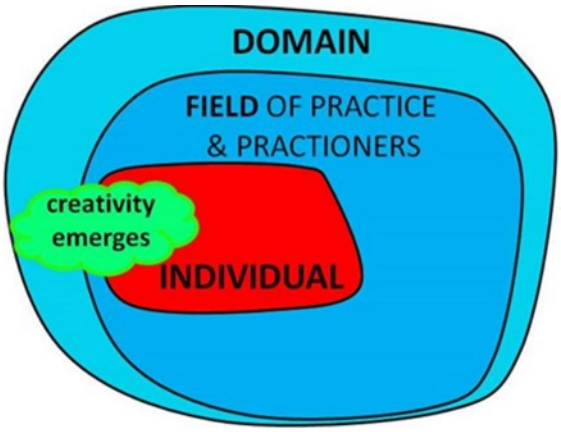
I am going to be cynical, now, about assessment of creativity at the other end of the creativity spectrum, and suggest that this is largely driven by trends in public opinion. What role is played in this context by media, money, jumping on band wagons, being in with the 'in crowd' (showing my age!), sycophants etc? I am thinking about the notorious banana strapped to a wall last week and deemed to be creative. I was more impressed by the person who ate the banana and the replacement of a new banana. Was this second piece more creative than the first?

Paul Kleiman Jennifer Willis When it comes to judging the visual arts, it's worth bearing in mind that it is generally accepted by art experts that the most influential (creative?) work of modern art was Duchamp's 'Fountain' - the ready-made urinal.

Which brings us back to the complex relationship between the individual creator, the domain within which s/he is operating or where the work is placed, and the field of audience, experts, media etc, (Czikzentmihalyi's model). Also what happens when established relationships, discourses and practices are challenged or fractured?

And coming back to the original question, it suggests that while creativity may not be taught or learnt in a traditional transmission-reception mode, we can certainly help to open students' minds to what might be possible, and help to create environments full of creative potential and possibilities.

Jennifer Willis As I have just returned from two hours' teaching 'creative writing' to adolescents, it is seemly to return to John Cowan's original question.



I am employed on the presumption that creativity can be taught, and this is one of the skills that must be demonstrated at GCSE. There are clear assessment criteria, and I can drill my students in seeking to address these in their work but ... does their work equate to something creative? Yes, it may observe the rules; yes, it may be something new to the individual hence is technically creative but…

Sadly, I am brought back to the old chestnut of creativity and productivity. Is what they have produced deserving of the term 'creative'? And hidden within this is the issue of values, to which Paul Kleiman refers. My English example typifies Csikszentmihalyi's [systems model of creativity[3] see image on left,] where creativity emerges in the context of a domain (here, English GCSE), the values of the field of experts and the individual.

My ambition is for my students to create something that surpasses this context-bound notion. But there I betray my own prejudices!

John Cowan In my view, you cannot teach creativity, nor does one learn it. I'll try to justify these standpoints in a few paragraphs and a recent example.

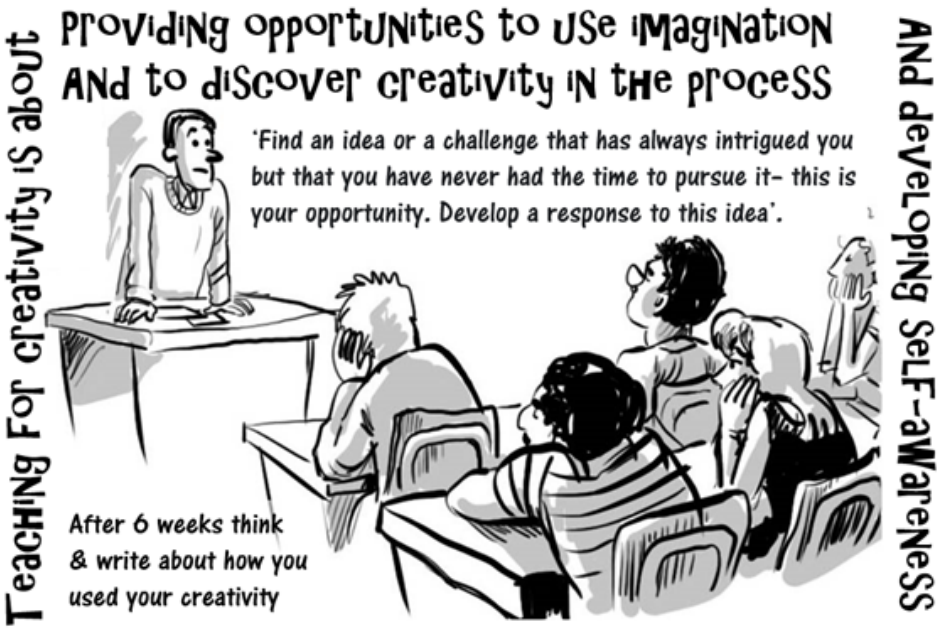
From what I have seen of my children, grandchildren and great-grandchildren, I would argue that most of us are born with the natural ability to be creative. However, this is an ability which I see steadily discouraged and side-lined into disuse by well-intentioned teacher-directed regimes in primary and secondary school, and in many universities. This seems so even when the learning is called learner-centred, because most teachers still decide and busily facilitate what they wish that to entail. I believe that to revitalise innate creative ability is not something which calls for any teaching at all. I would rather advocate a liberal interpretation of responsibility for nurturing learning as "the purposeful creation of situations from which motivated learners should not be able to escape without learning or developing."

to revitalise innate creative ability is not something which calls for any teaching at all. I would rather advocate a liberal interpretation of responsibility for nurturing learning as *"the purposeful creation of situations from which motivated learners should not be able to escape without learning or developing."*

Only a few months ago I encountered evidence of the impact of one such approach on the effective promotion of creative activity. I was providing online facilitation to students of civil engineering in the University of Limerick who were charged to review their learning and development in the first seven weeks of a semester concentrating inter alia on the promotion of creativity. They were expected to describe what being creative had entailed, how rebirth and development of that ability had come about, and to support their account by summarising the evidence or data on which they based their claim for development. All this after a mere six weeks! In these six weeks they had been confronted with a range of totally open-ended and highly demanding

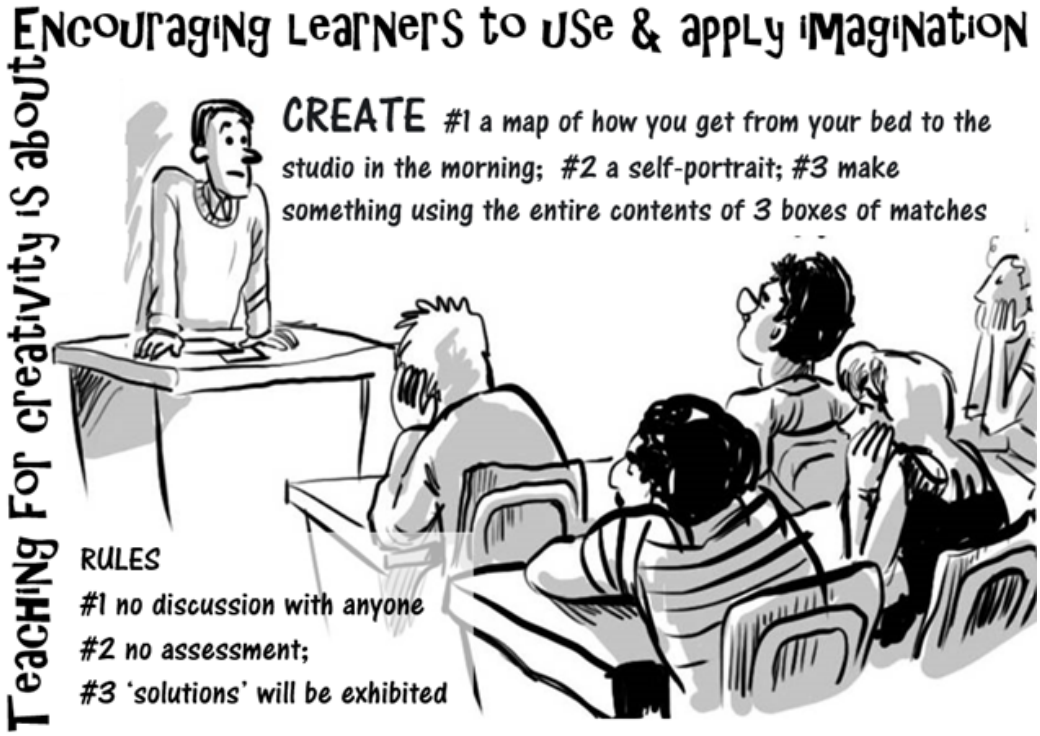
challenges, and given no suggestions about how they should tackle them, other than the demand which most tasks included to present oral reports to group or class at weekly intervals. Their "teachers" outlined each task in clear and simple terms, facilitated one or two non-directive but nurturing activities, and then left the students to it. Of one such case, a student wrote:

"I have found that the design studio module has challenged me creatively. It is designed to get us thinking differently and I would say that simply stated but complex demand is the hardest challenge I have faced so far. We were given a broad brief 'Find an idea or a challenge that has always intrigued you but that you have never had the time to pursue it- this is your opportunity. Develop a response to this idea'. I found this assignment extremely difficult; my mind went blank when I was given no guidance on what topic to pursue. I learned a lot in the process of completing this assignment, I had to learn how to brainstorm effectively on my own. "



These self-assessing reviews written in the seventh week told an inspiring story of conscious transition from what one described as "the rigidity of schooling from ages 4-18" where 'In school your creativity was taught out of you." Here was a group of enthusiastic and increasingly creative young students who had not been taught to be creative; they had not learned to be creative; they had been placed in a context where they had been encouraged and expected to rediscover their creativity, had done so; and they now rejoiced in their development.

Paul Kleiman John Cowan's description of the creative challenges those civil engineering faced is similar to the challenges we used to put to first year design students right at the start of the year. Alongside the 'normal' curriculum framed by module specs, learning outcomes, assessment methodologies etc., we asked them to tackle six design 'problems'. They included 'problems' like create a map of how you get from your bed to the studio in the morning; a self-portrait; take three boxes of matches and create something using the entire contents and boxes...all completely open:



The project 'rules' were:
1 no discussion with either tutors or other students;
2 no assessment;
3 all 'solutions' to be exhibited just before the end of term with a proper opening to which everyone would be invited.
Some colleagues insisted no students would do it if it wasn't assessed. How wrong they were!

Many of the solutions were incredibly creative and, of course, that was the main point of the project: for students, many straight from A levels, to understand that they were creative, did have good ideas, could create work on their own, [and] have confidence in their own abilities.

Jennifer Willis Thanks Paul Kleiman. I quite agree that learners often underestimate their own creativity and that we can help in bringing them to an appreciation of this. John Cowan's piece also reminds us of the need to allow students to experiment and take risks, without fear of ridicule. Both your example and John's illustrate my own belief that good teaching is dependent upon positive teacher-learner relationships, where respect and confidence enable risk-taking.

Norman Jackson (facilitator)
Robert Nelson's article[4] is also worth tossing into the mix.

Jennifer Willis Idealistically, I agree with Nelson, but if I were still working in a formal institution, I realise that I would not have the freedom he and I would wish for. Sadly, expectations of predetermined outcomes are only exacerbated by consumerism in our universities and schools.

One of my arguments is that the impact of teaching/learning is not only immediate: the source of my sudden burst of creativity might lie way back in something I was exposed to. Assessment cannot hope to capture such deferred creation. And creativity is not linear: developing critical thinking is not constrained by field boundaries. Let me illustrate what I mean. Last night, I was preparing some students for the type of creative writing required in GCSE paper 2, where they have to be able to argue a point of view. The actual question used to practise these skills focused on fame.

Clearly, before you can demonstrate the creative skills required, you need to have thought about the issues and planned your response. I was delighted by the creative processes my students displayed as their ideas progressed from different types and causes of fame, through the psychological impact, into areas of psychology and psychiatry (which they had many questions about), touching on exploitation and infringing social boundaries, and many more apparently irrelevant issues. For me, such discussions are invaluable and I know that the students gain far more than if we had stuck rigidly to a narrow brief. I hope that the wicked skills they were practising and developing will stand them in stead in the future and their writing will be more creative as a result. For my colleague, though, such methods are anathema. Only time will tell which of us is more effective.

Norman Jackson (facilitator) 'Teaching the value of creativity and its role in creating new value.'
Thank you to everyone who has contributed so far. I would like to gather together a number of ideas in the posts and pick up on the idea of values touched on by JW since you can't have creativity without considering value. If we use our creativity along with relevant knowledge, capabilities and dispositions to produce or perform something of value, then the question of whose values becomes important. Context is important because it contains values – cultural, individual and significant others in social groups that share or reject certain values. The educational environment is stuffed full of values, indeed it's an important environment for encouraging learners to adopt the values of society, the teaching profession and the discipline. It is not surprising that when it comes down to assessment it is these values, codified in instructions and criteria that, that prevail. But we can view this value-laden environment as a constraint and we know that human creativity loves the challenge of working with and overcoming constraints. John Dewey recognised this over 100 years ago.

While teachers may not teach creativity, they do communicate that individuals' creativity is valued and is valuable. Being encouraged by teachers to perform within the framework they provide and be assessed using the criteria they (or others) determine, is essentially defining a value system within which learners have to work. We might argue that in spite of all the negative things we might say about formal education as an environment that facilitates creativity, it really is no different to other value laden environments (e.g. work) in which we have to use our creativity in order to perform.

As John and Paul illustrate, in higher education at least, teachers do not 'instruct' learners in how to be creative. Their role is to enable learners to explore and understand their own creativity through an interactive, co-created process. What they do is demonstrate why and how creativity is important in their professional value system. As John suggests, their role as teacher is to help and enable learners discover what creativity means to them in the particular context in which they are working. Teaching (helping learners discover) their own creativity, is about providing the conditions that encourage and enable learners to interact with their environment and with each other to create (make or perform) something of value. These conditions contain the educational/disciplinary value system and encourage participation in tasks and challenges that contain affordance (opportunity for imagination and action) through which creativity might emerge.

Teaching for creativity enables learners to perceive for themselves the opportunities for creative action and to motivate themselves to engage deeply with their project. Teachers in a discipline will, through their own modelling, be 'teaching' (by example) learners to think (including imagine) and act like a – geologist, archaeologist, engineer, lawyer etc. In this way the disciplinary and related professional context provides the specific landscape within which creativity will be enacted and therefore shape the form of its presence and manifestation.

Teaching for creativity also involves encouraging learners to share the results of their efforts and to reflect on and make sense of their experience to draw out deeper meanings, to evaluate the effects of actions and to be aware of the ways in which their creativity emerged. In this way education is not just serving the purpose of engaging in a particular task in a particular way, it is preparing people for a lifetime of engaging creatively in new situations and challenges.

There is no right or wrong way of looking at this so please share your own perspectives and experiences so that we can develop a more comprehensive picture.

Jennifer Willis I would like to pick up the issue of valuing creativity, specifically that at the personal, mini and small c end of the spectrum.

In May of this year, we held a Facebook discussion by way of contribution to the BBC's creativity festival. My personal contribution was formed around the following proposition:

"By failing to recognise our individual small c achievements, we are doing ourselves and wider society an injustice. In Bourdieusian terms, we are allowing ourselves to be the victims of symbolic violence by becoming complicit in rejecting the importance of these creative achievements for our personal sense of wellbeing."

By focusing on creativity at the professional and big end of the spectrum, are we not in danger of forgetting the importance role creativity plays in making our leaves meaningful and pleasurable? Some of us may instinctively recognise the value of our small acts of creativity; as teachers, we can develop others' sense of appreciation.

> **Norman Jackson** I don't think we are denying the existence of small c everyday creativity in our personal lives Jennifer Willis. But in this discussion we are focusing on the educational environment and the proposition that you can't teach creativity, but can you learn it? Perhaps another way of exploring this question is 'can we teach ourselves to be creative?' which might link back to the points you are making.
>
> **Kevin Byron** The 4C's model identifies 4 different qualities of creativity, but in effect all creativity starts at the origin on the visual representation of this model. That is to say nothing ever arrives 'ready-made' at the higher 'C' levels. So Big 'C' creativity always started off at the small 'c' end first. How could it be otherwise?

Joy Joy Apologies for my tardy contribution - it's that time of year. I liked very much John Cowan's interpretation of **teaching as nurturing learning through "the purposeful creation of situations from which motivated learners should not be able to escape without learning or developing."** Some learning cannot be taught directly, as Alex Carter observes. Kieran Egan has described a program in primary schools (which runs in parallel with the standard curriculum) in which students with a whole lot of fanfare are given a topic – like bees, or trees, or clowns or flight – which they pursue through the full years of primary school, with the children in the school becoming recognised 'experts' in their field. The 'teaching' here is more like mentoring, and is focused on deepening and extending the investigation of the web of knowledge, and its interrelationships. The approach seems to encourage the development of expertise, depth and range concurrently. And a personal experience that creative pursuits can be characterised by – perhaps – endings, boredoms, hiatus and then burgeoning anew; overlapping conceptions. All good things for creativity.

This has similarities to the inquiry method of learning, popular in sciences in higher education, which leaves room for open-ended investigation.

If we accept the assertion that students take heed of what is what is assessed, as it signals what their teachers ascribe values to, then we have to try to integrate imaginative and creative thinking into assessments. Even if the rubrics we use are not perfect, bringing students into dialogue with the concepts underlying the rubrics can engage them in personal and critical reflection, and re-development of the rubric. Or if assessments can be flexibly applied so that students can for example, justify (in a meeting with the teacher) why they changed their mind about a contention they argued in an essay by the time of the due date. There has to be ways around the problem of how assessment impedes creativity.

Holly Warren We are creative beings. Conventions that our contexts have created set very strict boundaries that brings us to limit our creative expression. Creativity doesn't need to be taught but extracted and allowed to thrive. A good teacher facilitates the process.

All instincts are sedated and tamed made to fit in our society. If we see creativity as a skill this will emerge when it is given the correct soil to grow in. As a teacher but better still a facilitator, councillor, consultant and catalyst[8] we can demonstrate what this can produce. There are no co-creators really, as you are the only one in your mind in the true Think Tank philosophy.

> **Chrissi Nerantzi** Hi Holly Warren you made an interesting response. I see the co-creators as a buddy in the creative process. A recent study I did confirmed that the individual is the driving force for creativity and innovation but that individuals also value the collaboration with others. I feel that the process is enriched and the potential for creativity expanded. I am not suggesting that we do everything together. Could you please tell us a bit more about what you say linked to co-creation? Thank you so much.

Chrissi Nerantzi thank you so much for sharing this article with us all Alex Carter raised important questions and dilemmas. The suggestion about co-creation, co-experimentation and experiencing creativity in practice may indeed be a strategy that has the power to empower our colleagues and students to consider more creative approaches. I also think that this can happen more/better if there is a trust relationship perhaps? Trust makes us, I think, more tolerant to more unusual strategies and we take risks in a safe place and space. How can we go on a creative exploration with our learners? Looking forward to your views.

Maria Kefalogianni Hi all , thanks for inspiration through your lovely responses ...it's this time of the year and I been doing some marking today: I confess-Reading all responses I caught myself thinking ,could we find a more creative way of engaging in this very conversation ?😆perhaps videos ?apologies I been staring on a screen reading essays all day, hence the despair I'll free flow as a way of my responding ,maybe I'll even get to answer the questions ,maybe not...but that s ok...bare with me...

Talking on despair, is it maybe the portal to our creativity ?

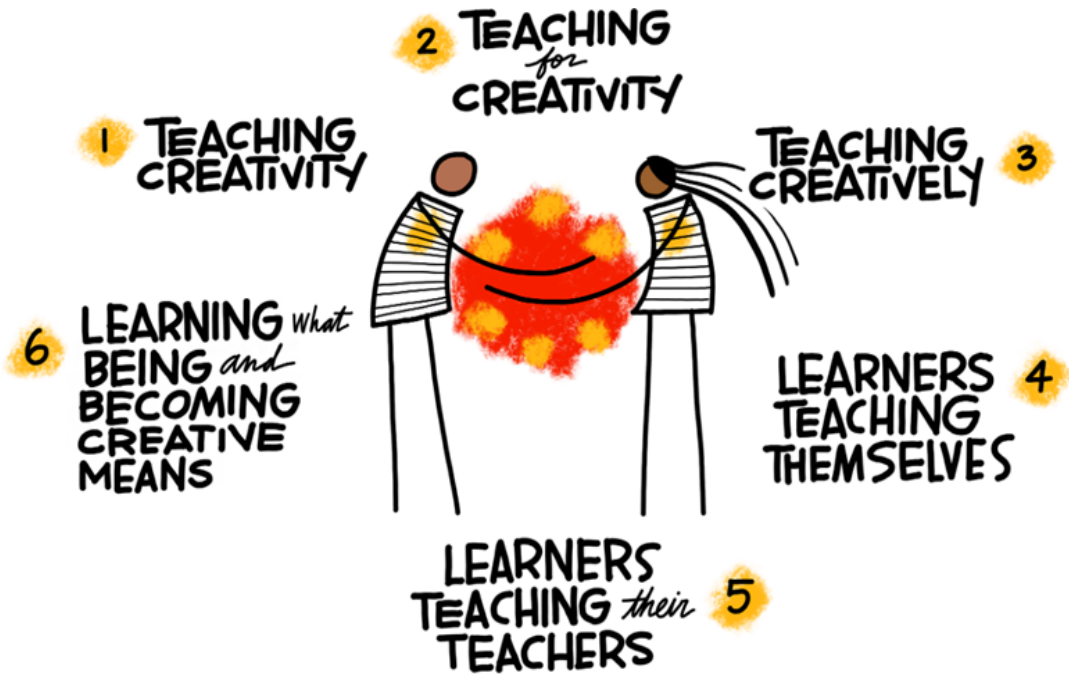
I think we can't teach creativity, we can embody a creative relationship to life ,and role model that through our ways of facilitation trusting the individual will connect with their creativity .we can of course show ways of being creative ..

I see creative spark as a very individual and unique thing and paradoxically ,for me, creativity is also fundamentally relational .the more brains the more ideas /creative solutions... I don't want to teach creativity I would ideally want to engage in some facilitation so that my students unleash their own creative spark. This contrasts perhaps an environment where is fuelled with assessments .is assessing creativity almost saying to them : well ,you can only be creative within these parameters ?this feels a little limiting for me (but is a good start in a constraining system). Imagine a world where creativity wouldn't need to be assessed ,where people were offered trusting spaces like Chrissi Nerantzi says to be safely unsafe, experiment, discover, be willing to be silly and reconnect with their childlike curiosity ,maybe it wouldn't be sustainable ?maybe it would be chaos ...or maybe we would be much happier being creatively responsive with less resources.. I am thinking of contexts in countries where the kids have no plastic toys ,they still discover ways to play. Less is more and that is a deep contrast in a society where we are conditioned to believe (if we let it) that we need more tools knowledge equipment ; maybe the true nature of creativity lie in its un-learning ? I feel we live in times calling us to step up and step away, perhaps, of the familiar in search for the old new ....

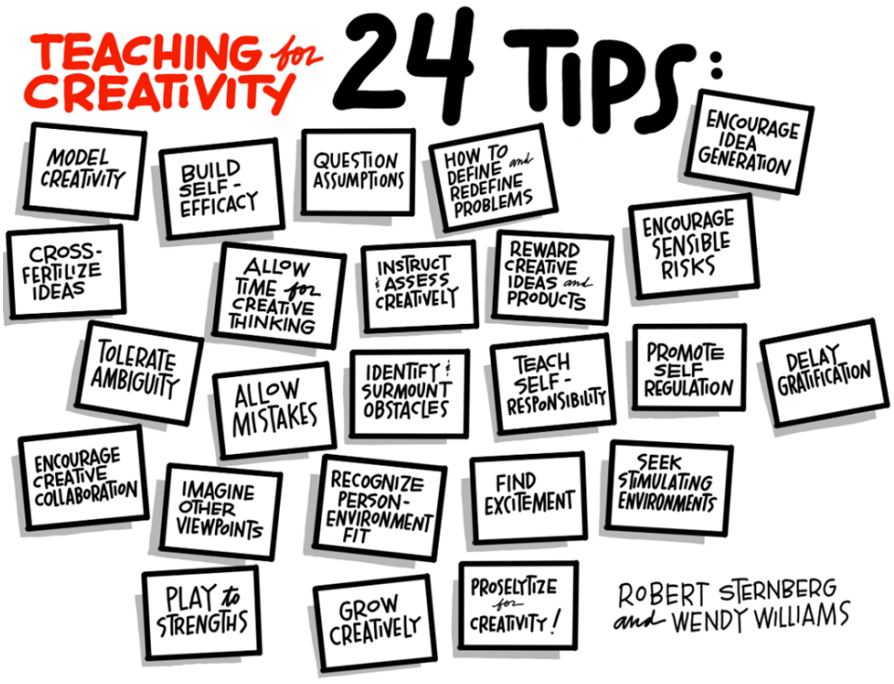
Carly Lassig I think the distinction between teaching creativity and teaching for creativity is useful. Although creativity may not be a skill we can impart on students directly, I think it's useful to start by teaching about creativity. We need shared conceptions of creativity if students are to understand what we mean when we ask them to "Be creative!" We can also teach for creativity by using pedagogies that research have shown to stimulate, encourage and develop creativity. This also includes a consideration of the curriculum we plan and the learning environment we create.

> **Norman Jackson** I am reminded of the conceptual framework for 'creative pedagogy' developed by Yu-Sien Lin[9].
>
> *"Informed by the assumptions and the aspects of creativity nurtured within education, a framework of creative pedagogy is proposed to illustrates the relationship between creativity and pedagogical practices. Creative pedagogy is put forward to describe practice that enhances creative development through three interrelated elements—creative teaching, teaching for creativity, and creative learning. Rather than a situation in which teaching and learning are two parallel processes that rarely meet, the three interconnected elements complement and result in each other, rendering it a resonant process. A supportive climate for developing creative abilities and qualities is created through the interaction between inventive and effective teaching (by the creative facilitator), and creative learning (by the active learner)"* [9 p151-2]

Norman Jackson Building on these ideas of a complex set of relationships between teacher, learner, practices, tasks, motivations, interactions and effects, it seems to me that there are at least six related and interconnected ideas entangled with the ideas of 'teaching', 'learning' and 'creativity' in educational environments: 1) teaching creativity- the inference that a teacher can encourage learners to think about what creativity might mean and through their enhanced understanding guide them towards being creative in certain ways and in certain situations 2) teaching for creativity - the inference that teachers can encourage and nurture learners to be creative in their own ways and situations 3) teaching creatively - when a teacher expresses themselves creatively through their own creative practices in situations that they create in order to engage learners and reveal the nature of their creativity to learners 4) learning what being and becoming creative means when teachers encourage and enable learners to think and talk about their own practices and effects and through this reflective process recognise and value their own creativity in particular situations 5) learners teaching themselves to be creative by engaging in thinking and acting that enables them to express themselves in unique ways to produce results and effects that are new to them for the situations they are in 6) learners teaching their teachers what creativity means to them as they share their understandings of how their practices, processes, products and performances were formed and teachers experience and observe learners in creative action. These relationships reveal that the creativity and creative development of teachers and learners in an educational environment involves partnership and collaboration in which they are deeply entangled in a pedagogical-heutagogical dance by accident or design.



Where creativity is concerned, there is an ecological continuum of interconnected practices from *teaching about something* to *learning to be and become* through experiences of doing and trying to accomplish something of value and significance. A continuum that embraces teacher directed practices that encourage and facilitate learners' creative development and self-awareness as to what being creative means, and the self-motivated and self-directed (self-regulated) practices of learners that yield experiences of being creative and provide the experiential knowledge and emotional experience through which deeper understandings and identities are created. This continuum of interaction can take place at any level of the education system but at the highest levels, when learners engage in cognitive and practical apprenticeships for future work roles in particular domains, teaching and learning practices are oriented towards learning to be creative in that domain. In this way formal education at all levels provides the platform for learning what creativity means and what it means to be creative in different contexts and situations, and at higher levels for learning what it means to be creative in domain specific contexts and situations. At the highest level, education provides the gateway to creativity in domains where specialist knowledge, skill and expertise are essential to being creative. This is not to deny the fact that other experiences in life outside formal education can also provide platforms and catalysts for individuals' creativity and creative development.



Norman Jackson (facilitator) As a way of rounding off this stage of the never-ending conversation I am posting Robert Sternberg and Wendy William's[2] two dozen tips for teaching for creativity.

AFTERTOUGHTS: some reflections on the whole conversation

Paul Kleiman I've just read through the whole thread and the thought occurs that while we have all these theories, models and 'top tips', we don't talk or write much about the AFFECTIVE side of creativity, tending to focus on how we can make the teaching for/of creativity more EFFECTIVE. Avoidance of the emotional component [in learning] is common throughout education.

I started my professional career working in Theatre-in-Education, developing and performing drama-based educational programmes in schools, starting from infant up to secondary/high school. We covered subjects areas like English, History, Maths, Science. All the programmes - which related to the curriculum and were developed in partnership with teachers - always had at their core 1. a real problem that needed solving 2. a strong emotional 'hook' or engagement.

Some of the most enjoyable and rewarding work was working with the very young, and it was clear that once they understood that their teachers would not interfere (because they had been instructed only to observe) you see their innate creativity being put to work on solving the problem they had been faced with....because they really cared about it.

This leads me to wondering to what extent to WE care about the assessments and projects we set. One of the unwritten rules we had when I was Head of Department and we were planning projects/assessments, was to ask ourselves 'if we were students again, would we care about/be really interested in this project, even though it meets things like learning outcomes etc.?' If the answer was 'mmm...not really', then why were we setting it for our students?

> **Norman Jackson (facilitator)** I quite agree Paul Kleiman I guess there could be a related question.. 'if the students don't care about this problem should they care about it?'.. and if we believe they should then it is up to teachers and learners to explore 'why we should care? Educators have a moral responsibility to ensure that something that is worth caring about can't be ignored simply because we can't be bothered to think about it or be exposed to it. And you are absolutely right about the idea of CARING enough about something to want to work with it or do something about it is fundamental to all problem solving and opportunity realizing that is intrinsically motivated. In fact, it's the basis for the existence of Creative Academic and #creativeHE – the members of our community care about creativity and students' creative development.
>
> I think CARING is closely related to VALUES and wanting (desire and/or need) to create or add VALUE is the driver for creativity. What has begun to dawn on me through this and other conversations is how education provides opportunities for developing understanding of value in different disciplinary and problem working contexts. How can we recognise creativity unless we can appreciate the value of the things we care enough about to want to do something that adds value.

Chris Wilson It's an extremely interesting dialogue. These are just some initial reflective comments:

If it isn't possible to 'teach' creativity, it's contestable whether it's possible to teach anything at all. Whilst I certainly agree that it is possible to inhibit creativity (https://derby.openrepository.com/handle/10545/618580), and arguable even that HE has inadvertently established a distinctly inhibitive environment for creativity, as highlighted initially by Kevin Byron in the discussion, **the semantic interpretation of 'teaching' and 'creativity' lie at the heart of this debate.** If transactional perspectives of 'knowledge transfer' underpin conceptions of 'teaching' then perhaps creativity cannot be taught. If teaching is conceived as a more general process of supporting others in developing new insights and understanding, then of course creativity can be taught. Creativity is, after all, domain-based.

Equally, this dilemma is made more complex by binary perspectives of creativity (it is or it isn't) rather than consideration of creativity as a spectrum. Focusing on the 4C model highlighted by Jennifer Willis (Kaufman and Beggheto, 2009), for example, all university regulations mandate that work produced for formal/summative assessment is 'original' to the author. In that respect, every piece of assessed work across all subject disciplines arguably represent examples of at least 'little-c' creativity. Considering levels and learning outcomes in HE, it is consequently arguable that educational development is designed to develop students through a sequence of integrated 'little-c' experiences towards opportunities for exercising more integrated 'pro-c' potential. One view of education is simply that it is simply a process of 'self-creation'.

Regarding the subsequent points about assessment highlighted by Paul Kleiman, the 'Gold Standard' CAT model (Amabile, 1982) reflects the model most commonly applied in HE but the ambiguities and issues of integrity of related judgements described in the thread are of course profound. As highlighted regarding Duchamp's 'Fountain', this would arguably have breached most university regulations if submitted as a major project on a typical art and design course. Furthermore, assessment still perpetuates according to an individualised model. Picked up by Jennifer Wills acknowledging Csikszentmihalyi's 'Systems model', all creativity is connected with previous creativity, all creative acts are to an extent derivative.

An example from practice: I led and co-delivered a 'creative project' module for many years. A significant component of a final undergraduate year on a bachelor of arts music degree, students had to consolidate their creative and technical studies to develop a major piece of original work. Over several years we began to spot some patterns and trends that led to some specific changes being made to the learning and teaching. Firstly,

students who elected to take more strategic risks tended to produce work ultimately judged to be more creative than those who elected to take a 'safe' approach (extending a previous project, repeating a successful approach, working to their 'strengths' and avoiding 'risks'). Consequently, we implemented a positive and negative risk assessment methodology and mandated that students had to identify a 'positive risk' as part of a project proposal process. This led to an overall uplift in student performance through assessment and an increase in the value of the creativity evident in final submissions. The 'positive risk' elements had to be relatively benign (work with new people, in a new idiom, in a new way, with new musical instruments) but the impact was significant. This for me is 'teaching creativity' as it nudged students away from 're-patterning' previous 'success' and towards embracing the risk and joy of the unfamiliar.

> **Norman Jackson (facilitator)** thanks Chris Wilson very interesting what you say about the encouragement to make risk taking explicit in your process. Given the high stakes nature of the assessment it is not surprising that students are averse to risking everything. I wondered how you coped with learners who pushed themselves into entorely new territory but produced work that was judged to be relatively poor. Did you recognise their courage in some way? Did you value process as well as product?
>
> **Chris Wilson** Norman Jackson That's a really interesting question. Yes, we did place some emphasis on process but of course did experience anomalies. Some quite chaotic and 'badly organised' methods produced/led to amazing results, and some superficially well organised creative processes led to modest/unremarkable results. One student many years ago did the classic 'leave everything to the last minute', had to book recording equipment to take home to try to do a year's work in a matter of 48 hours in a rented student house. He produced a masterpiece, arguably 'by accident'.In terms of managing the balance of novelty and ensuring students didn't 'over stretch' into new territory,this was managed through ongoing tutorial sessions open to peer review and feedback. Where any significant uncertainty was evident in terms of the 'final destination', we frequently encouraged students to add a 'safer' side project. For example, one student wanted to explore ambient music despite being entirely novice in that domain. As an established song writer we encouraged her to include an EP of her 'main creative work' alongside the 'main' project element. It was the side project, treated as a 'lesser' project element that had the biggest impact on final grade outcome.

Paul Kleiman This edges into the territory that I call the 'glorious failure.' I used to talk about preferring students to fail gloriously (high risk) while learning a hell of a lot from the experience, than succeeding boringly and learning very little or nothing at all. I designed an approach to assessment that enabled us to reward the glorious failure and particularly the learning from that 'failure'. (I dislike the word 'failure').

Norman Jackson (facilitator) These are interesting lines of conversation Chris Wilson and Paul Kleiman I agree with Paul that 'failure' however glorious is the wrong concept when engaged in a process of transformation (rather than producing a product) which is more about 'trying to find a way' towards a fuzzy, as yet unknown outcome. How often in working life do we try something - sometimes groping towards something intangible that we might fancifully call a vision, and end up in a place which some people would call failure but we might see as valuable experience, growth and learning (what Dewey would call undergoing) in preparation for a more important project that we have yet to imagine. I did it for five years at the University of Surrey!!

Chris Wilson As a composer who uses computers, I have always use the phrase 'fumbling with intent' as the best way I can describe a significant part of my creative process. I also recall numerous conversations with disappointed students who expressed a concern having just submitted a piece of assessment that 'they now knew how to do it all better'. I always said that was a good thing, that they had reflected and were consolidating their learning. Maybe we should have an elective referral process to allow those students to add that value or correct their errors?

Paul Kleiman Chris Wilson Hah! My blog is called 'Stumbling with Confidence" a phrase that came from my research into academics' conception of creativity. So often , when asked why they'd embarked on such and such a course of action, they said "I stumbled across something" or words to that effect. But the key was also having the confidence to pursue it not knowing where it might lead.

Josefina Ramirez Probably the tricky thing is the concept "teaching".... if by teaching one is referring to promote provoking environments and circumstances and experiences, to allow creativity to be triggered or developed , then one could "teach" it.

Jennifer Willis Another interesting strand to the conversation Norman Jackson, Chris Wilson, Paul Kleiman. What underpins the use of words such as 'stumbling' and 'failure', and the SCEPTrE experience at the University of Surrey is, once again, the question of values and whose values are more powerful. Hence we come full circle to having the confidence to perceive and appreciate our own creativity knowing the context in which it has been achieved. (Irrespective of formal assessment!!!)

We let Alex Carter, who provided the trigger paper for discussion, have the final word

Alex Carter To give a little context... My "brief" for the article was to keep it accessible (i.e. it is not a journal article) and conversational—I was also limited to 900 words! However, thanks to Norman, this conversation is ongoing. I should also add that, for our courses on creativity, our central focus is not education so much as Creativity Theory, History and Philosophy (although the latter will, I sincerely hope, inform the former). Our key reading is Rob Pope's book Creativity Theory, History and Practice, as well as Bruner, Bohm, Blanchot and Bergson (all the Bs!). We will be turning our sights to applied creativity—and so to science, business and, crucially, education—but the current Diploma is backward-looking insofar as we want to understand how our ideas about creativity have changed from thinking of God as the sole Creator, to thinking in terms of divine-inspiration and genius and, today, to a democratisation of creative practice. My view is that ancient notions of creativity continue to inform modern creative practices. I hope therefore that I am not thinking merely in philosophical terms. True, I am a philosopher and so I have a tendency to over-think problems. But I am also from a school of philosophy that seeks to confront "the pain of the problem", i.e. what is actually at stake. As such, I hope that my philosophical musings do have a point.

What many of the comments seem to pick up on is that no one person can claim to have the answer to creativity—I am certainly not claiming this - in fact, I claim the reverse. For this reason, my general approach is a collaborative and inclusive one. As the article outlines, developing creativity requires us to move away from traditional teacher-student relationships (which I agree is part of a more general trend anyway) and To that end, thank you to everyone who commented on this topic.

There seems to be, if not a consensus, then a shared general approach that I find encouraging. I certainly agree that definition is key to assessment, and that creativity can be defined. But I too am skeptical that any single definition can be definitive. In other words, the myriad definitions of creativity—e.g. "The quintessence of humanity", "Problem solving + relevance", "the generation of something new or novel", etc.—are not wrong. On the contrary, each says something about a complex issue (or should I say, "a complex of issues"). Yet there seems to be some aspect of creativity that, like humour, resists definition. I suggest that it has something to do with 'play', but it might also have something to do with how our understanding of creativity has developed, e.g. out of myths about how new ideas or things are formed, e.g. ex nihilo. Creation myths are also, insofar as they are myths, not "wrong"; but the question I have asked is to what extent our thinking around creativity is influenced by them. Can we start to think in new ways? think instead in terms of teachers and students as co-creators.

My take on "you can't teach creativity but you can learn it"

Gillian Judson

Gillian is a Lecturer in Education and Executive Director of the Centre for Imagination in Research, Culture, & Education (CIRCE) (www.circesfu.ca) at Simon Fraser University, Canada. Her research and teaching are primarily concerned with the role of imagination in all learning. As an educational consultant she explores a range of topics including imaginative and ecological teaching practices (PreK through post-secondary), imaginative educational program design, educational change, imaginative educational leadership, imaginative online learning practices and museum education. Gillian is both an ally and accomplice in Creative Academic's educational mission.

We don't just need allies; we need accomplices that not only value imagination and creativity but model it in their life and work and help create contexts and cultures within which imagination and creativity can flourish.

It's a pleasure to reflect on the Creative Academic forum topic: *Can creativity be taught?* After reading the transcript, I find myself curious about notions of meaning/language, context, and action that emerge from the responses. I personally come to the topic with an interest in looking at imagination—the human ability to envision the possible in all things. As a seeking of the *possible,* imagination is what *fuels* our creativity. And yet, it is often missing from our conversations. And here are my thoughts…

Many questions are raised: How do we—and can we—"teach " "creativity"? And how do we do so given the scarcity of creativity and opportunities for developing this capacity among many (most) learners in higher education? How do we nurture imagination and creativity if/when earlier schooling contexts most often destroy it? But wait…as various contributors to this forum mention, can we even talk about the "how" of teaching and/or creativity if we don't have a clear sense of what we mean by "creativity" and by "teaching"?

A common idea expressed in the forum is that human beings have some kind of innate *capacity* and, thus, potential, for finding novelty—for designing unique things, making "possibility" come to life, being different. We may be born wired for creativity, but far too many contexts neglect this. Far too often many contexts shape learning experiences in ways that deny/ignore our imaginative hearts. As a result, contexts and cultures in "schools" educational institutions at all levels, that allow creativity to flourish and imagination to grow are typically the exception rather than the norm. My ongoing work on imagination's role in learning and understanding has led me to study the *cognitive tools* that human beings have used across millennia in cultures to make-meaning and explore their worlds. These cognitive tools—the story-form, mental imagery, a sense of musicality, humour, play, the sense of mystery and many more—are immediate practical means that develop our innate imaginative/creative potentials and that we can employ to both find and express novelty in our lives. What connects all the ways in which imagination awakes—and develops creativity—is, of course, emotion. We are emotional animals, first and foremost—with emotion being the "mind's rudder" for understanding (a metaphor I have stolen from Mary-Helen Immordino-Yang).

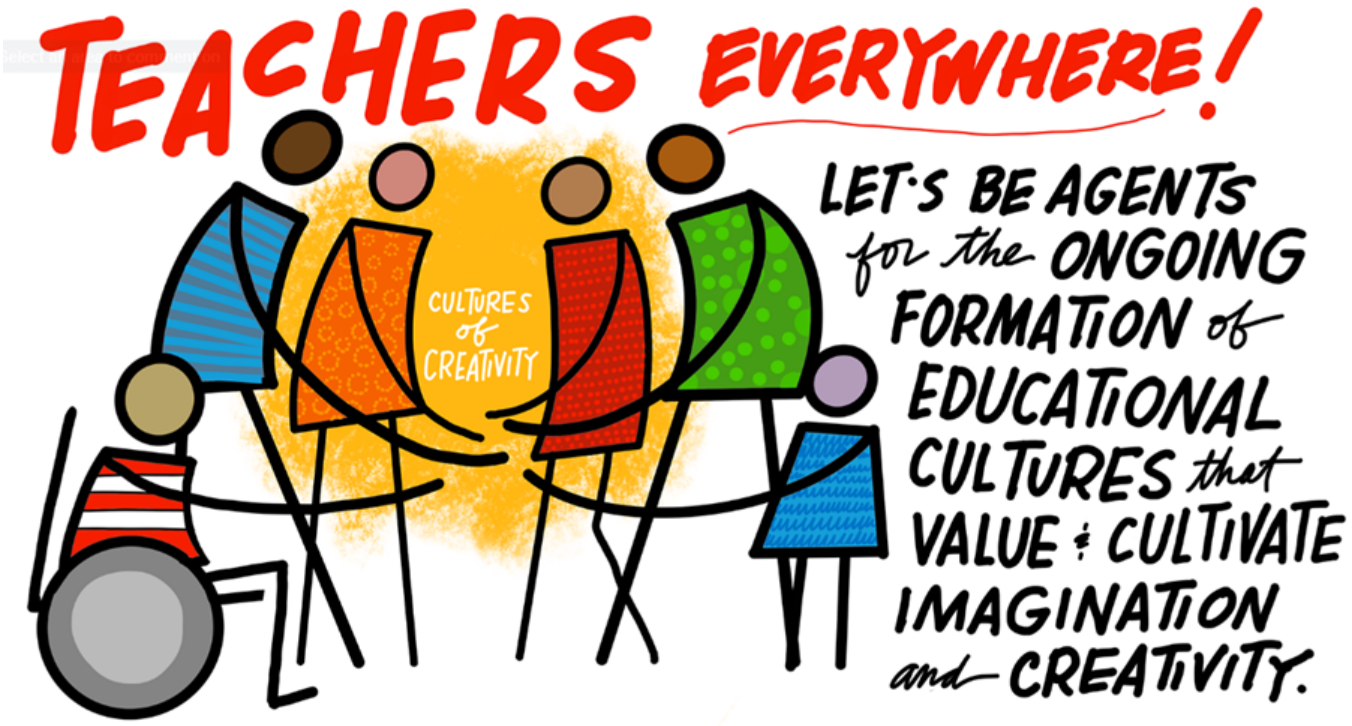
Another key theme: the importance of the learning context or educational climate and culture. As educators we have that choice—and need to make it—to establish safe, supportive, play-full, exploratory and *curious* learning contexts if we want our students' novelty-making skills to develop and if we want them to risk sharing them with us. (*I have a hunch that many students are far more creative once they leave our classrooms…*). I

love this forum; it's a format that amplifies the dialogical and informal nature of collegial conversation. I would dare to say that it represents the kind of *context* in which creativity and imagination can flourish.

For me, the question of whether (or how) we can/can't teach creativity is not an either/or situation. I think we all agree that you can't "transmit" creativity like you could specific content knowledge—teaching content knowledge (what is creativity etc.) wouldn't make someone more adept at *being* creative. I propose we can (and should) foster opportunities for growth in novelty-making. I like the idea that *how* we teach (model) can nurture our students' innate abilities—learning that puts imagination, first, for example, would, presumably support the growth of creativity without explicit teaching.

Like others in the forum, I think we must recognize that the motives for why we want to be creative, how and when we are creative, and what it means to be "creative" are highly personal. My "creative" is unusual and unique *for me*, within my work and narrative. While this may not be considered "creative" within the established field, enhancing creativity writ-large does require me to understand myself as a creative and imaginative person. That understanding can be nurtured in education. There must be space, therefore, for both this small "c" (personal) and large "C" (context- discourse- bound) definition. We see imagination at work in both the "c" and the "C" if and only if we have we have supportive and fertile space to PLAY (physical, intellectual).

Legislation won't get more creativity and more imagination in our schools—whether it is directly taught or not, nurtured or not. Accomplices will. We need accomplices the world-over who create opportunities for openness, emotional engagement, flexibility and action. I'm *curious* about how my higher education colleagues would respond to more discussion around the impact of imagination and creativity in their work. With an understanding of the constraints we do face as educators in higher education, but also recognition of how imaginative/creative work is a "high impact" activity for student learning, I ask you this: How will you make more space for imagination and creativity in your practice? (Because, as Jackson, notes, human beings can work exceedingly well and be imaginative within the constraints of their work environments.) How will you make imagination and creativity part of your identity as an educator so that you consistently support your students in novelty-making and so that we collectively can form creativity- and imagination- friendly learning contexts and cultures?



Educators, at all levels of our education systems, are creators of small-world cultures within which imagination and creativity can either be valued and flourish, or marginalised and even stifled. So, teachers everywhere, let's be agents for the ongoing formation of educational cultures that value and cultivate imagination and creativity. Be an accomplice with me! Connect with a community of imagination accomplices and get resources for growing imagination in your teaching context at CIRCE [sur-see]: www.circesfu.ca (the Centre for Imagination in Research, Culture and Education at Simon Fraser University, B.C., Canada)

How did I learn to be the creative person I am?
Some reflections triggered by the #creativeHE discussion "You Can't Teach Creativity But You Can Learn It"

Chrissi Nerantzi

Chrissi Nerantzi used to be a translator of children's literature and taught Modern Foreign Languages for many years, before moving into academic development. She is Principal Lecturer in Academic Continuing Professional Development at Manchester Metropolitan University. She is a passionate and creative academic developer and tireless in her encouragement and support for creativity in higher education. Her approach is playful and experimental and underpinned by scholarship and research. She is a UK National Teaching Fellow and co-founder of Creative Academic and founder of the #creativeHE community.

These reflections on my own creative life are triggered by Alex Carter's article, 'You can't teach creativity but you can learn it?'[1] and the conversation that unfolded in the #creativeHE Facebook community.[2]

My first thoughts take me back to my own personal experiences and how I developed my creativity or my creative habits, as I like to call them. All my life I have felt a foreigner and have been a foreigner. That girl from elsewhere, even in my own country. A Greek who stood out with her black hair and black eyes born in East Germany, then a Greek with a foreign accent in Greece who was often ridiculed for that and for the last almost 21 years a Greek with a strange and difficult to pin down foreign accent that doesn't seem to match my appearance. I have been a wanderer in a way through countries and cultures, meandering through Europe.

It seems to me that Alex is right. When I think about myself and living my own life, **nobody taught me how to be creative and resourceful**. I have to admit that for me being creative is about being resourceful. And that probably links to imagination as Gillian Judson would probably say who talks about the importance of imagination for creativity. Is there anything we can do without it? Is imagination the foundation of being resourceful that then leads us to creativity? I am thinking of adversity I have faced throughout my life and how I got through it, each time. It wasn't easy, it never is. But I definitely seem to have learnt to use my imagination and be resourceful, to make good use of the resources available to me: do more with less, with nothing, do something or something different. Could it have gone all down hill for me? And why didn't it?

I remember when I was in Germany and we learnt to swim. Very first lesson, we had to jump in the deep end and the teacher would take us to the side with a long wooden stick we had to hold on when surfacing from the bottom of the pool. That was super scary and I was trying to avoid it... I learnt to swim. I did overcome my fear. But rarely was somebody there to teach me. Except my parents perhaps. Even swimming was mastered by jumping unwillingly into the deep end. I made mistakes... and I am probably rubbish at many things. My violin teacher said that I didn't have a musical ear, so I stopped learning... what if she was wrong? What if I just needed more time, more practice?

Are we not ourselves the best teacher and our personal struggles with adversities and opportunities the best contexts and environments for learning about creativity?

When we are at the edge of our known and experienced world, what drives us towards success or failure? What role does personality play? What role do nature and nurture play in what happens to us or becomes of us? This is a discussion I would like to have with a psychologist. Holly Warren in the #creativeHE discussion states *"I am a strong believer that creativity is an instinct. It is a survival tool implanted in us."* Gillian Judson in her article also recognises the innate nature of creativity and says "cognitive tools that human beings have used across millennia in cultures to make-meaning and explore their worlds." **When we ourselves employ these cognitive tools as we try to be resourceful and accomplish things we value do we create our own small-world cultures within which our creativity can flourish.**[3]

My creativity has been about survival and growth. Can it just be about coping? A curious and imaginative mind doesn't stop. The more it is used, the more ideas and possibilities are generated and the more we grow.

Is creativity similar to empathy or compassion for example? Can we really teach empathy? What if the person does not care? When it doesn't matter to them? How do we develop empathy and what role does teaching play? Is it more about modelling and experiencing? I was interested to read what Gillian Judson wrote in her article[3] about modelling and how she saw it as a nurturing form of teaching. Reflecting on experiences and most importantly learning from them? Kevin Byron in his first response to the conversation[2], talks about creativity as something that we deconstruct and re-synthesise in new ways? With some new ingredients? Do we deconstruct the experience? Is this part of the reflective process? I think it is as analysis, criticality, imagination and creativity will help us make sense of our experiences.

So, the experience of being creative itself, including our experience of the whole ecosystem within which our creativity is embedded, and why and how we react and interact and immerse ourselves into these experiences and become aware of them and ourselves, play a key role in being and becoming more creative.

I continued reading the insightful discussion. So many ideas and perspectives were shared. Truly fascinating. Marta Davidovich notes that "Creativity develops through engagement in process". This seems to align with my thinking somehow as just mentioned, the experience itself. Marta also emphasises that "Products are not creativity". Now this is an interesting provocation. I need to think about this a bit more, but while I agree that the process is important, the product, achievement or change that has come about as a result of a creative process, is something I see part of creativity. Marta talks about "Increased feelings of well-being and joyful self-expression can also be outcomes of creativity". Very true. I definitely agree with this. And we do feel this also through the product. At least I do. I have also found that sharing that creative product can magnify our well-feeling and well-being even further.

For example, I have been teaching myself how to crochet. I had an interest in it. Nobody asked me. It was pure desire and for pleasure. Pleasure for myself as a process and pleasure for others when the product is shared. And I have shared a few. My projects have been small, manageable and repetitive. Don't know if anybody has written about creative expression or the development of creativity as an act of repetition and routine. When I learnt the basics in crochet, I made multiple little items that were very similar. And still do. Many flowers, little hats and leaves. I don't think this killed my creativity, but gave me multiple opportunities to practise and refine my approach.

I feel repetition and habits are important too when learning to be (more) creative. They suggest that there is a discipline to improve his performance.

I enjoy crafting, it really helps me feel relaxed and engergised. I don't just connect with materials, others but also with my inner self. David Gauntlett's book[4], Making is Connecting in which he also explores craft contains important ideas about creativity. Crafting means making something. Something that wasn't there before. It often involves being resourceful and is very satisfying. Craft as a creative process definitely seems to work for my well-being and I have observed the same in others. Recently, I helped co-create a MAKER community (part of #creativeHE) for staff and student crafters at Manchester Met with Haleh Moravej, (colleague) and Rebecca Dignan (first year undergraduate student) to bring people together from around the university, help them relax and feel good, be creative, learn and share something.

I was recently involved in producing a special issue around creativity in the RAISE journal and we discussed purpose, process and product[5] Do we need a purpose to be creative? Is the purpose always clearly defined from the outset? What if purpose is more fuzzy and emerging during the process of doing? In a conversation with Norman, he highlighted that for him "purpose is closely linked to motivation and one of the key things for me is how we are energised to tackle something in a particular way that is more likely to involve our creativity if we have a purpose". So we need to explore where does our will to be creative originate and believing in a purpose is an important driver for the will to do and the will to persist in spite of obstacles." This does make sense and was probably what did drive me to persist and find ways to overcome obstacles and adversity I have experienced.

John Cowan also seems to reject the idea that creativity can be taught and shared. He described an example from working with teachers and students on an engineering design course in which he created an environment and culture in which students were encouraged to reflect on their own experiences in the course to discover their own creativity for themselves.[6] While I can recognise in his narrative that strong and confident students with a lot of freedom, can use their creativity to work through such educational challenges, not everybody is prepared, or has the confidence to perform in this way and I am wondering if some students do need a scaffold and some nurturing? I think that this is the core purpose and role of a teacher, just as I needed an initial helping hand from the craft lady. We can help others grow their own creativity wings. As a teacher I have witnessed this happening: helping learners to become braver, take risks and give it a go! When this happens not in isolation but with others and others do this too, we can feel more empowered. Others, of course are prepared and prefer to work on their own but it is that sharing of ideas, that discussion, debate, deconstruction and synthesis of novel combination that can make a real difference. This chimes with Gillian Judson's idea of creating small-world cultures within people feel empowered and confident to try in which creativity can flourish.

I am wondering if some students do need a scaffold and some nurturing?

Kevin Byron hinted that creativity is innate. "Can you teach breathing? well you can learn some techniques to improve your breathing if that is needed, but we can still breathe well without them!" But I think different environments and situations challenge us to breathe in different ways. For example, if we are a singer we might be shown how to breathe in a particular way that enables the singer to achieve more! Perhaps the role of the teacher is to create environments, small-world cultures, and possibilities in which imagination and creativity can flourish and learners attempts to be creative are valued regardless of whether they are successful.

This is an important conversation for all teachers and educators to have and I am sure it will continue I am sure. For now, my thinking around learning to be creative seems to focus on experiencing creativity in an immersive, experiential way and teaching myself what it means to be creative by reflecting on how my creativity emerged through my experience. When adversity hits, opportunities for resourcefulness and creativity are superlative! Daring something different, daring ourselves to think and be different, but also establishing routines, repetition and habits, making mistakes, loads of them, to develop personal creativity and resilience. But it is also necessary to reach out for helpers when we need them.

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Creative Festivals 2020

Mon 18 May, 12.00am to Sun 24 May, 12.00am

A new collaborative partnership of Creative Festivals is aiming to turn May 2020 into a month of creativity and culture:

- Age of Creativity: throughout May 2020
- Get Creative Festival: 9-17 May 2020
- Creativity & Wellbeing Week: 18-24 May 2020

Editor: One of the joys of facilitating an on-line discussion is that it is so unpredictable, 'stuff emerges' as people share a thought and someone else picks up the idea and runs with it taking it in another direction. In this final reflective post, Paul Kleiman comments on this feature of the #creativeHE environment and draws attention to the metaphor of crystallisation. I am favourably predisposed to metaphors that resonate with part of my identity. Once a geologist I appreciate the concept of crystallization— a concept of growth by which chemical atoms dispersed randomly through a liquid are connected and grow, if conditions permit, into beautiful multifaceted crystals. The idea appeals to me as it is sort of what I hope Creative Academic and this magazine seek to do by creating the conditions whereby lots of thoughts, ideas and feelings are shared and grown, through human interaction into more solid, complex ideas in our search for new understanding.

A 'Crystallising' Conversation: reflections on 'You Can't Teach Creativity But You Can Learn It?' discussion.

Paul Kleiman

Paul trained and worked as a designer before 'stumbling' into teaching in higher education. He was one of the founding tutors of the Liverpool Institute for Performing Arts (LIPA) and then, from 2000-2011, co-led PALATINE, the LTSN/HEA subject centre for dance, drama and music. He then became the HEA's UK Lead for those disciplines. He now works as a consultant in higher education. His research and work on creativity and assessment is cited widely in books and journals across a range of disciplines and informs the assessment approaches in a number of institutions and HE programmes.

When the Editor asked me if I would write some thoughts and ideas on the long and fascinating discussion thread, prompted by Alex Carter's article 'You can't teach Creativity but can you learn it?, I was both flattered to be asked and intrigued. Those feelings were followed, once I had read through the whole discussion again, by a feeling of being completely stumped as to where or how to start. Unlike an article or paper, there was no obvious line of direction or argument. Instead there was a fascinating multi-faceted, multi-layered, multi-directional collection of ideas and comments that were prompted not only by the original 'provocation' but also by previous contributors to the discussion.

Eventually (and thankfully) some ideas about how I might respond began to form themselves in my mind. Having written the words 'multi-faceted' and 'multi-layered' in the previous paragraph I realised that they reminded me of the work of Laurel Richardson on the notion of crystallization and that came with the realization that work may have some resonance and application to our topic and discussion.

Richardson, a sociologist, broadly introduced the concept of crystallisation to qualitative methodologists in her now classic essay, "Writing as a Method of Inquiry." Writing about qualitative research, she articulated crystallization as the capacity for writers to break out of traditional generic constraints.

"The scholar draws freely on his or her productions from literary, artistic, and scientific genres, often breaking the boundaries of each of those as well. In these productions, the scholar might have different "takes" on the same topic, what I think of as a postmodernist deconstruction of triangulation. In postmodernist mixed-genre texts, we do not triangulate, we crystallise. I propose that the central image for "validity" for postmodern texts is not the triangle—a rigid, fixed, two-dimensional object. Rather, the central imaginary is the crystal, which combines symmetry and substance with an infinite variety of shapes, substances, transmutations, multi-dimensionalities, and angles of approach. Crystallisation provides us with a deepened, complex, thoroughly partial, understanding of the topic. Paradoxically, we know more and doubt what we know. Ingeniously, we know there is always more to know."[1 p934]

the "crystallized self," a notion that pulls from Laurel Richardson's[1] epistemological notion of "crystallization". The "crystallized self" is considered a positive term that helps people to experience and talk about the self in more appropriately politicized and layered ways. Tracy and Tretheway say: "The crystallized self is neither real nor fake…. The crystallized self is multidimensional; the more facets, the more beautiful and complex[2]. Certainly crystals may feel solid, stable, and fixed. But just as crystals have differing forms, depending upon whether they grow rapidly or slowly, under constant or fluctuating conditions, or from highly variable or remarkably uniform fluids or gasses, crystallized selves have different shapes depending on the various discourses through which they are constructed and constrained".[2] Viewing the self as crystallized moves away from ideas of which parts of the self are more "authentic" and rather suggests that the self is constructed through context and communication. Multiple facets can be "real" and competing simultaneously.

https://en.wikipedia.org/wiki/Crystallized_self

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Our discussion certainly fulfilled that 'infinite variety of shapes, multi-dimensionalities, and angles of approach'! But that notion of crystallization may also apply to the way creativity operates in the field of education and why so many find it a difficult 'fit' with the rather neat, logical, elegantly aligned models and frameworks that can be found right across (I avoided the word 'litter'!) our educational landscape.

Moving on from crystallization and focusing on the actual content of our discussion, it occurred to me, again, that some previous work might have some relevance.

Writing about the dilemmas of those assessing creative practices[2], I categorised - with a bit of tongue in cheek - those doing the assessing into one of three types: 'Roundheads', 'Cavaliers' and 'Innocents'. *(For those unfamiliar with this particular English historical reference please google 'Roundheads', 'Cavaliers' or 'English Civil War')*. I wondered whether the same, admittedly somewhat simplistic description, could be applied to the participants in the discussion.

The 'Roundheads', in this case, take a rigorous, scientific approach in their attempts to understand the complexities and paradoxes of creativity, and they tend to refer to and rely on models and frameworks to guide their thinking and work on creativity.

The 'Cavaliers' tend to believe that creativity cannot simply (or complicatedly) be captured and understood via models and frameworks, no matter how rigorously researched, elegant and logical. They tend towards the holistic, the interdisciplinary, embracing the sometimes unexpected and occasionally chaotic manifestations of creativity.

Lastly, there are the **Innocents:** they could be highly experienced and skilled professional and creative practitioners who have recently entered what appears to them to be the overly bureaucratic, esoteric, parallel universe of higher education, and/or they could be early career researchers/academics developing and pursuing their own path through higher education.

In all three cases, what shines through all the contributions to the discussion, is both the passion for creativity and the absolute commitment to the idea of creativity as an essential, integral part of education necessary for the development (or crystallization) of human beings and society.

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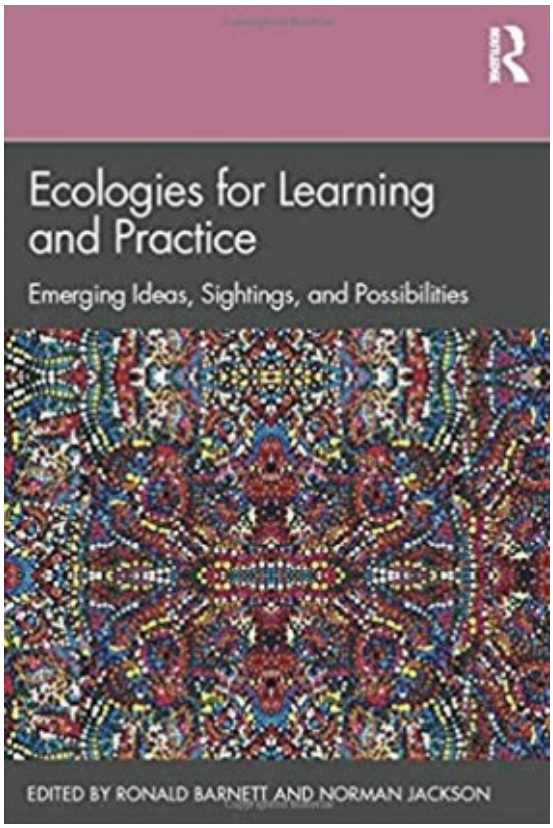


Ecologies for Learning and Practice provides the first systematic account of the ideas of learning ecologies and ecologies of practice and locates the two concepts within the context of our contemporary world. It focuses on how individuals and society are being presented with all manner of learning challenges arising from fluidities and disruptions, which extend across all domains of life. This book examines emerging ways of understanding and living purposively in these new fluidities and provides fresh perspectives on the way we learn and achieve in such dynamic contexts. This book explores diverse topics from the higher education and adult learning worlds. These include:

- The challenges faced by education systems today
- The concept of ecologies for learning and practice
- The role and responsibility of higher education institutions in advancing ecological approaches to learning
- The different eco-social systems of the world—local and global, economic, cultural, practical, technological, and ethical
- How adult learners might create and manage their own ecologies for learning and practice in order to sustain themselves and flourish

With its proposals for individual and institutional learning in the 21st century and concerns for our sustainability in a fragile world, *Ecologies for Learning and Practice* is an essential guide for all who seek to encourage and facilitate learning in a world that is fundamentally

Editor: if you accept as fact, that the fundamental moral purpose of education is to help and enable other people to develop to their full potential then there is no argument as to why educators should be concerned with enabling learners to develop their creative potential. Sadly, these two propositions don't always fit snuggly together. Perhaps, we can try another pair of more pragmatic propositions. If the purpose of higher education is to prepare learners for a lifetime of employment then there is no argument as to why educators should be concerned with enabling learners to develop their creative potential since they will need every bit of their creativity to survive and flourish. I thought it would be useful to include an employability perspective so I invited Dr Douglas Cole who is well versed in such matters to offer his opinion on the discussion.

You can't teach creativity but you can learn it!
An employability perspective
Douglas Cole

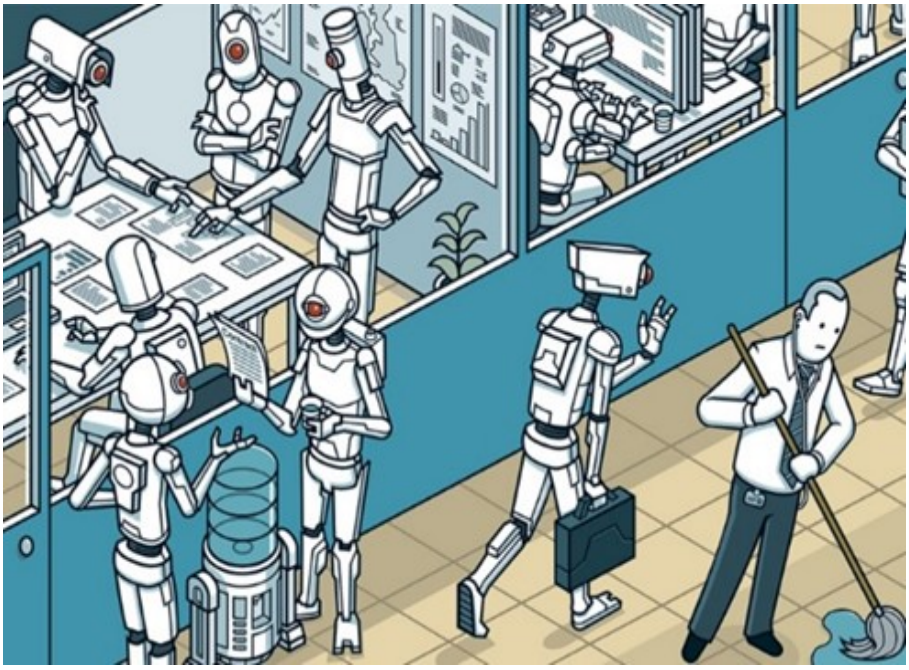
Doug is Deputy Director of Employability at Nottingham Trent University. Doug has over fourteen years' industry experience and ten years in higher education. He is a Senior Fellow of the Higher Education Academy (HEA) and Fellow of the Chartered Institute for the Management of Sport and Physical Activity in the United Kingdom. In 2012 he developed the concept of a framework for employability with a particular focus on curriculum design. In 2013, he co-authored the HEA publication *Defining & developing your approach to employability: A framework for higher education institutions* with Maureen Tibby. Most recently in 2019, writing a book chapter with Dr Rafe Hallett on The Language of Employability and completing his PhD.

I have to confess that I didn't participate in the Facebook conversation, but the Editor invited me to offer my perspectives on the transcript of the conversation1 from my particular interests in employability. I am no expert in creativity but what excited me having read the posts, is the potential synergies between the points discussed and my own thinking about what employability means.

Kevin Byron's comments about outcomes got me thinking again about learning outcomes, as part of the curriculum design process, how we develop these and critically what goes in them exactly? I recently reread the work of Geoff Scott2 who developed the Work Ready Plus project in Australia and he talks about the importance of learning outcomes and the opportunity to weave other areas of learning in here, areas that stretch the narrative beyond one of simply knowledge and skills alone, taking into account a broader range of personal qualities, dispositions, capabilities, or any other preferred term we may like to use here! For me, anything other than skills, which currently dominates the employability landscape, is a beacon of light! Moving forwards then, how might we potentially weave and signal the importance of creativity in our learning outcomes, and whilst we are on the subject, is outcomes even the right word? It suggests something finite that is achieved and then potentially measured, when I perceive creativity to exist on more of a spectrum (so I agree with Marta Davidovich in this regard too). I view creativity without boundaries and therefore in this case, would learning objectives better signal a direction of travel and be a more appropriate term? We may not be able to teach it, but surely, we at least need to flag its importance and make it explicit somewhere, or how will it ever be truly valued by both students and our colleagues?

I could argue the same principle for other areas too, emotional intelligence, resilience and so on, in fact in many places throughout the narrative I felt I could have lifted out the word creativity and inserted one of these other areas of potential learning and the principles being advocated, still worked. For example. Norman Jackson wrote: *"If creativity is socially constructed, then it is necessary for learners to be involved in negotiating the criteria against which they will make claims and by which they will be judged. The extension of this logic is that the role of the teacher is to help learners develop the skills and awareness necessary to recognize and judge their own creativity, and to develop the evidence to substantiate any claims."* I recently completed my PhD and what I said in it was nearly identical to the above, but with employability in mind. I have never viewed employability as simply about securing a job or gaining a set of magical 'employability skills' which is contrary to this commonly held view across the sector, in the media and by government. Employability is about so much more and is very personal and should be individualized3-8. Employability is widely misunderstood, and I would hazard a guess that there may be many misconceptions around creativity and its importance too. I am fascinated by the issue of language and the power it holds to influence and impact on engagement, or not, depending on which side of the fence you fall on, so I agree with Marta on this one too, how we define terms is critical and clearly consensus will always be a challenge.

Creativity is important to finding, creating and keeping a job and adapting to change in what is often a turbulent world. Its recognition has steadily climbed those skills charts that employers, think tanks, managing consultants and policy makers love to point to when discussing employability.



But there is a critically important and less certain dimension to employability as we leave what we know and travel into a future in which our relationship to machines will be very different to what has gone before. Educators must not only be concerned with preparing students for their first jobs when they leave university, they must also be aware that they are preparing students for learning, surviving and flourishing in the completely unknown world of 2030 and beyond. A world in which so many jobs of today will have vanished – automated or AI'd out of existence (see for example Danial Susskind's recent book "A World Without Work: Technology, Automation and How We Should Respond."[9]).

This is a world in which human beings will need all their creativity and ingenuity to survive. Schools, Colleges and Universities of today surely have an obligation to ensure that their learners are given every chance to develop their creative potential in what are the foundational years for a lifetime of learning. Perhaps the concept of 'future readiness' is relevant here, *"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]"*.[10]

Surely, our creativity lies at the core of what it is to be human - that strong inner self- that is self-reliant, imaginative, resourceful and resilient, able to see and make use of opportunities and adapt to whatever the world throws at us.

Bringing it all back to the present, really the most important point I took from the Facebook conversation was the clear synergy between creativity and more holistic interpretations of employability, and I look forward to perhaps exploring this further in the forum in the future.

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Image credit: Robots and humans https://medium.com/@orge/the-future-of-work-technology-will-kill-your-job-this-is-how-8c6bb9e29840

‘You can’t teach creativity but you can learn it’: Deconstructing the conversation

Jenny Willis

Jenny’s career in education began as a languages teacher in inner London areas of social deprivation. This experience inspired her through middle and senior management of schools to teaching for the Open University and further research. Whilst working as an assistant registrar in HE, she completed a PhD in socio-linguistics. She held a fellowship in the Surrey Centre of Excellence in Teaching and Learning (SCEPTrE), researching professional and personal development. It was there that she first worked with Norman Jackson and began studying creativity. She is a founder member of Lifewide Education and was executive editor of Lifewide Magazine and Creative Academic Magazine from their inception until 2019. She continues to teach children and adults while pursuing her other interests, stigma related to mental illness and wellbeing.

The Facebook discussion triggered by the proposition ‘You can’t teach creativity but you can learn it’, makes fascinating reading, but it is easy to get lost in the detail. This article attempts to analyse the issues raised and to reflect on where the conversation has taken us in our exploration of ‘creativity’.

Participants and contributions

The initial discussion took place over a period of two weeks in December 2019, followed by some additional contributions in January 2020. There were 12 participants in total, but some dropped out part-way through the conversation whilst newcomers arrived late in the day. This change in continuity is reflected in the issues discussed, as described below and shown in Figure 2.

The examination began by identifying the essence of each of the 59 individual interactions. This resulted in a list of 62 bullet points, some iterative, as new stimulus material brought discussion back to familiar issues as well as provoking new lines of debate.

Emergent themes

In order to rationalise these bullet points, key themes were identified. Six emerged, viz.

- Definitions
- Forms of creativity
- Assessment of creativity
- Values
- Conditions for developing creativity- process
- Uses of creativity

These were a subjective assessment; it is acknowledged that it may be artificial to separate issues e.g. assessment is an expression of values, and some points may arguably belong to more than one theme. Nevertheless, it is hoped that this analysis will be useful in drawing out the dominant issues discussed.

The 6 themes and their respective descriptors are:

Definitions

- Definition provides assessment criteria
- Definitions of creativity vary
- Define ‘teach’ creativity – ranges from transmission, through nurturing to facilitation
- Need a shared definition of creativity

Forms of creativity

- Creativity ranges from unactualized to actualized
- Creativity ranges from valueless to valuable
- Creativity ranges from small/mini C to big C (Kaufman & Beghetto)[1]
- Ecological continuum of creativity from teaching about creativity to learning to be/become creative

Assessment of creativity

- Reliability of ‘expert’ view is greater when discussing ‘product’ than when made against list of criteria
- Peer review is only reliable assessment process for research
- Assessment of creativity at the big C end depends on fashion, trends, social capital
- Engage students in the assessment process

Values

Only through awareness of the experience of creating that it is recognized
Teacher can't appreciate learner's creativity unless it is product of co-creation
Each person's experience is different, only I can know my own creativity, so co-creativity is impossible
One can't ever know one's own brain due to unconscious processes
Creativity valued within its domain, field, discourse (Csikszentmihalyi)[2]
What value does creativity have when domain etc norms are fracture or breached?
We should nurture learning rather than creativity
Individuals underestimate their personal creativity
Creativity is valued in its context
Value of small and mini C for self-esteem
Only individual can know their own creativity, therefore there is no co-creation

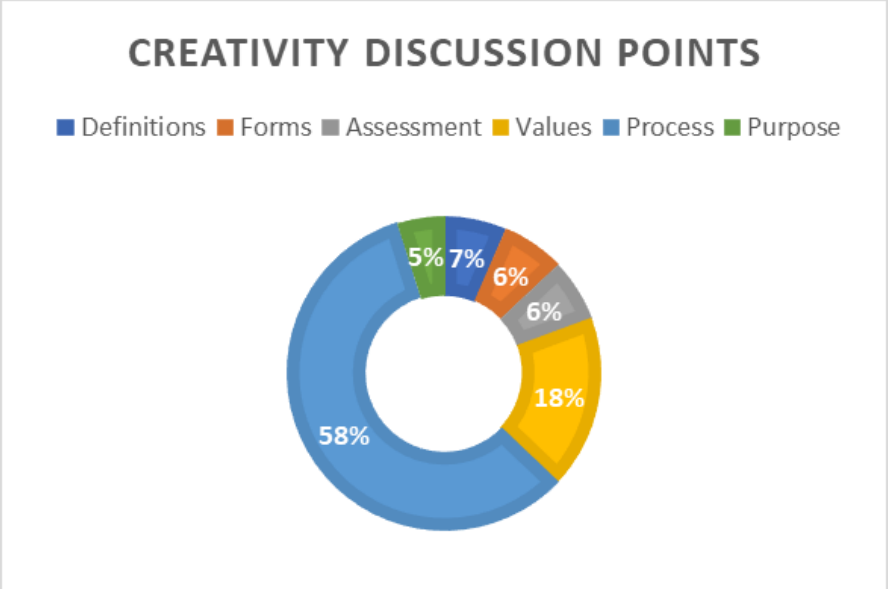
Conditions for developing creativity/process

Creativity arises from engagement with process
Safe environments conducive to creativity
Creativity comes from trying, failing and determination to solve
Creativity can be taught but is only meaningful in its practice
Creativity in education is grounded in academic contexts rather than experiential situations
Being and becoming creative require an enabling environment
You can't teach creativity nor does one learn it
Self-awareness needs critical thinking – we can help develop critical thinking for self-awareness
We can open students' minds to possibilities
We are born creative and steadily discouraged because of explicit attempts to facilitate creativity
Self-motivation is necessary
Positive teacher-learner relationships support becoming appreciative of own creativity
Nelson article proposes education crushes creativity through process of problem-solving and assessment
From ideological position, agree with this unconstrained approach, but it is not practicable
Creativity not linear process, expression may be deferred
Can we teach ourselves to be creative?
Example of how topic-based inquiry developed creativity
Creativity is an instinct, originally for survival
It began for survival but this spontaneous creativity became planned and is now embedded in humans
We share playfulness with other animals
Humans have separated the idea from the activity of play
Disagree – other animals understand play
Play is a human construct, encouraged by rewarding behaviour in animals
Creativity is constrained by boundaries, including that of (the right) time
Example of Franz de Waal[3] disproves creativity as human construct view
An alternative interpretation of de Waal – humans define 'play'
We are naturally creative and the teacher facilitates this
The process of co-creation enhances the potential for creativity
Trusting relationships support creativity
Despair, unhappiness as a portal to creativity
Would freedom from rules result in chaos or greater happiness? Less is more, so unlearn
Yu Sien-Lin[4] model of 4 interconnections
Expanded interconnections to: teaching creativity; teaching for creativity; teaching creatively; teaching what being/becoming creative is; learners teaching themselves to be creative; learners to teaching teachers to be creative
Robert Sternberg's[5] tips for teaching creativity
Delayed gratification, so need to build trust in learners
Willingness to see failure as source of learning

Uses of creativity

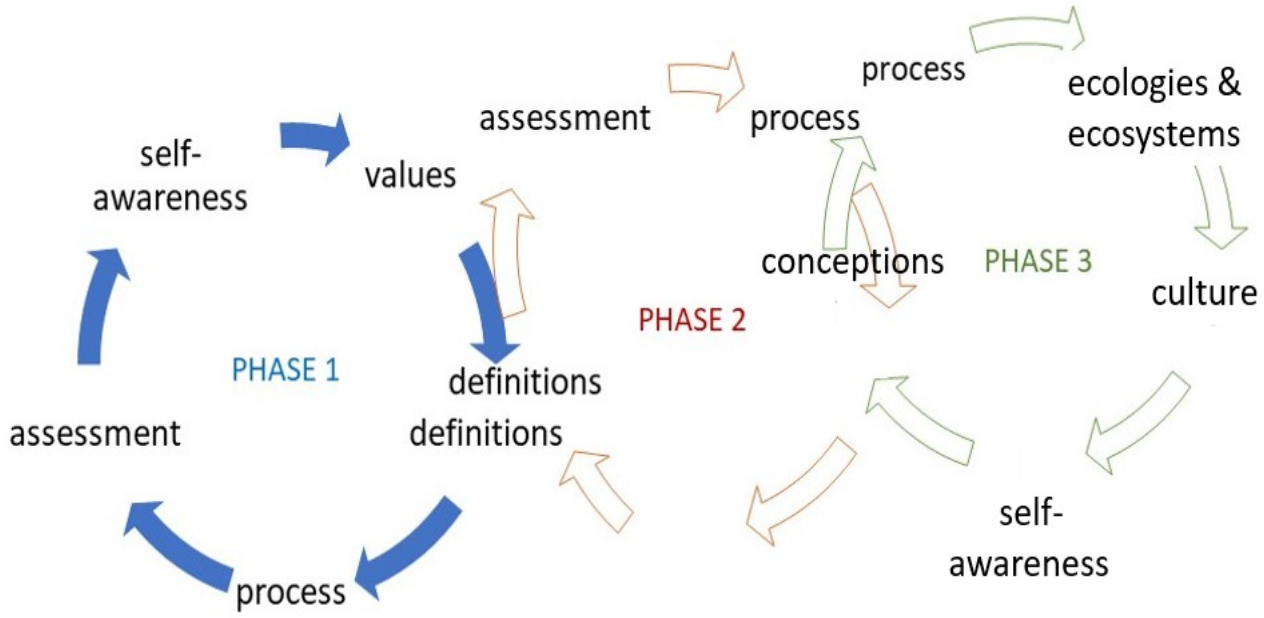
Creativity for self-expression
Creation or production?
Distinguish between teaching creativity and teaching for creativity

This list illustrates the predominance of factors related to the process and conditions for developing creativity in the field of education. This is understandable, given that the question posed was about action: learning and teaching. Figure 1 shows the relative significance of each of the 6 key issues.



It was noted above that the conversation circled back and forth between key themes, each cycle incrementally refining issues and sparking new ideas. Figure 2 attempts to visualise this evolving process of spiralling ideas.

Figure 2 Evolving cycles of discussion around important points



The blue cycle (phase 1) records the sequence of discussion, beginning with definitions then moving through process-related issues, including assessment and what is valued and by whom. New contributors arrived and took the conversation into a second phase (brown), where some points regarding each issue were reiterated, starting the cycle once more, though not necessarily in the same sequence. A third phase emerged after the main discussion when the facilitator invited participants to reflect on the conversation as a whole and draw out things that they felt were particularly significant or had been omitted or under-represented.

Comparative views on developing creativity in education

The conversation addressed whether creativity can be developed/taught, and moved on to consider whether it can be self-taught. Participants fell into two distinct camps: those who saw the possibility of nurturing creativity through trusting teacher-learner or co-learning relationships, as opposed to those who had a more cautious view of creativity being a human construct, fraught with obstacles and boundaries. Ultimately, this dichotomy stemmed from different personal values.

How did this groups' views compare with those of others? One of the reference papers used to inform the discussion featured a list of 24 factors conducive to creativity, proposed by Sternberg and Williams[5]. To what extent, if any, did the Facebook discussion correspond with this list?

Impressionistically, it seemed well, the diversity of views coming together collectively to produce an apparently comprehensive response. A proper comparison was made between the two: the results are shown in Figure 3.

The analysis suggests that participants in the Facebook discussion had a very clear understanding of the factors involved in developing creativity. 13 of Sternberg and Williams' points emerged explicitly in the conversation, with another 8 being implicit in comments. Only 3, (7) Allow time for creative thinking, (9) Reward creative ideas and products and (22) Play to strengths, did not appear.

Figure 3 Comparative views on developing creativity in education

Sternberg & Williams' tips for Creativity	Mentions in discussion	
	Explicit	Implicit
1. Model Creativity		
2. Build Self-Efficacy		
3. Question Assumptions		
4. How to Define / Redefine Problems		
5. Encourage Idea Generation		
6. Cross-Fertilize Ideas		
7. Allow Time for Creative Thinking		
8. Instruct and Assess Creatively		
9. Reward Creative Ideas and Products		
10. Encourage Sensible Risks		
11. Tolerate Ambiguity		
12. Allow Mistakes		
13. Identify and Surmount Obstacles		
14. Teach Self-Responsibility		
15. Promote Self-Regulation		
16. Delay Gratification		
17. Encourage Creative Collaboration		
18. Imagine Other Viewpoints		
19. Recognize Person-Environmental Fit		
20. Find Excitement		
21. Seek Stimulating Environments		
22. Play to Strengths		
23. Grow Creatively		
24. Proselytize for Creativity		

Conclusions

The conversation did not produce one unanimous response to whether creativity can be taught. Instead, individuals expressed their personal assumptions and aspirations. They thereby drew attention to what is possibly the most important issue to emerge: values and who has the greatest social capital to decide what is deemed creative and worthwhile.

The discussion opened with acknowledgment that responses depended upon definitions of what creativity is and who judges this. Creativity was perceived to be of value to the individual, for affective as well as performative reasons.

One sub-set of participants was more critical about defining creativity, recognising its relativity to culture and sub-culture. They shared common ground, though, in recognising the difficulties of assessment.

Conceptions of 'teaching' as well as 'creativity' were important in this discussion and Chris Wilson got to the heart of the matter in his contribution:

"the semantic interpretation of 'teaching' and 'creativity' lie at the heart of this debate. If transactional perspectives of 'knowledge transfer' underpin conceptions of 'teaching' then perhaps creativity cannot be taught. If teaching is conceived as a more general process of supporting others in developing new insights and understanding, then of course creativity can be taught. Creativity is, after all, domain-based."

Norman Jackson expressed this in a different way.

"Emerging from the conversation was the recognition that relationships between teaching, students' learning and creativity are complex and multidimensional. Building on Lin's[4] model, the conversation led to a distillation of 6 inter-related issues:

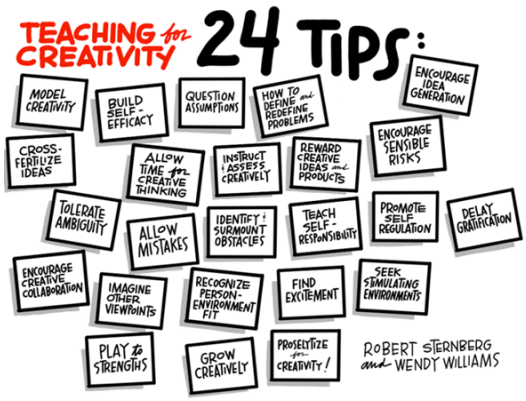
Teaching creativity
Teaching for creativity
Teaching creatively
Learning what being creative is
Learners teaching themselves to be/become creative
Learners teaching teachers to be/become creative

The entanglement of these relationships and interactions reveals that simplistic instructional models of teaching are inadequate to account for the complexity of the 'undergoing' or 'transformations' that take place in the educational process when creativity is involved."

In her reflection on the whole conversation, Chrissi Nerantzi posed the question, 'How did I become the creative person I am?' Chrissi Nerantzi highlighted the important role of reflection in developing our knowledge of being creative in our own experiences.

"For now, my thinking around learning to be creative seems to focus on experiencing creativity in an immersive, experiential way and teaching myself what it means to be creative by reflecting on how my creativity emerged through my experience.

During the final stage of the conversation the matter of culture came to the fore Gillian Judson noted *"Educators, at all levels of our education systems, are creators of small-world cultures within which imagination and creativity can either be valued and flourish, or marginalised and even stifled".*



The conversation also confirmed the validity of Sternberg and Williams' criteria for teaching for creativity. The wide-ranging discussion demonstrates a good understanding of the process of teaching/learning to be creative. It is recommended that future work should focus on the question of values, how these vary in different cultures and sub-cultures, and power structures. This would respond to the ideas expressed in Alex Carter's 'Afterthoughts' and take forward the nascent third phase.

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Editor : the question of values surfaced on a number of occasions in the Facebook conversation and value and the creation of new value are important concerns of creativity. Judgements of value are learnt—they are cultural and formed around what is considered normal. So judgements both personal and social are usually relative to what is considered to be the norm. Hence in Carly Lassig's grounded theory of adolescents' creativity the core idea is 'perceiving and pursuing novelty: not the norm'. Chris Wilson has thought a lot about value and its relationship with creativity also I invited him to offer his perspectives.

Narrow targets: Deconstructing questions of value and creativity in HE

Chris Wilson

Chris is a member of the Academic Team in the Centre for Learning Innovation and Professional Practice at Aston University with specific responsibilities for professional development of academic staff and management of institutional projects. He leads the Creativity Special Interest Group at Aston and publishes and presents on the subject in the UK and internationally as well as supporting related research activities across disciplinary areas. Chris is a classically trained musician and creative practitioner.

A story to start

"Mischievous antics of a class of naughty pupils have been uncovered by workers restoring a former school."[1]

In an episode of a BBC documentary series entitled 'Toy Stories' focusing on a challenge to build a model glider that could cross the English Channel[2], the programme cuts away briefly in the narrative to visit a renovation site in Barnstaple, Devon, a 14th century building that had operated as a grammar school from the 16th to the early 20th century. Attention turns to the discovery of over twenty small paper airplanes lying in the eaves and roof space. All demonstrating clear ingenuity and even design prescience despite potentially predating the turn of the 20th century and being produced by students younger than thirteen years of age, as observed by the presenter, "to discover that concord was actually the work of an unknown 19th century child, is an uplifting and emotional moment." I wonder what value the students responsible experienced making them and what these evidently creative activities ultimately led to?

Introduction

That education itself is judged to be inherently valuable is self-evident. Tackling educational inequality is treated as a globally strategic priority[a], quality education features prominently as the 4th of the 17 UN Sustainable Development Goals[b], and OECD data indicates an upward trend in global education spending in overall terms[c]. Nevertheless, that by no means implies that debates about educational value are settled or uncontentious. Since John Henry Newman famously extolled in 1852 the simple "value and dignity of liberal knowledge"[3], marketisation and massification of education, and higher education in particular, has inaugurated a seemingly exponential increase of accountability, related scrutiny, and consequent contention and uncertainty.

Almost universally publishing mission statements or other strategic proclamations of institutional values, from ivory towered autonomy and a focus on knowledge for knowledge's sake, universities are now subject to more critical public and political scrutiny[d], face debates about free speech and accusations of political bias[e], grade inflation and academic integrity, operate within an increasingly challenging and more heavily regulated and commercialised environment, and contend with a seemingly ever more granular range of proxy measures and metrics used to determine the performance and standing of individual institutions. There being concerns about a consequent 'McDonaldization' of higher education[4,5], with provision increasingly following demand as departments flourish and die based on popularity, curriculum design is ever more vocational with graduate employability used as a key determinant of course value, and there is an increasingly significant influence of 'student satisfaction' as a means of determining the value of learning and teaching ultimately shaping practice. Value in education has never been scrutinised in a more forensic way or subject to more intense debate. As the old saying goes, there has never been a problem, however complex, that if thought about in the right way can't be made even more complex.

Considering creative value

In simple terms, creativity in education has value where it is judged to. Yes, where this relates to the development of new insights, irrespective of scale or significance. And no, where an act may be creative for an individual but brings negative value to others, such as through the development of ingenious ways to cheat in formal assessment - malevolent creativity[6]. Creative integrity or value is also often easily perceivable or decodable even to non-expert audiences. Beautiful music is as much so, or even arguably more so, for an infant as a trained musicologist; extraordinary acts of physical dexterity or athleticism as visible to the amateur as the sports conditioning coach, and when closely aligned to a Pro-C framework[7] of professional or stylistic conventions such as in the case of art and design departments in universities the world over, quite readily subjectable to notionally consistent evaluation.

Nevertheless, what is focused on to reach those judgements is routinely a narrow snapshot of student learning and always that which is most visible. Assessment practice in higher education remains considerably focused on outcomes and artefacts often underpinned by normative understandings and conventions favouring or even mandating reproduction over originality, with expectations significantly weighted towards conformity over significant disruption and departure from the norm. Creativity may be easy to see, but can also be easily missed, especially if it's not being looked for.

Whilst creativity can be relatively straightforwardly defined in terms of novelty and utility[8], either for an individual or for humanity[9], Melvin Rhodes' 4P model[10], for example, highlights the significance of the Person, Process, Press (relationship to environment), as well as Product in understanding creativity indicating significant additional nuance. With clear implications for education relating to the first P and personal experience (including mental health and wellbeing), issues of ambiguity of authorship and creation in the digital age related to Process (conceptions of digital creativity and originality), and increasing dynamism and instability in the very status of specific areas of knowledge, skills and employment as a consequence of the 4th Industrial Revolution related to the Press, the value of any creative product is subject to complex set of wider variables, and creativity itself arguably a perennially dynamic and inherently more ambiguous and fuzzy construct[11].

For example, the economic or objective value of artworks vary significantly with age, rarity, according to often esoteric provenance, and subject to complex cultural and market trends. Consider art fraud, for example - does a wave front of creative as well as economic value simply collapse entirely at the point at which a forgery is discovered, especially a brilliant one that had managed to fool all but the last and greatest investigator? Furthermore, regarding the veneration of creative individuals, Leonardo da Vinci's technical drawings for flying machines are remarkably prescient and brilliant for example, but they did not ultimately inform the work of the pioneers of flight, or as far as is known even function at the time. Other, far less creatively revered individuals have greater claim here. And what about germinality and influence? The tendency towards romantic veneration of creative individuals does belie the evident understanding of creative domains as cultures of practice with foundations of knowledge and shared frames of reference. Reflecting Csikszentmihalyi's Systems Model of creativity[12], for example, many if not most eminently creative musicians chart their influence quite directly to antecedents, contemporaries and direct collaborators. If, as Paul McCartney has acknowledged, Sgt Pepper's Lonely Hearts Club Band would not have existed were it not for Pet Sounds by the Beach Boys, what role then do Brian Wilson and his bandmates have in the creative value of the eponymous Beatles' album?

Perhaps most significantly, consider the art project in a secondary school that provides one child with the opportunity they need to express themselves and consequently then seek further specialist support that ultimately saves their life. The psychotherapeutic benefits of art-based education is widely appreciated and music and art teachers are often involved with supporting students in distress as a result of more private teaching situations. Whilst the product in the case of the art project may not necessarily be artistically remarkable, the process, in this example, clearly had value beyond measure. What that creative individual might subsequently create and contribute subject only to wondrous speculation.

Is it really that complicated?

Creativity is fundamentally synonymous with discovery and the inauguration of the new. Whilst we can by definition never act spontaneously within reason, only ever draw maps of the discovered and never blueprints for discovery, apart from exceptional acts of creativity that transcend convention and inaugurate new domains, all creativity is nevertheless domain-based, in part derivative, and incorporates recognisable concepts and constructs. It wouldn't, after all, be identifiable as creative if it didn't. Nevertheless, creativity is always at least atypical if not unusual, operating at and ultimately extending the edges of what is normal for either an individual, domain of practice, or a whole society. Consequently, as well as being valuable in and of itself, creativity also disrupts and extends established value frameworks.

creativity disrupts and extends established value frameworks

Whilst the notional unpredictability and inherent novelty of creativity may present a challenge for education rooted within the conventions of disciplines, it is important to recognise that creativity is also inevitable. Taking the standard definition of creativity as novelty and task appropriateness[13 p3], or simply the act of developing new meaning, with the possible exception of malevolent creativity, the value of creativity in its positive sense is widely recognised in education and arguably conceivable as foundational to learning itself. Recognising uncertainty and complexity, creativity in education is nevertheless conceivable in some very simple terms. To paraphrase a famous maxim with reference to Kaufman and Beghetto's 4C model of creativity[7], the journey to any little, pro, or big-C creativity must ultimately begin with a single mini-c and be followed by a continued and ultimately unbroken sequence of articulating mini-c events. Education simply needs to facilitate and then support the integration of these events as effectively as possible. If education is ultimately the domain in which we develop our understanding of value and how to evaluate value in specific contexts, including the value of our own creativity and its effects, perhaps it's enough **simply to remember that creativity operates on the margins,** that we mustn't forget to look in the conceptual eaves and roof space, and ultimately remember how simple and how valuable it is to encourage learners to throw things there.

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End Notes

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How are engineering students encouraged and enabled to become creative engineers?

John Cowan assisted by Conor Cunningham; Clarissa Harte; Damien Madigan; Stephen Martin; and James O'Connell

John entered academia after a successful career as a structural engineering designer. His research at Heriot-Watt University, Edinburgh, where he was the first Professor of Engineering Education in the UK. His passion for and professional interest in student-centred learning now spans over 50 years and he has inspired many higher education teachers. In reviewing his book 'Becoming and Innovative Teacher' Professor John Biggs wrote *"the whole book is driven by a cycle of questions, examples, strategies and generalizations from the examples. In all, it is the clearest example of practise-what-you-preach that I have seen." Here are some examples of John practising what he preaches.*

How do we educate and cultivate the next generation of creative engineers?

This issue of the magazine advocates that higher education plays a pivotal role in the development of people who have the dispositions, foundational knowledge and skill to perform creatively in particular domains. In other words, higher education provides the formative experiences, contexts and environments in which people learn to think and act in creative ways in their particular disciplinary fields. Jackson and Lassig[1] argue we should think of higher education as the essential stepping-stone towards what Kaufman and Beghetto[2] call Pro-c creativity – the creative acts of people who have developed considerable knowledge, skills and expertise in a particular domain like engineering. In this contribution I want to connect three stories from the domain of engineering design to illustrate what creativity means and show how students studying to be design engineers begin their journey towards self-awareness and domain specific forms of creative performance.

Biographical example of what felt like creative design to me

During the months before I moved from civil engineering design consultancy to academia, I addressed yet another of the "almost impossible" jobs for which I had gained something of a reputation. A rather important paper-making machine was housed in the midst of an accumulation of tightly adjoining mill buildings. The roof and roof structure were in urgent need of repair, lest the quality of the special, high quality paper produced by this machine was compromised. The client required that the re-roofing operation must be carried out within the annual mill shutdown period, which amounted to a mere 16 days. The speediest quotation that the client had obtained for replacement of the old structure by a new structure of foundations, stanchions, roof structure and cladding, called for shutdown of the machine for three months.

I looked for an alternative to the traditional form of reconstruction. Construction time rather than cost was the critical constraint. I decided that my new building would be constructed downwards, rather than conventionally ascending upwards. I conceived a plan for the contraction of a new roof structure and cladding together with the upper legs of new stanchions, all built to hang temporarily above the condemned roof. This new construction would be supported by an assortment of integral trusses sitting on temporary stanchions located in positions in adjoining buildings with minimal adjustment to their roofs. When the shutdown period came, we were able to dismantle and remove the existing roof and supports and extend the new stanchions downwards while hastily excavating for and casting new concrete foundations. The work was completed within the available period. I breathed a sigh of relief and went home to catch up on lost sleep.

ENCOURAGING MYSELF TO USE MY IMAGINATION TO SOLVE A REAL ENGINEERING PROBLEM

achieved my goal. And I look back to see how I overcame the obstacle. In my imagination this time, I saw the new structure appearing mistily with the important roof and its supports prominent, and with the foundations – hidden underground – almost unimportant. I found myself asking the weird but facilitative question "What if we could do all the messy foundation work last?" Immediately the main details of the final plan began to emerge.

This creative design was conceived, I suppose, because I seriously asked myself "What if I threw aside the conventional approach to doing a job like this?" and day-dreamed through my imagination into the main features of a successful scheme.

Editor - this description of John's mental process reminds me of John Dewey's interactional model of creativity.

"For Dewey, what brings action and creativity together is human experience, defined precisely by the interaction between person and environment and intrinsically related to human activity in and with the world. …Action starts….with an impulsion and is directed toward fulfilment**. In order for action to constitute experience though, obstacles or constraints are needed. Faced with these challenges, the person experiences emotion and gains awareness (of self, of the aim, and path of action).** Most importantly, action is structured as a continuous cycle of "doing" (actions directed at the environment) and "undergoing" (taking in the reaction of the environment). Undergoing always precedes doing and, at the same time, is continued by it. It is through these interconnected processes that action can be taken forward and become a "full" experience." [4 p2-3]

A memorable teaching experience

Over 40 years ago, I ran a learner-directed, learner-managed, self-assessed course on Design in Civil Engineering. I negotiated with learners the contract within which individual learners would determine their own learning aims relating to Design, define learning outcomes and plan how to achieve them. The entire effort was to be self-assessed. My role was to create the draft contract, and to occasionally provide facilitation – without teaching, in the usual sense of that word.

Three students in the group of twelve opted to work together for a few weeks and try to develop their creativity, which they felt in dire need of attention. They identified a simple motorway-crossing design task, which they would try to address creatively together; but quickly they found themselves making little headway in their aspiration to be creative. They asked me for suggestions. I discovered that they had stuck on three-span bridges. I suggested as a trigger that they imagine their client had forbidden the provision of a *three*-span bridge. "What would you suggest, then?" I asked. They went off and came up with a creative set of bridge designs of varying feasibility with various structures and arrangements other than three spans. They proudly showed me these results of their creativity. I responded by suggesting that they now imagine that their client had precluded a bridge of any type for the crossing. What would they then suggest? After a pregnant and thoughtful silence, they went off to generate a smaller range of innovative solutions, ranging from a tunnel to a roundabout and intriguing road diversions. I interjected to ask them to identify what had unleashed their creativity. They concluded it had been identifying a common feature of the first solutions generated, and actively seeking solutions in which that feature was absent. "Great", I commented, "Why not try that on a different design challenge and see how fruitful it is in promoting your creativity?" They did so and were successful.

ENCOURAGING MY STUDENTS TO USE THEIR COLLECTIVE IMAGINATIONS TO SOLVE HYPOTHETICAL ENGINEERING PROBLEMS

I identify several aspects in that wee story that embody for me the promotion of creative engineering thinking which combines and integrates perception, imagination, reasoning and reflection which was what, I as a teacher, was trying to accomplish.

1. A carefully designed, purposeful and relevant activity for engineers.
2. Triggers within the activity to promote original thinking about the engineering problem.
3. No teaching in an instructional sense by teachers: only facilitative nudges in the form of questioning.
4. An obligation and need for learners to use their imagination in order to respond creatively to the task, linked with a willingness to try to engage in a creative way with the problem.
5. Encouragement to generate ideas without initially evaluating and judging them.
6. Encouragement to expand thinking by considering simple 'what if?' questions that disregard constraints and oblige people to think about a problem in a different way.
7. Interaction and sharing of ideas between struggling learners as they engage with a challenge and create further possible solutions to the engineering problem
8. Encouragement to reflect on the problem so they could bring into their consciousness the means by which they solved it i.e. to learn from their experience of being creative what it means to be creative in this situation.

It is clear from this story that I did not teach the students to be creative. I gave them a problem that I knew would demand their creativity and invited them to teach themselves by experiencing it first-hand. My role was to help them teach themselves and to encourage them to become more aware of how their creativity had emerged as they worked on their problem. This perspective chimes with Chrissi Nerantzi's conclusion about how she has learned, and continues to learn, about her own creativity. *"For now, my thinking around learning to be creative seems to focus on experiencing creativity in an immersive, experiential way and teaching myself what it means to be creative by reflecting on how my creativity emerged through my experience."*[4]

It seemed to me at the time, and still seems to me, that creativity thrives in learning environments where these sorts of conditions for learning prevail and these ways of thinking influenced my contributions to the recent online discussion responding to the proposition – 'You Can't Teach Creativity but You Can Learn it'.[3]

Design Studio

The third story in my trilogy relates to a recent experience of 'teaching'. In October 2019, I offered facilitative comments to level 1 students on the civil engineering degree at the University of Limerick who were 7 weeks into a problem-based course called Design Studio. The rationale behind this programme has already featured in this Magazine[4]. The students had been charged to identify and analyse their learning experiences in that short period, and submit a data-based claim of their development in terms of interdisciplinary attributes like presentations to groups, teamworking, creativity and time-management I was impressed and enthusiastic about the tale told in their short reports which were their first experience of reflective reviewing. I conflated some quotations and, with the students' permissions, sought publication in a journal that I hoped would be sympathetic to a paper of this type with an encouraging message for creative teachers. I shared the draft article with Norman Jackson who was enthusiastic about its content; but the submission was swiftly rejected by the editor of that journal.

Meantime, Norman (the editor) emailed to share his plans for an issue of this magazine which he wanted to form around the idea that we should recognise education as a special domain for the development of creative beings that are preparing for performing creatively in specific domains like engineering.[1] He invited me to write a short article based the work of Tom Cosgrove and colleagues at Limerick, drawing on the way the team of teachers encourage student engineers to develop and implement their initial awareness of what it means to be a creative engineer structured around reflective reviews for, in and on action. I thought back to those features from my experience in promoting students' creativity in an engineering course all those years ago and found myself ticking them off from items in the Limerick students' claims. And so I have joined with some of these students to recount and analyse significant aspects of those first formative weeks for them in Design Studio.

Students' reflections on their experience of Design Studio

The following extracts from students' claims regarding their development of awareness and creativity in the first seven weeks of a module called 'Design Studio' have been provided, with their permission, and simply conflated by me.

[Clarissa] As a bright group of young people we have experienced the rigidity of schooling in Ireland from ages 4-18. Our lecturer once said 'In school your creativity was taught out of you'; after giving this statement some thought I realized how right he was. As young children we play an array of wonderful games that keep us entertained for hours, all in our minds. Now, you do not see us sitting in waiting rooms for any longer than 3 minutes without taking our phones out. This conclusion I made saddened me.

[Stephen] The initial weeks of both modules seemed very alien to me as I had never been handed such open briefs. The vague guidelines for the projects proved to be very difficult to begin with as, throughout my academic life, every project in school had specific requirements which almost led me to be unable to think critically for myself as the info was always provided and the framework for my thinking firmly outlined.

[Clarissa] Initially when I read the list of our modules and I saw 'Design Studio 1' my first thoughts were that we would be designing and building models. By the end of week one I realized I was grossly incorrect. Through my experience of this module so far, I now think it's more about designing ourselves as engineers to think outside of the box, to develop skills in us that will give us the head start against other engineers. Skills that even the greatest of lecturers would fail to successfully teach inside of a lecture hall.

[Damien] Design Studio has been the most unusual module I have studied in college so far. I feel that in this module we are learning real life skills that are needed in the careers of civil engineers but also in almost any other career that I can think of.

[Conor C] The modules are not lecture-based; they require you to think for yourself and learn from and with your peers, so that the skills mentioned are essential for this type of learning. We are required to do group projects and give presentations, often with a selection of broad topics unrelated to engineering. This requires a great deal of creativity as it is initially hard to focus the mind with very slight direction or criteria.

[Clarissa] On the Tuesday of Week 1, we met Declan Philips and re-met Michael Quilligan (our lecturers for Design Studio). Within the first 20 minutes of class we were split into groups and given our first trigger. 'Can a child easily lift a fully grown adult?'

[James O] Originally our answer was "No, surely not." However, we decided to forget this mindset and began to discuss how a child might support the weight of an adult. We broke down the boundaries of what we thought we already knew and began to think outside the box. We eventually came up with several solutions to this brief, such as by using a pulley system, a lever system or even underwater. By giving us a brief and no other information about what we needed to do, we were forced to be creative and work outside our comfort zone to find solutions to this problem and choose between them.

[Conor C] I have found that the design studio module has challenged me creatively. It is designed to get us thinking differently and I would say that simply stated but complex demand is the hardest challenge I have faced so far. This was illustrated when we were given a broad brief "Find an idea or a challenge that has always intrigued you but that you have never had the time to peruse it – this is your opportunity. Develop a response to this idea". I found this assignment extremely difficult, my mind went blank when I was given no guidance on what topic to pursue. I learned a lot in the process of completing this assignment, I had to learn how to brainstorm effectively on my own, and I was forced to improve my self-discipline in doing so

[Damien] a large portion of the marks are going for group work projects. In Structural Engineering Design this began in week one when we were given our 12-week brief "to provide a safe means for Declan Phillips to cross the Kemmy pond." We used a number of methods to think of and find solutions to cross the pond. Solutions varied from catapulting Declan across the pond to telling him to walk around.

[Stephen] What does it take to be a creative thinker? In my opinion the notion of a person being a creative thinker or not should not exist. As I have learned from the first six weeks of my college year, I can see that creative thinking is just a mindset and not an ability. Anybody can be a creative thinker if they have the correct mindset. While in the correct mindset, it is important to keep a key point in mind while trying to conceive ideas or solutions to a problem; The thinker must not dismiss any idea regardless of practicality, simply write every idea that comes to mind onto a brainstorm. Every avenue of design for every idea should be investigated as some of the most outlandish ideas can often be the root of the final solution for a mind-boggling problem.

[Damien] Often when it comes to needing to thinking creatively, it feels like trying to squeeze water out of a turnip. Sometimes an idea can pop into my head the second I've finished identifying a problem, while at other times it can feel like an age before I can think of some sort of a suitable solution. Thinking outside the box is just another skill I need to practice and perfect, but so far, through forcing myself to come up with an idea I feel that I have improved this skill, such as during the presentation where I needed to improvise.

A commentary on students' perceptions of their Design Studio experiences

Key features of the students' accounts that relate to their experiences of creativity include:

1. Demanding yet motivating tasks that are relevant to the domain of the professional engineer and which call from the outset for creative thinking relevant to engineering.
2. A carefully planned succession of appropriate task structures and experiences.
3. The absence of any instruction delivered by lecturers who require learners to work things out for themselves.
4. License and encouragement to use imagination when responding to challenges, to think beyond the obvious, to abandon preconceptions
5. An emphasis on working collaboratively and interactively in groups, and on developing communication skills in presentations (not described here)
6. Encouragement to reflect on experiences in order to develop self-awareness of what it means to think and act like an engineer.
7. Motivation for and satisfaction with what is achieved.

The three lecturers concerned have clearly developed in Design Studio, a context and culture, and an educative process and set of experiences that has made a striking and rapid impact on the development of these learners as creative thinkers and doers in the disciplinary context of engineering design. Their perceptions of what they have learned through their experiences and their reflections on both their experience and the impacts their experiences had on them, reveal the early development and application of dispositions, foundational knowledge and skill to perform creatively in their disciplinary domain.

Rounding off

The intention and execution of 'Design Studio' as a means of enabling learners, to think and act like an engineer, supports Carly Lassig's proposition[1] that education is a special domain for the development of people so that they are able to perform creatively in specific domains like engineering. Design Studio features the first facet of her grounded theory of adolescent creativity, namely *Perceiving and Pursuing Novelty*[6]. Design Studio starkly calls upon embryo civil engineers to exercise unique perceptions and insights, and to "actively pursue

novel outcomes based on what they experience." When they perceive and pursue novelty they connect their thinking "to bring imaginative ideas into concrete existence."

I believe that to revitalize the innate creative abilities of students is not something which calls for any teaching at all in the sense of directing or instructing them. I would rather advocate a liberal interpretation of responsibility for nurturing learning as, "the purposeful creation of situations from which motivated learners should not be able to escape without learning or developing." As exemplified by the trilogy above. In the first story I was 'trapped' so to speak in a real world problem situation that I had to solve, while the second and third stories involved trapping learners in an educational design involving hypothetical problems that required them to use their creativity in order to escape.

Sources

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Exploring and Extending the 4C Model of Creativity: Recognising the value of an ed-c contextual-cultural domain

Norman Jackson & Carly Lassig

Norman is Emeritus Professor of Higher Education at the University of Surrey, co-founder of Creative Academic and Editor of Creative Academic Magazine. His book ,'Developing Creativity in Higher Education: an imaginative curriculum' provides a foundation for his current work on creativity.

Carly is a Lecturer in the School of Early Childhood and Inclusive Education in the Faculty of Education at Queensland University of Technology. She has a passion for social justice, equity, and inclusion and thrugh her doctoral research she developed a grounded theory for adolescents' creativity.

Background

The 4C model of creativity developed by James Kaufman and Ron Beghetto in 2009[1] provides a useful framework within which general concepts of creativity can be located. It helps to explain some of the complexity associated with the phenomenon of creativity. The value in their framework was to extend the ideas of everyday *personally meaningful* small-c creativity, and Big-C eminent *culturally meaningful* creativity to include "mini-c"—creativity that is inherent in the process of learning, and "Pro-c" creativity—relating to the creativity of experts working in a professional domain i.e. a domain where specialist knowledge and skill is needed to perform.

Their map of creativity as a phenomenon made a lot of sense to me [NJ] and I used it to create an illustration for conferences and talks given between 2010-14. The visual aid enabled me to explain the different contexts and significances of individuals creativity (Figure 1) and show how different parts of the spectrum are relevant to education, work or other aspects of everyday life.

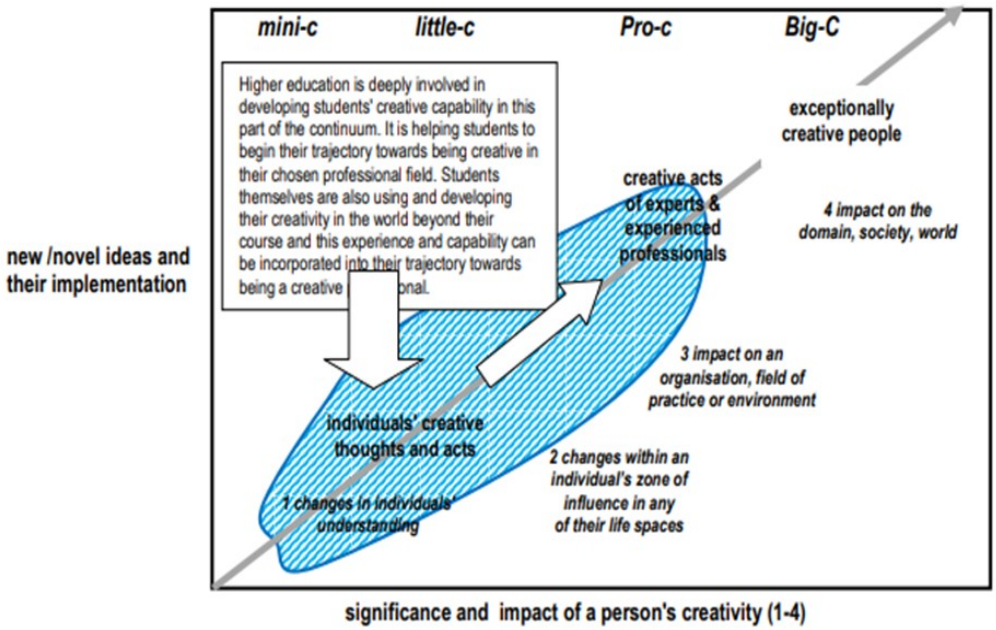


Figure 1 Representation of the 4C model of creativity[1] prepared for a conference presentation in November 2013[2]

Unbeknown to me, at the same time Carly was working on her doctoral study in Australia investigating the creativity of adolescents in which she drew on the 4C model and argued for its extension to include a fifth C to represent the domain of formal edication.[3]

In May 2019 I attended the UK Creativity Researchers conference at the University of Central Lancashire and enjoyed a talk given by Thomas Colin, a doctoral researcher at the University of Plymouth. During the talk he showed a representation of a 2x3 grid for understanding creativity with 'context' and 'norm' as the labels for the two axes of the grid. I assumed his diagram was related to the 4C model of creativity. On the train home from the conference I redrew my 4C framework diagram to incorporate the dimensions of context and norms and shared it with Thomas to find out how I might give him credit for his idea. He subsequently sent me an article[4] which explained the background to his diagram, but he assured me that he himself had not related his matrix to the 4C model, although he could see the value in doing so.

Simultaneously I was facilitating an on-line conversation in the #creativeHE Forum in our 'Lets Get Creative' festival. During the conversation I introduced the 4C model of creativity as a tool to help us interpret our own creative involvement in the festival[4] In response to my post, one of the participants recommended that I look at Carly Lassig's PhD dissertation[3]. After reading Carly's work and appreciating the synergies in our ideas, I contacted Carly and this article is the result of our collaboration. We offer this exploration of the 4C model in order to stimulate further conversation about its use and value and argue that what we are calling a *contexts and norms framework* for creativity, could usefully be extended to include the educational (ed-c) domain proposed by Carly in her dissertation.

What is human creativity?

Before we go any further, we need to share our understandings of what creativity means. At the most fundamental level we agree with Lev Vygotsky when he says, "Any human act that gives rise to something new is referred to as a creative act, regardless of whether what is created is a physical object or some mental or emotional construct that lives within the person who created it and is known only to him."[6 p7]

But there are many nuances on this theme resulting in over 100 published definitions or propositions as to what creativity means. There is no consensus-based definition of creativity, however, according to a standard definition, creativity is often perceived as the ability to produce something new/novel and appropriate/useful. Embedded in the standard definition used in psychological research[7], are the ideas of *originality* and *effectiveness*. But there are two ambiguities in the standard definition[3]. 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(s)[3 p25] i.e. the person, persons or groups of people who evaluate and decide whether something is of value. In other words, the social/cultural environment within which people create is also the environment in which judgements are made about a creation. Creativity is a social construct and it is fairly meaningless without a social/cultural context.

Creativity as a phenomenon involving unique people interacting in unique ways with their unique contexts, situations and physical-social-cultural environments

The American philosopher, educator and social critic John Dewey developed an interactional model of creativity through which creativity emerged as a result of humans interacting with their environment. He believed that action and creativity are brought together through human experience. *"When we experience something, we act upon it, we do something with it; then we suffer or undergo the consequences. We do something to the thing and then it does something to us in return."* [8 p46]

Carl Rogers framed the way creativity manifests itself as a phenomenon through his 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, people, or circumstances of [their] life"* [9- p350]. Like Dewey, he describes creativity as an ecological phenomenon - human beings having thoughts and feelings that are stimulated by their relationship and interactions with the material and socio-cultural world around them and these thoughts and feelings lead to actions and experiences in the world which they interpret and respond to in ways that cause new 'things' to emerge or happen.

Anthropologist Tim Ingold has much to say on the making of cultural artefacts that grow through a unique person interacting purposefully, skilfully and creatively with their environment.

"What people do with materials is to follow them, weaving their own lines of becoming into the texture of material flows comprising [their] lifeworld. Out of this, there emerge the kinds of things we call buildings, pies and paintings." [10 p97]

"every practitioner has to improvise his or her own passage through the array of tasks the performance entails…… the wellsprings of creativity lie, not inside people's heads but in their attending upon a world in formation. [11 p.124]

Support for these ways of thinking about creativity is provided through the recent publication of a socio-cultural manifesto for advancing creativity theory and research[12] which was endorsed by a group of 20 top creativity researchers. A selection of quotes from this short but authoritative statement about the nature of creativity, serve to reinforce the general flow of ideas about conceptions of creativity as we explore the 4C framework.

"Creativity is, at once a physical, social and material (physical and embodied) phenomenon. This multidimensionality is important because we create not as isolated minds but as embodied beings who participate in a socio-material world." [12 p2]

"Creativity and culture are intertwined: the former uses the signs and tools made available by the latter to produce new cultural resources that go on to facilitate future creative acts. Language as a cultural artefact plays a particularly important role in the dynamic of creativity……. In the socio-cultural tradition, culture and mind are interdependent and continuously shape each other. Culture is neither external to the person nor static, but constitutive of the mind and of society by offering the symbolic resources required to perceive, think, remember, imagine, and, ultimately, create." [12 p2]

"Creativity takes the form of action or activity, and all human action occurs in a given symbolic, social, institutional, and material context. As a result, creativity is constituted to a great extent by the situation and domain in which it is expressed rather than any universal or innate bio-psychological principles. This, among other things, makes creative acts unique – given that no two people and situations are completely alike – and also difficult to predict. At the same time, cultural patterns as well as individual regularities in creative expression do allow us to construct models that are transferable to different domains of creative action and to different contexts. Generalization should be made with great care, though, and in ways that recognize the situated nature of creative action."[12 p.2-3]

Education and creativity are cultural constructs. Culture is learned, not inherited. It derives from one's social environment [14 p.6] and creativity is action mediated by culture'[12 p.2] so we cannot extract (de-contextualise) creativity from its cultural home and expect to understand it. This is very important when using the contexts and norms framework as a cognitive tool we must appreciate that culture underlies everything (Figure 2).

But culture is also an individual, psychological construct as well as a social construct.[14]

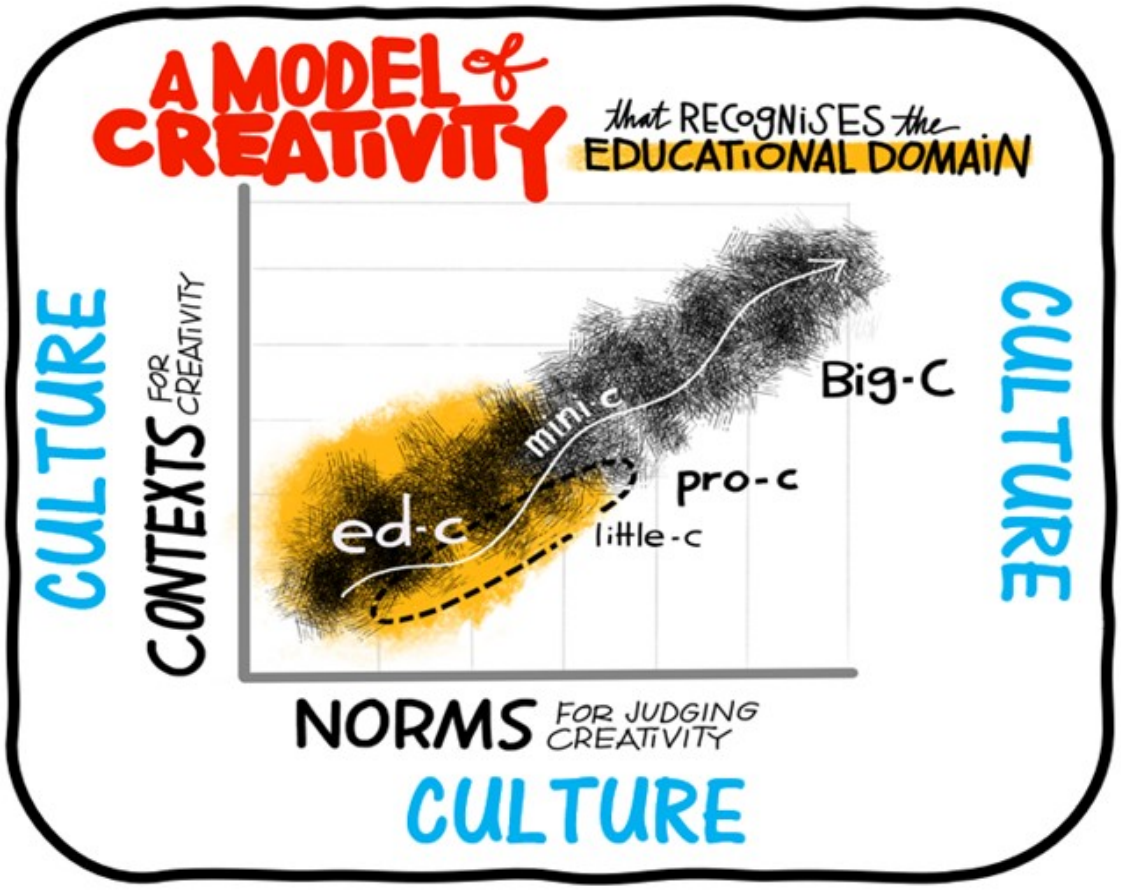
> 'Culture is a fuzzy set of basic assumptions and values, orientations to life, beliefs, policies, procedures [artefacts] and behavioural conventions that are shared by a group of people, and that influence (but do not determine) each member's behaviour and his/her interpretations of the 'meaning' of other people's behaviour.' [13 p.3]

"culture exists in each and every one of us individually as much as it exists as a global, social construct. Individual differences in culture can be observed among people in the degree to which they adopt and engage in the attitudes, values, beliefs, and behaviours that, by consensus, constitute their culture. If you act in accordance with those values or behaviours, then that culture resides in you; if you do not share those values or behaviours, then you do not share that culture."

"While the norms of any culture should be relevant to all the people within that culture, it is also true that those norms will be relevant in different degrees for different people. It is this interesting blend of culture in anthropology and sociology as a macro-concept and in psychology as an individual construct that makes understanding culture difficult but fascinating." [15 p18]

What is clear from the literature is that culture underwrites the definitions, process and assessment of creativity[16] and 'people from different cultures or settings have distinct implicit and/or explicit conceptions of creativity'[16 p.1]

Figure 2 Our representation of the contexts and norms framework, drawn by Sita Magnuson, emphasising the way in which culture underpins everything and showing how ed-c sits alongside little-c as the essential environments for creativity during childhood, adolescence and early adult life for many people.



The 4C contexts & norms creativity framework

Our understanding of the 4C model[1] is that it seeks to develop a comprehensive and inclusive concept of creativity that can accommodate individual's creativity along and across the life span from the humblest to the most significant of scales and impacts. The model has four categories that relate to the manifestation of creativity but they are not uniform in character. Two of the categories might be viewed as meta-contexts within which particular contexts, situations and physical social-cultural environments are located.

Personal everyday life situations and contexts (little-c) *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.

Professional/work situations and contexts (Pro-c) *creativity can be present in and through* aspects of individual's work or areas of expertise. The Pro-c meta-context contains a multitude of domains in which people practice and create. The word 'professional' might be a little 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 context for example serious hobbyists may have invested as much time and committed practice as someone who earns a living from their own expertise.

A third category of eminent creativity (Big-C) *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.

A fourth category (mini-c creativity) *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" [1 p4]

Viewing creativity as a phenomenon involving unique people interacting in unique ways with their unique contexts, situations and environments means that any frameworks within which creativity is considered need to acknowledge the contexts, and material and social-cultural world in which creativity emerges. This is the first motivation for our exploration of the 4C framework.

We believe we can usefully integrate the ideas of context, norms, values and subjective judges into the 4C framework to enhance its meaning and value as a cognitive tool. Figures 3 illustrates how these ideas might be combined and integrated.

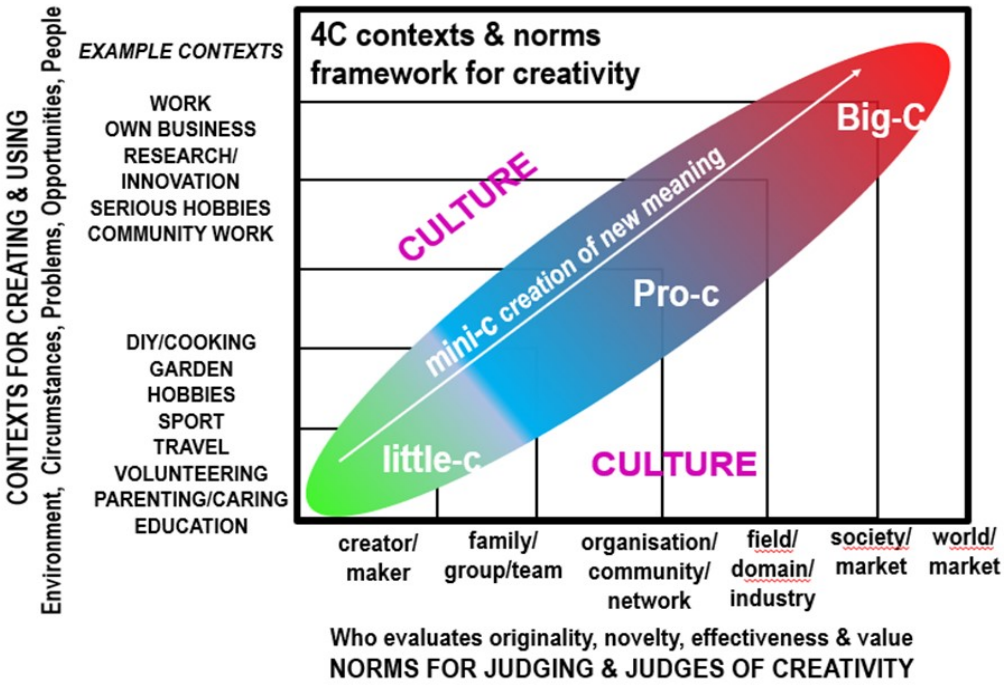


Figure 3 4C contexts and norms framework showing the categories of creativity in the model with example contexts and the people who create, use and judge creations. Developed from Kaufman and Beghetto's 4C model of creativity[1]

Exploring the contexts and norms framework (examples of little – c/mini-c phenomenon)

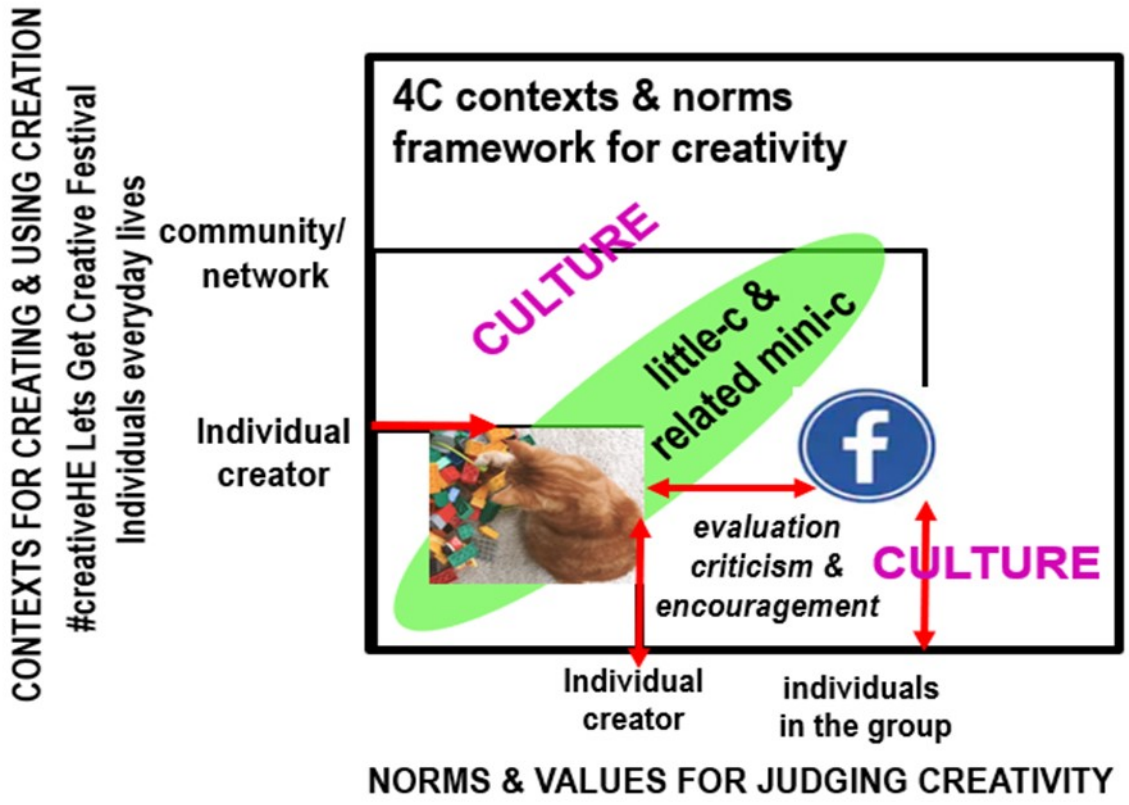
The May 2019 the UK-wide 'Let's Get Creative Festival' afforded the opportunity for the members of the #creativeHE facebook forum to use their creativity and share its effects with the other participants. The festival and forum created a context for individuals to try to use their creativity and share the outcomes and their understandings with others who in turn were able to evaluate and comment on the creative gifts using their own values to judge them. In this way the personal creativity of individuals was connected to the norms of a social group that shared to varying degrees, certain values and beliefs and were able to gently explore interesting aspects of little-c and attendant mini-c phenomenon.

Philosophically, the annual Let's Get Creative festival is founded on western cultural assumptions that engaging in creative activity is an essential part of being human with practical and psychological benefits in line with those advocated by David Schuldberg.

"Living creatively is an intrinsic part of everyday life. It is a core component of 'living a good life' which is not an outcome but a path that is constructed through ordinary activities and experiences. In this context creativity means coming up with solutions to life's problems and to making the most of opportunities that are both novel and useful to the inventive [resourceful] person. Sometimes these activities and effects are of practical significance and value and sometimes their meaning lies in the emotional and aesthetic" [17 p.55-6].

We believed that the people who participated in the Lets Get Creative festival by producing and sharing something with the members of the group, also shared these cultural beliefs and values, although perhaps to varying degrees. We might use the 4C contexts and norms framework to model this set of conditions (Figure 4).

Figure 4 Using the 4C contexts and norms framework to illustrate the interactions between an individual participant sharing their little-c/mini-c creativity and the members of a forum



Clashing norms – what is/isn't creative?

While participants shared a context – membership of and participation in the #creativeHE forum and festival, and a set of broad cultural assumptions about creativity, what surfaced in the group was a tension between what some people believed was a valid manifestation of their own creativity for example, a photograph of their cat with interpretations of the meaning of what it was doing, and what other participants felt was an acceptable claim to creative self-expression. What we witnessed was a clash of personal norms relating to what it meant to be creative: a situation that is represented schematically using the 4C contexts and norms framework in Figure 5.

What followed was a conversation in which the facilitator defended the right of the individual to make a claim for their own creativity while the agent provocateur elaborated a more critical view of the creative value of the claim for creativity. What was interesting was the feedback given to the creator by other participants which aimed to encourage greater meaning making or more inventive use of the photographic artefact. The cat-

snapper responded to the critical feedback by creating captions and at the end of the process a synthesis collage. The lesson here perhaps is that interaction with a community 1) invites criticism and the testing of an individual's normative creative values against those of others. However, interaction 2) also invites the possibility of constructive feedback that can then stimulate responses that are deemed to be more creative by the community. In this way perhaps an individual's normative values are changed.

The cat snapper invited others to contribute captions and this resulted in several people suggesting alternative captions including several that were quite funny. In this way simple snaps of a cat engaged imaginations and stimulated metaphorical and symbolic interpretations of possible meanings which were aired and shared. Perhaps in this way interaction results in the sharing of meanings so that mini-c might be a property of a group process as well as an individual process.

The question of what is or isn't creative is a good one and it is one that continually exercised the #creativeHE forum. Carl Rogers talks about the need for an internal locus of evaluation.

"Perhaps the most fundamental condition of creativity is that the source or locus of evaluative judgment is internal. The value of his product is, for the creative person, established not by the praise and criticism of others, but by himself. Have I created something satisfying to me?... If to the person it has the "feel" of being "me in action," of being an actualization of potentialities in himself which heretofore have not existed and are now emerging into existence, then it is satisfying and creative, and no outside evaluation can change that fundamental fact." [9 p354]

When people declare their opinions, such as in a public on-line forum, it is clear that individuals differ in their sense of what is creative based on the beliefs and norms they hold. One way of mediating these differences is to develop criteria that can be shared and discussed in the context of individual contributions. Unfortunately, it is often very hard to even get participants to share the results of their creativity and even harder to get them to talk about it. This is one of the reasons that creativity is so elusive, subjective and contentious.

Personalising the 4C contexts and norms framework

The advent of social media means that the products of individuals' creative self-expression can be communicated to a wider, potentially global audience. One of the contributors to the May 2019 #creativeHE Let's Get Creative Festival was Chris Tomlinson a busy veterinary surgeon. Chris starts his day with a big bowl of porridge on the top of which he makes a pattern or a picture that means something to him, with fruit he has ready to hand[18]. On special days, like an anniversary or festival, he makes a picture that symbolises the meaning of the day, or it might be an incident or event drawn from his life that forms his subject for the day. Some examples are shown in Figure 5. His porridge pictures are personally meaningful cultural artefacts.

He began this practice to amuse and communicate important things to his young children. Impressed by his artistry, his daughter-in-law suggested he could share his personal creations with others by posting them on Instagram. She set up an account for him and since then he has made over 800 daily posts to share his porridge creations with over 300 followers on Instagram and many more on Facebook. In this way he actively participates in one of the more recently developed popular cultural practices of his family, friends and society more generally.

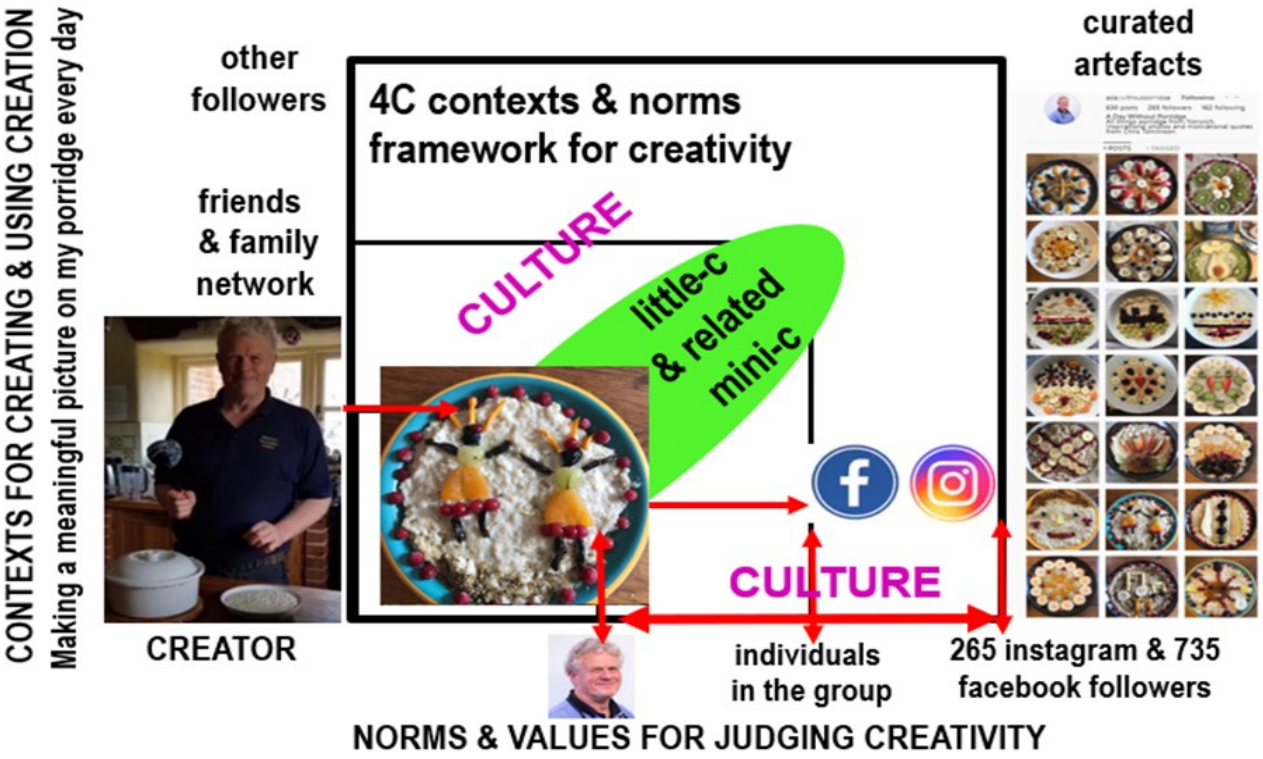
Figure 5 Some examples of Chris' porridge art

According to Chris, *'creativity is expressing something about yourself in your daily life.. so it's not doing something that everybody else does in the same way as everyone else does it, but doing something which shows something of your personality.'*[18] In making his designs he uses the materials in his cupboard, fridge and freezer, he draws on recent or soon to be events in his life to provide the subjects for his imagination and he weaves these things into a design or picture that means something to him and the people who know him. In this way his mini-c and little-c are working together to make something that is not just an expression of himself for himself, but a gift for others which he is able to share with them at the instant of making because he has access to a number of technologies – mobile phone camera, wifi, internet and social media platforms.

'It's kind of fun to be feeding pictures of my porridge to people on Facebook and Instagram, "This is my porridge for today." You get the feedback from people and it tells you it brings a smile on people's faces and they enjoy seeing what I have done with my porridge, it's like a little feature in their life.'[18]

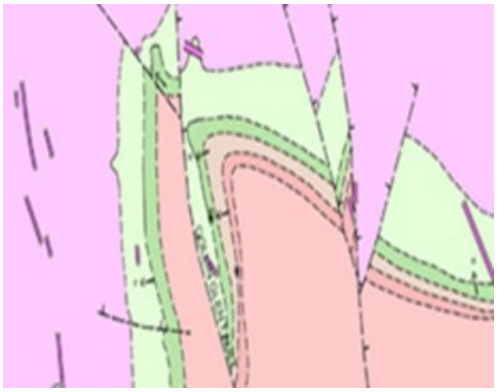
We can use the 4C contexts and norms framework to illustrate some of the features of his creative process (Figure 6) in doing this we personalise the abstract framework. Chris has undertaken to start every day by engaging his mind and body to make something that is both original and meaningful in the context of his everyday life. Because it's part of a daily routine – eating breakfast, he is not 'eating into' his busy life. His making is fairly spontaneous, he has an idea imagines an image that he is able to execute. The materials that are available to him in his home environment also shape the image as he works. There is a video clip of his practice https://www.youtube.com/watch?v=ytFtrgZT9qU&t=546s that has in the last 12 months been watched 650 times.

Figure 6 Using the 4C contexts and norms framework to visualise an individual's little-c creative practice and their environmental and social-cultural interactions facilitated by social media.



Because his images have been curated on Instagram we can see that no two images are the same, taken together they provide a substantial body of porridge art while documenting significant events in his life. After he has made his creation he photographs it, adds some captions to help convey the meanings he attributes to the artefact and posts the image on Instagram and facebook where his followers indicate whether they like it or not and offer their comments and reactions. In this way his followers evaluate his gift and the feedback they give tells him that what he is doing is valued by others. In this way his artistic enterprise becomes a conversation and this motivates him to continue and do more. From this simple example we can see how social media enables an individual to share/ gift the results of their creativity in real time with a large number of people and gain feedback that encourages them to sustain their creative enterprise.

This example of little-c / mini-c creativity also reveals another dimension of creativity phenomenon, namely the production of a 'body of work' over time. In this case the use of social media enables people to access the body of work at any time now or in the future. Furthermore, the body of work itself creates a new context within which the creative enterprise and any new creation can be judged.



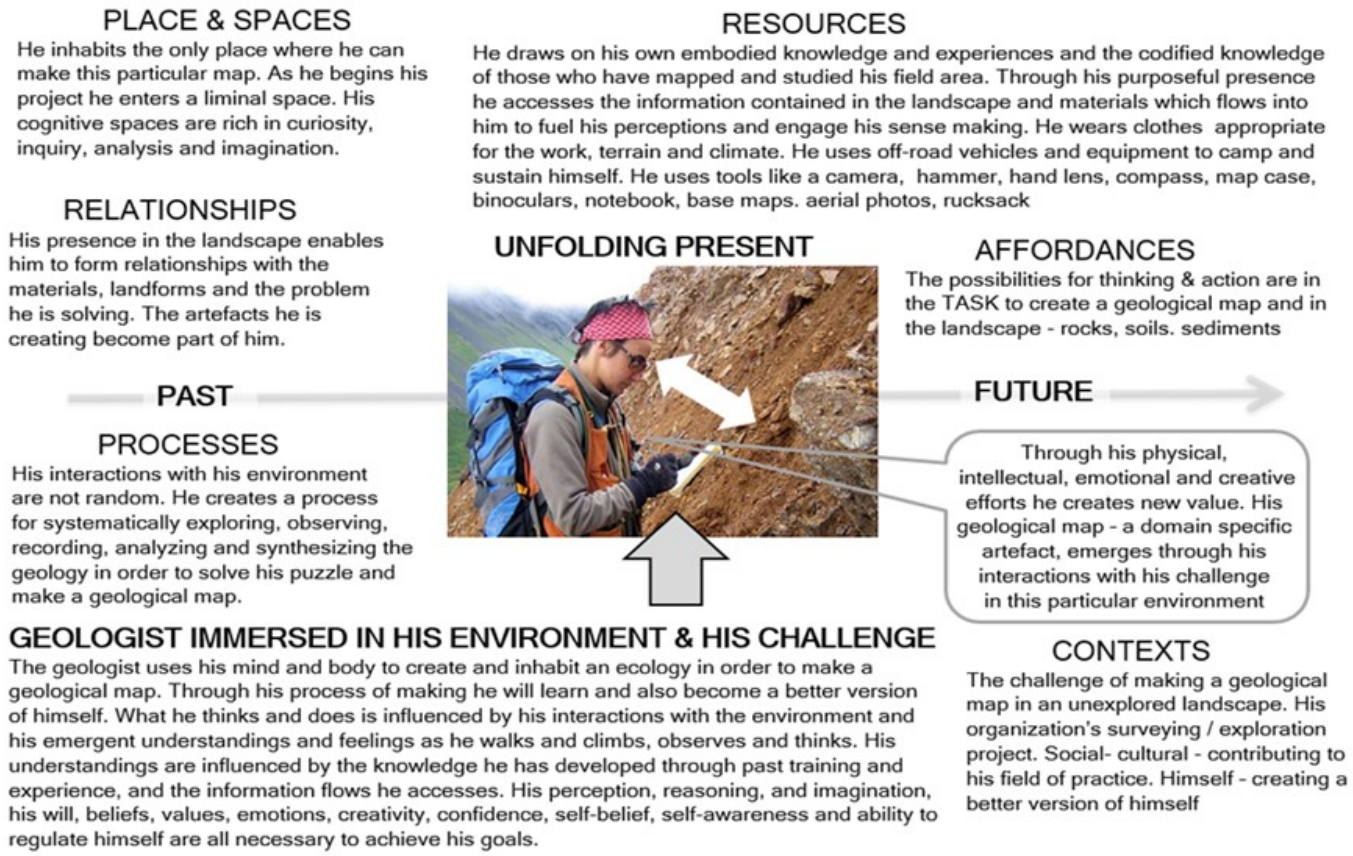
Exploring the contexts and norms framework: Example of Pro-c/mini-c phenomenon

We can use the same approach, to that described above, to represent the creativity of people who are expert in their field i.e. the Pro-c domain of creativity in the 4C contexts and norms framework.

In a recent book chapter[19] I [NJ] describe a geologist making a geological map that contains a symbolic visual representation of the rocks, structures, material resources and geological history of an area. We can view the geological map as a new/original, useful and meaningful, domain specific artefact brought into existence through the skilful/ expert practices and cognitive processes of the geologist.

In order to make the map the geologist develops an *ecology of practice*[15] (Figure 7). A geologist's ecology of practice comprises themselves, their mind and body and all they can bring to the situation as they relate to and interact with their unique physical environment - the only place in the whole world where this particular map can be made. They have learnt how to create an ecology of practice through the education, training and practical experience they have learnt how to create an ecology of practice through the education, training and practical experience they have undertaken in the cultural domain of geology. This has equipped them with the knowledge and skills to engage with, observe and interpret their physical environment using the signs and tools developed and made available through their cultural domain in order to produce new cultural re-sources – a geological map and report.

Figure 7 A field geologist's ecology of practice for making a geological map[19]



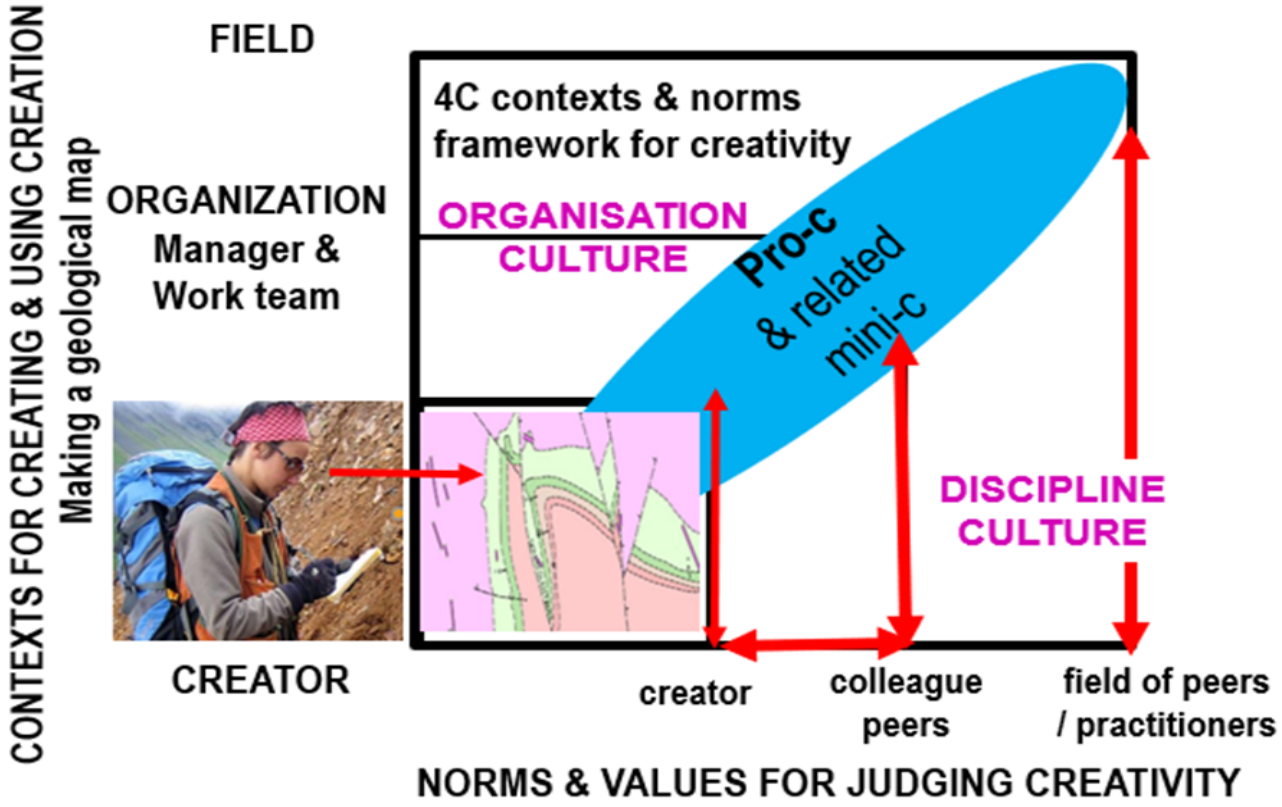
Their ecology of practice includes their work activities and the methodologies and the processes they employ using specific tools and technologies. Before they enter the field environment they will conduct research into what is already known. They gather the resources they need, such as aerial or satellite photographs and topographic maps, and use these to make preliminary assessments of the geology. When they enter the field environment, they will physically cover the ground, gathering and processing lots of information through skilful actions like locating the position of a rock outcrop on a topographic map or aerial photograph, measuring the dip and strike of bedding or other structures in rocks, breaking rocks and examining fresh surfaces with a hand lens and perhaps testing them with dilute hydrochloric acid, photographing and sketching outcrops and annotating their sketches with observations and interpretations. In these actions they are searching for geological evidence that they can interpret and to which they can give meaning; meanings that have been learnt through years of study and practical experiences in a range of environments.

> *"Creativity and culture are intertwined: the former uses the signs and tools made available by the latter to produce new cultural resources that go on to facilitate future creative acts*[12p2]

Making a geological map is like solving a giant jigsaw puzzle where most of the pieces are missing (there may be no rock at the surface to physically to examine). They use tools such as a hammer, compass, clinometer, camera, notebook, base maps, and aerial photographs to help to locate themselves in the landscape, sample the rocks, observe, measure and record information that is important and relevant to their map making. The physical and emotional experience of making a geological map, and the accompanying mental processes of perceiving, imagining, reasoning and reflecting enable them to build a picture of the geology and develop working hypotheses. Such concepts and theories influence future actions that enable them to test and evaluate their ideas and search for more pieces of their geological puzzle. In this way, ideas about the geology are tested, advanced or abandoned as they create new meaning.

Through their practice ecology the geologist blends at every step their scientific and experiential knowledge, imagination, and skill as they improvise their actions through the landscape to create their map. This domain specific artefact 'emerges through action'. The geologist's creativity does not happen by chance, it emerges because the creator – indivisible with their environment –weaves together particular pieces of information, ideas and material things to create new meaning. Like any other artefact once the map and report are produced they can be evaluated by other knowledgeable practitioners such as the geologist's colleagues, managers and perhaps an editor (Figure 8). And once the map is published it can be used and evaluated by other geologists in the field (Figure 8).

Figure 8 Using the 4C contexts and norms framework to visualise an individual's Pro-c / mini-c creative practice and their environmental & social-cultural interactions.



Including other cultural domains in the contexts and norms framework

The appeal of the 4C framework is its simplicity which permits customisation for particular domains of activity. However, we might ask whether these are the only generic contextual-cultural categories worthy of inclusion in a generic framework. Here we outline the reasons why we believe there is a case for including an educational domain 'ed-c' in the generic framework.

Ed-c – creativity in education

In my study [CL] of adolescent creativity in the school environment[5] I developed a grounded theory to explain adolescent creativity as a process of perceiving novelty and then pursuing it, in order to be different from others or create something that is different from the norm. I also argued that within the 4Cs model of creativity, the creativity of adolescents would typically be classified as mini-c or little-c creativity.

Mini-c is directly involved in learning as it is association with "the creative, transformative process involved in developing personal knowledge and insights" [20 p.74] It is distinguished from all other forms of creativity because the judgment of creativity is made solely by the creator; mini-c outcomes are not novel or meaningful to other people[20]. Tasks and activities that involve mini-c can occur at any developmental level, and therefore do not necessarily require high levels of knowledge or skill. Depending on whether the learning is related to formal education or personal interest, mini-c manifestations of creativity can be either intrinsically or extrinsically motivated.

Little-c refers to creativity used for engaging in and managing everyday activities or interests, and adapting to change[20,21,22]. It is a form of interpersonal creativity where other people, in addition to the creator, judge the creativity of the outcome. Higher levels of ability, knowledge, or skill were necessary for progressing beyond mini-c to little-c. Little-c tasks were sometimes worked on by adolescents over an extended period, when they had the time, opportunity, and autonomy. Ongoing, recursive brainstorming and evaluating of ideas was often evident before they achieved insight; however, other times the tasks were more intuitive and spontaneous. In the absence of time constraints, incubation was a commonly utilised strategy for dealing with challenges during the little-c process.

scope of participating adolescents' creative experiences because it does not explain creativity for educational purposes, including learning and achievement. Just as Big-C and little-c do not sufficiently encapsulate the creativity of people who are expert in their field requiring the recognition of a Pro-c contextual domain, little-c and mini-c were inadequate to account for adolescents' creativity in the educational contextual domain. This led me to propose an ed-c contextual domain for adolescent creativity that is enacted and manifested within the environmental conditions and cultural constraints of formal education. [3:280-1]

Ed-c refers to perceiving and pursuing novelty for learning or achievement in formal educational environments such as schools, colleges and universities. Ed-c outcomes differ from outcomes typically presented by peers. Requirements and constraints of a particular educational environment, e.g. limitations posed by task demands, assessment criteria, or teachers' instructions and behaviours influence individuals' creative processes and products. Ed-c, like little-c, is a form of interpersonal creativity, so the outcome must be creative to someone else, not just the creator. For adolescents in formal educational environments, the judges of creativity are usually teachers, external examiners of formal assessments, or fellow adolescents in peer-assessed tasks.

Ed-c refers to perceiving and pursuing novelty for learning or achievement in formal educational environments such as schools, colleges and universities.

Although adolescents could be intrinsically motivated in educational tasks, ed-c and related mini-c usually involved extrinsic motivation and was often focused on creative task achievement (e.g., achieving a good grade for assignments). Completion of the creative process and production of a creative outcome was paramount for most ed-c tasks, particularly educational assessment tasks. Ed-c outcomes often affected future creativity in similar educational tasks, and sometimes creators' emotions. There was an intention to affect the audience assessing the work, as students were usually aiming to receive positive reactions or recognition.

Ed-c can also be distinguished in terms of the optimal context for this category of creativity. Sufficient levels of intellectual ability, knowledge, and skills related to the specific task were required. Supportive environmental conditions included stimuli and structure to guide the adolescents towards meeting task demands, as well as cognitive and affective support from teachers, parents, other experts or mentors, or like-minded peers. Given that ed-c was often related to school work, curriculum constraints, time constraints, and pressure were most likely to be inhibiting factors; however, these did not necessarily prevent creativity.

My research points to a 3Cs model of adolescent creativity. While there are some overlaps between the categories of mini-c, little-c, and ed-c, there are also clear differences. A comparison of the 3Cs of adolescent creativity is presented in Table 1.

Table 1 Core features of each of the categories in the 3C's of adolescent creativity

	mini-c	little-c	ed-c
Form of creativity	Intrapersonal creativity that is part of formal or informal learning and other life experiences	Interpersonal, everyday creativity that is novel and valuable to someone other than the creator	Interpersonal creativity for learning and achievement in formal education
Example judge of creativity	Creator (student)	Family, friends	Teacher, IB external examiner

The outcomes of each of the 3Cs of adolescent creativity must meet the criteria of being novel as well as appropriate to the relevant judge of creativity. These criteria distinguish outcomes that are not the norm from typical work by adolescents. Outcomes are not creative if they do not involve the imagination of learners to produce something that is new to them and what is produced is merely copied from other people's work or repetitions of previous work. Mini-c processes or outcomes need only be novel to the individual adolescent; ed-c and little-c must be creative to the intended audience in a particular context.

The 3Cs of adolescent creativity are displayed in various situations and environments (Table 2).

Table 2 Environments of the 3C's of adolescent creativity

	School environment		Non-school environments		
	Curriculum	Extracurricular activities	Formal extracurricular activities	Hobbies or personal interests	Everyday life
mini-c	✓	✓	✓	✓	✓
little-c		✓		✓	✓
ed-c	✓	✓	✓		

Mini-c can be demonstrated in a range of activities and tasks inside and outside school. Little-c is evident in school extracurricular activities that do not entail formal learning or assessment, and in everyday life and personal interests external to school. Ed-c is exhibited in educational tasks in school, extracurricular activities with a formal structure of evaluating progress, ability, or achievement (e.g., debating), or other formal extracurricular activities outside school (e.g., private music lessons). Ed-c is always created within the constraints and culture of a formal educational environment; this is not necessarily the case with mini-c and little-c. **5C contexts and norms framework for creativity**

We [NJ & CL] believe that 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 for up to 15 or 16 years. Secondly, it's a generic domain in which people have to conform to and be-have 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.

Educational commentators like Sir Ken Robinson, say that education kills a young person's creativity, but another and more positive way of appreciating what education does, is to see it as an environment in which people learn to use their creativity in a way that is consistent with the requirements of the subject and the pedagogical task. This is the third and most important reason for why education should be seen as a significant and distinctive context for creativity. Through education people are introduced to disciplinary cultural ways of thinking and behaving and they begin to appreciate the domain specifics of creativity which they may later pursue in their careers. In education, learners develop the foundational academic knowledge and skills to make use of such knowledge that is essential for creativity in any knowledge work. They also learn what is valued in different subject and problem solving contexts, and in certain pedagogical environments they may also experience the creation of new value. Understanding both of these concepts is essential for the evaluation of creativity in a disciplinary learning environment.[23] The creation of new value – bringing something new into existence, or the extension of existing value by developing something that already exists "*involves learners interpreting the relevance of a particular idea to their local context and then doing the integration work to make it fit. This adaptation to local fit is not written on the surface of the concept or idea but involves envisioning the potential value of the idea to what is being learned and how it could operate in the local context in a way that realises a locally envisioned outcome.*"[24 p131-32]

Education is a domain of practice in which the practice is dedicated to enabling others to learn. Through appropriate pedagogical practices teachers as the key influencers in the system, are able to encourage, support and facilitate learners' creativity and creative development. Alternatively, their pedagogical practices can inhibit learners' creative development. Creative development takes place alongside the intellectual academic development of the learner within the cultural traditions and constraints of specific disciplines, institutions & systems. In other words, development is 'pragmatic' serving the needs and of priorities of education. Unfortunately, in many subjects in secondary and tertiary education, these needs and priorities all too often pay little attention to the creative development of individuals.

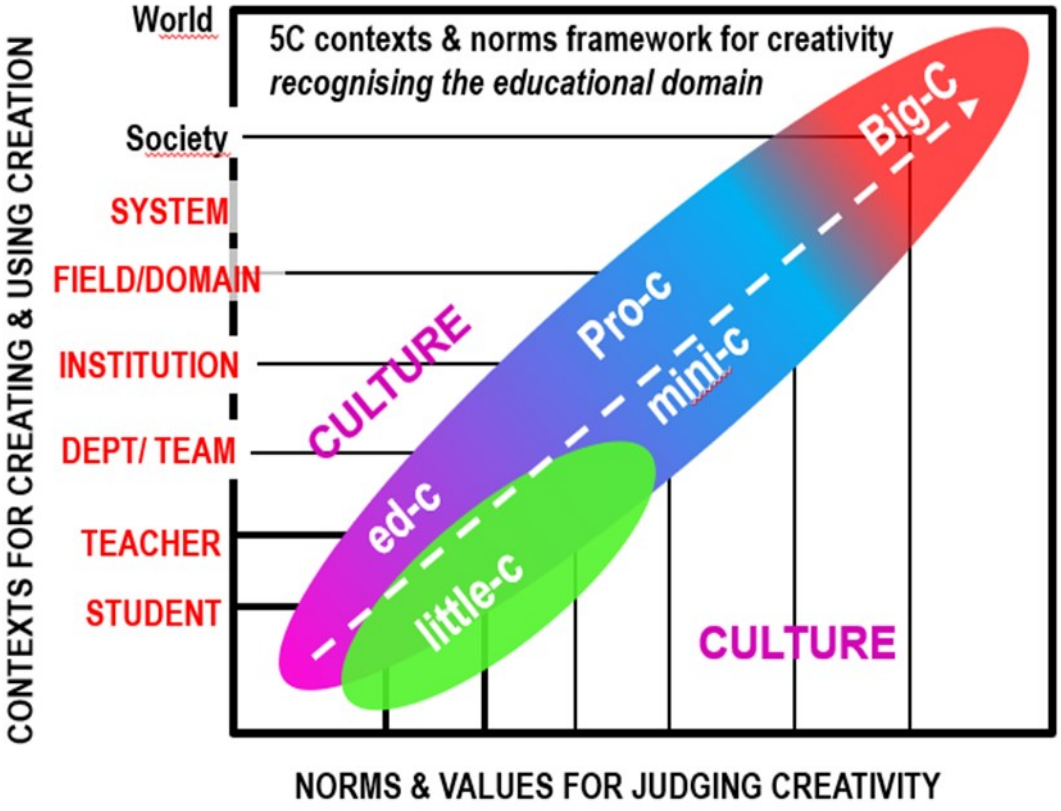


Figure 9 A 5C contexts and norms framework for creativity incorporating the ed-c domain

If the argument is accepted that the disciplinary foundations of creativity are laid down in secondary and tertiary education then we can also argue that ed-c is the stepping-stone to Pro-c creativity in a way that little-c never can be. Such reasoning allows us to argue that education provides a significant generic context within which creativity is used, developed, recognised and valued and for many people it lays the foundations for future creativity in their chosen professional/work domain. Figure 8 shows how an ed-c contextual domain can be incorporated into the contexts and norms framework and how ed-c provides the foundations for discipline-based Pro-c creativity.

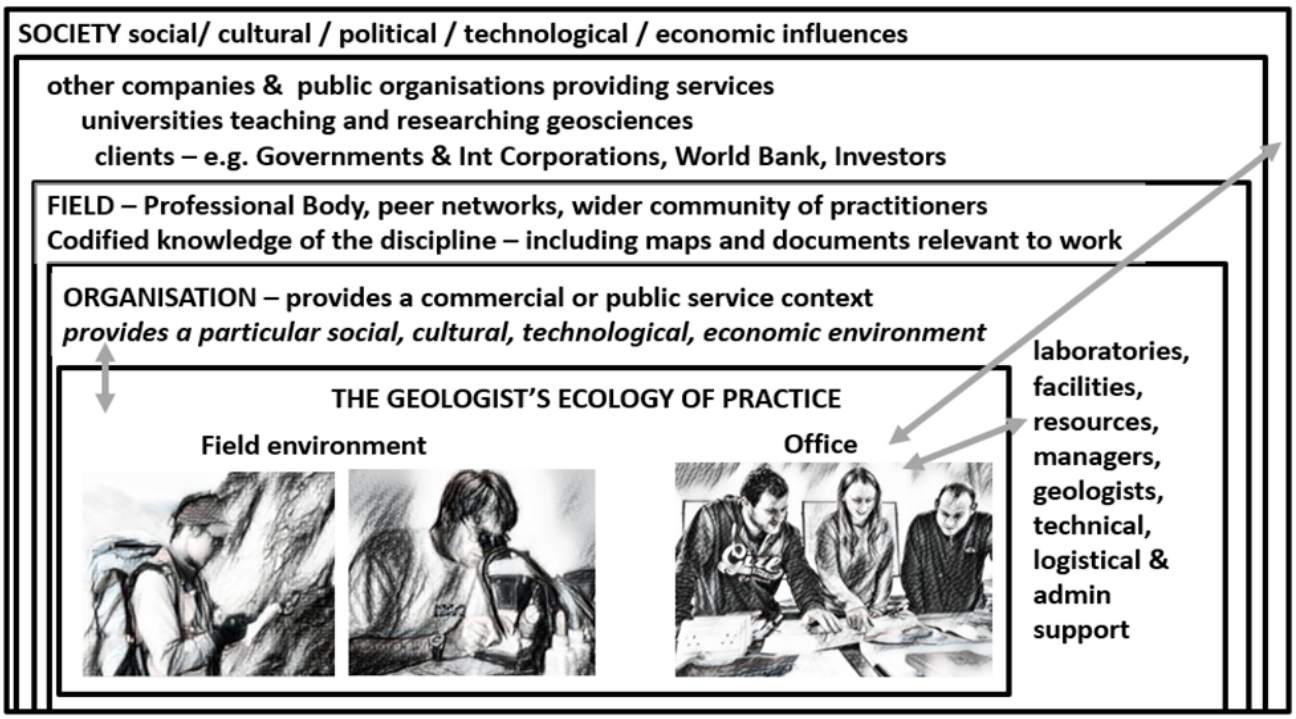
Customising the 5C model for the Higher Education context of encouraging and enabling learners to use, develop and recognise their own creativity

One of the important features of the contexts, norms and values framework is the way it maps out the ecosystems within which people create. This is because (as we have shown in previous illustrations) an individual's creativity is not simply a cognitive process, rather, it is a function of their whole body and mind involvement in and interactions with the ecosocial system of which they are a part.

All organisms inhabit an ecosystem - *the complex set of interactions among the residents, resources and habitats of an area for the purpose of living*[21]. Each organism within an ecosystem develops a unique ecology for living and reproduction. However, human organisms differ from other organisms in the extent to which we make our own ecosystems and develop our own ecologies not simply to sustain ourselves but to make our lives more interesting, productive and meaningful.[25]

Biological concepts of ecosystem n the natural world can be applied to human ecosystems which are part natural and part social constructions. For example, if we take the example of the geologist making a geological map which we described earlier, the ecosocial system they work within is shown in Figure 10. Ecosocial systems have a hierarchy of organisational levels and form a nested structure. They are open with each level of organisation able to influence other layers of organisation. When it comes to creativity its production and manifestation is at the practice level (ecology of practice) but its social-cultural evaluation and recognition is at higher organisational levels.

Figure 10 The geologist's ecosocial/cultural system[19],[26]



Teachers also work in an ecosystem comprising different levels of organisation. For example, a university is a specialised ecosocial system for the purposes of education and research nested within a tertiary education system within a society and global field of educational practices and practitioners.[26]

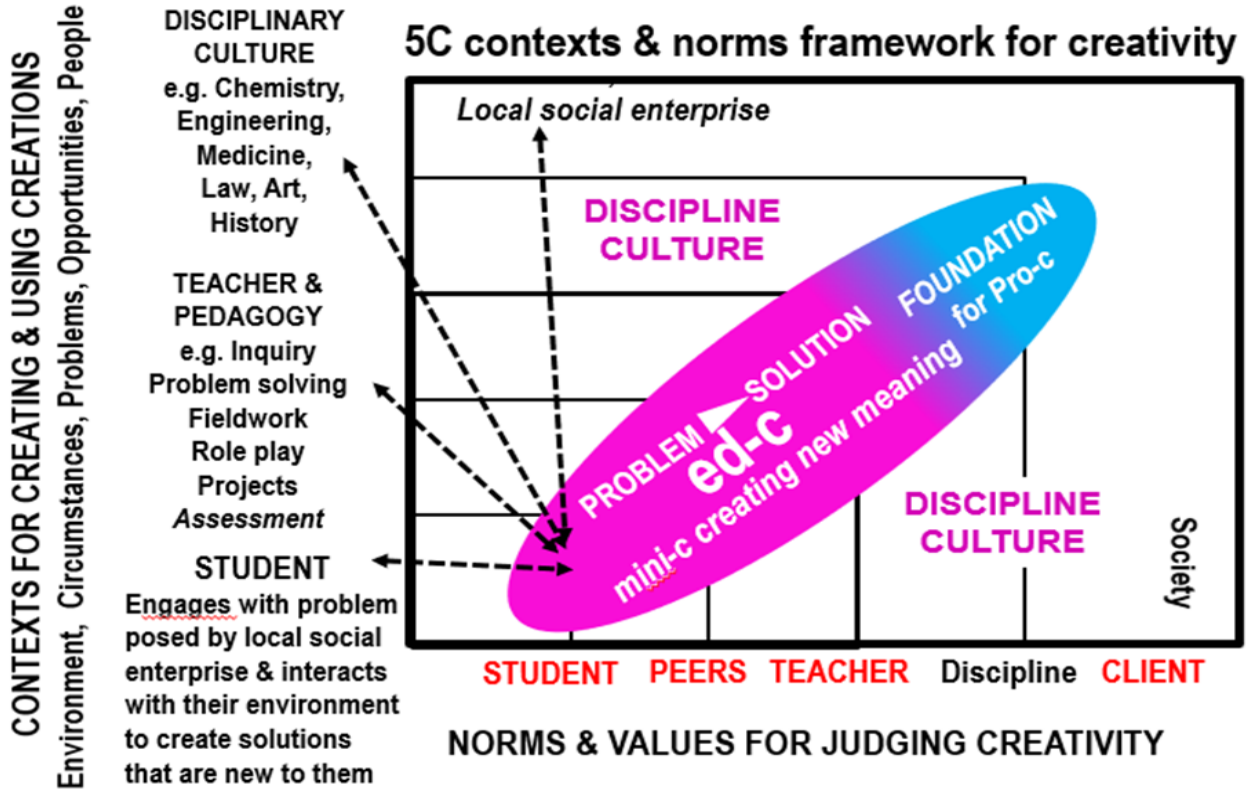
A university contains many people with specialist knowledge and skills, many organisational parts and functions, and many interactions between the people and the parts/functions. It is adaptive because information flowing from activity at all levels of the system enables it to respond, develop and accomplish the things the people and entities in it set out to achieve. A higher education ecosystem comprises different levels of organisation extending from individual actors fulfilling different roles and pursuing different goals (learners, teachers, administrators, support workers, leaders and managers), through organised teams and networks of people, departments, schools, faculties, whole institutions and other organisations.[26]

The 5C framework allows us to map key features of the educational ecosystem and interactions within it with a view to emphasising key influences on creativity (Figure 11). For a university ecosystem we might emphasise : 1) the learners immersed engaged in a module on a programme of study within a specific disciplinary context in which creativity has meaning and tangible expression in the thinking and performances of learners and the artefacts they make 2) the pedagogies and tasks used by teachers to enable learners to use and develop their creativity and to reflect on their understandings of what creativity means in the contexts in which it was applied and 3) the means by which learning and creativity are evaluated/assessed/judged by teachers, learners and their peers and others.

> Creating new value "involves learners interpreting the relevance of a particular idea to their local context and then doing the integration work to make it fit. This adaptation to local fit is not written on the surface of the concept or idea but involves envisioning the potential value of the idea to what is being learned and how it could operate in the local context in a way that realises a locally envisioned outcome."[20 p131-32]

Figure 11 has in fact been customised to illustrate how it can be used to understand the emergence of creativity within a particular educational scenario. An engineering student studying on a module that involves tackling problems for the local business community, is tasked with helping a social enterprise solve a problem. Through discussion he explores the problem with his client. He conducts research and imagines possible solutions which he discusses with his client. The conversation helps him refine his problem and solution and design a possible solution which he discusses with his client. The feedback he received enabled him to refine his solution and then present it to his classmates and teacher. His peers are encouraged by the teacher to provide him with constructive feedback and suggestions for improvement. They are also encouraged to evaluate the originality and value of his ideas using criteria the class has agreed and the teacher also judges his performance and provides him with feedback. Through the ecology he created to work with this set of circumstances the student learnt how to create new value for their client and had a rich experience to reflect on the ways in which he used his creativity.

Figure 11 Mapping key features of the ecosystem that are relevant to individuals' and groups' creativity.

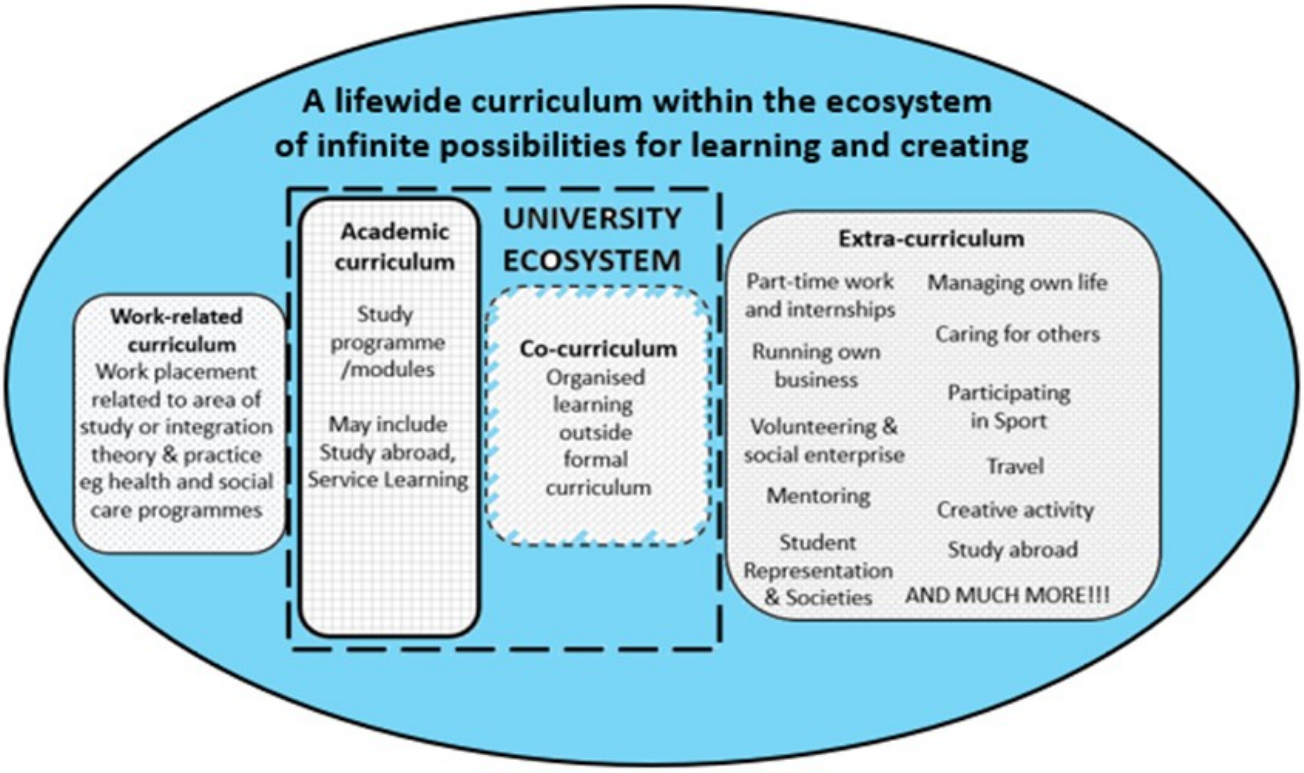


A lifewide concept of education

The range and scope of opportunities for learners to use, develop and gain recognition for their creativity depends on the way an institution defines what counts as learning and experiences that have educational value. In many institutions the concept of learning and education is limited to the academic curriculum while some institution's extend learning and education to the co- and extra-curriculum. A lifewide curriculum[23] (Figure 12) embraces every possible curriculum space and affords the best opportunity for students' creative development, since the intrinsic motivations that drive creativity and the contexts that provide the opportunity and challenge, are more likely to be present in the spaces that individuals either choose to inhabit or are forced into by circumstance [2].

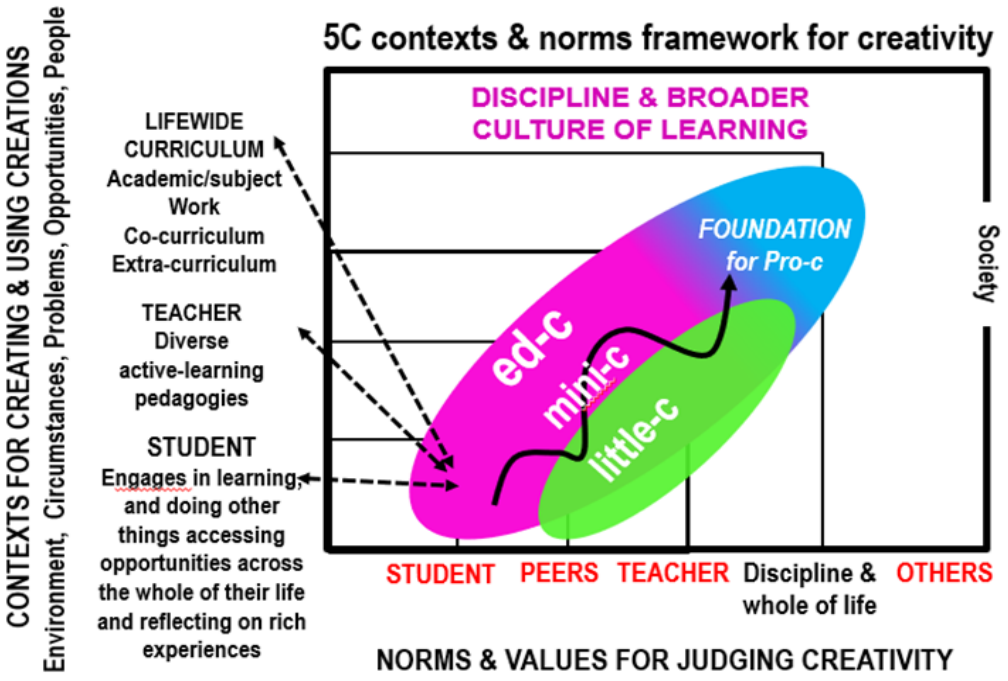
A lifewide curriculum honours informal, accidental, by-product learning in learner determined situations as well as formal learning in teacher determined situations. It embraces learning in the physical/emotional social spaces that characterise the work/practice environment and it honours formal and informal learning in all other environments that learners choose to be in because of their interests and passions, needs [and circumstances]. Because of this a lifewide curriculum is likely to provide a better framework for encouraging, supporting, recognising and valuing learners' creativity and self-expression, than a curriculum that is solely based on academic or academic and professional practice experiences.[2]

Figure 12 A lifewide curriculum situated within the global ecosystem of infinite possibilities for learning, developing and achieving[23]



Adopting a lifewide curriculum enables an educational institution to engage learners in creative enterprise and learn from their experiences in the disciplinary meanings, contexts and opportunities for creativity (ed-c with associated mini-c) and in the many other contexts and opportunities for learning, action and creation that pervade students' lives while they are studying at university (little-c with associated mini-c) Figure 13.

Figure 13 Using the contexts and norms framework to show how a lifewide curriculum embraces all the opportunities a student has to use and develop their creativity.



Final thoughts

Over a decade ago I [NJ] analysed the problem of creativity in higher education[28] and concluded that it is not seen as chronic, in the sense that most teachers and decision makers believe that there is a significant issue that needs to be addressed. The problem is not that creativity is absent but that it is omnipresent subsumed within analytic ways of thinking that dominate the academic intellectual territory. By 2020 this perception is shifting with the threat of AI and automation taking over many knowledge worker roles that higher has traditionally prepared their learners for.

There is a gradual recognition that the key meta-skill (disposition and capability) for surviving and flourishing in the world 40 years from now has to be our ability to think with sufficient imagination and complexity to be able to understand the situations and contexts and projects we are involved in, and adapt to innovate in such situations.

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 dynamic environment of which we are a part. Figure 14 provides a neat way of synthesizing the complex interplay between our perceptions, imagination and reasoning as we access and try to make sense of these information flows and do something productive with such information. 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 essential for survival and flourishing in the non-routine cognitive domain of knowledge work. Higher education, has, and will always have an important role to play in developing the cognition necessary to think with complexity, but it also must pay attention to the learning opportunities (affordances) that enable learners to create, and experience creating, new value.

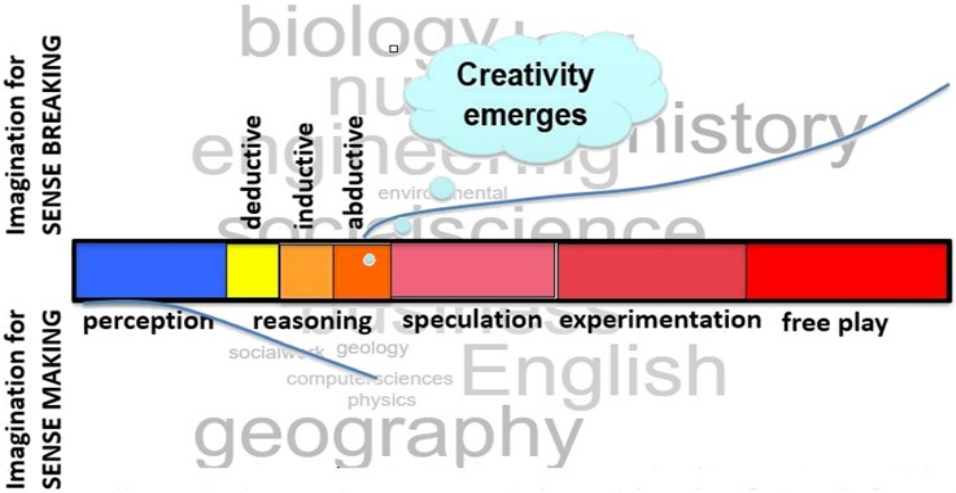


Figure 14 The cognitive continuum showing how creativity involves the complete spectrum of cognition based on the work of Pendleton-Julian and Brown[28 p68-9]

Undergoing in order to be creative in a Pro-c domain begins in the ed-c educational domain

The recent conversation in the #creativeHE forum prompted by the proposition, 'You can't teach creativity but you can learn it' offered many perspectives each of which seemed to hinge on the interpretation of what it meant to teach and what roles teachers and learners performed in the educational domain. Chris Wilson got to the heart of the matter when he said, *'If transactional perspectives of 'knowledge transfer' underpin conceptions of 'teaching' then perhaps creativity cannot be taught. If teaching is conceived as a more general process of supporting others in developing new insights and understanding, then of course creativity can be taught. Creativity is, after all, domain-based.'*[30 p23] I would like to expand on this a little.

Being creative in any field requires the development and mastery of domain specific knowledge, skills and values, combined with the will to be creative and other essential dispositions such as the will to inquire and persevere. In order to become an engineer, lawyer, scientist, historian or practitioner in any other discipline, a learner has to serve an apprenticeship through which they 'undergo' and learn to think and act like the practitioner they want to become.[22] In order to come to know what being creative means in their disciplinary field, learners must be able to experience what being creativity means and learn what it means to add or create new value. They must 'perceive and pursue novelty for learning or achievement'.[3]

As John Dewey first explained in his interactional model of creativity[8], such 'undergoing' is a necessary foundation for further creative (or any other significant) action in the world: in some disciplinary contexts it provides the essential platform for creative action at the Pro-c level of expertise since it is at this level that the foundational knowledge and skills necessary to perform in a field of practice are developed. This is the level at which learners, learn how to create ecologies for learning and practice. For example, the geologist making a geological map in the Pro-c domain, learns how to create an ecology of practice to perform this task in the ed-c domain. We argue that recognising an ed-c contextual domain will help draw attention to the important role of education in developing human creative potential.

If we take the example of the field geologist making a geological map in the Pro-c domain (described earlier), to perform this role he developed, through a higher education, a substantial body of domain-specific knowledge and skills so as to perceive (observe, recognise, interpret and understand) the rocks, structures, or landscapes that will form the material environment of his work. His university programme provided him with opportunities for cognitive and practical development (like an apprenticeship) through classroom and real world immersive experiences [19 p179-80]. His cognitive apprenticeship[31] enabled him to develop the propositional knowledge and ability to perceive, imagine and reason and, to some extent, to act like a practitioner, while the practical apprenticeship enabled him to think and practise competently in the different environments and problem solving situations in which geologists work. While a cognitive apprenticeship can be served in a classroom, a practical apprenticeship must be served in the authentic environments in which practitioners perform their role alongside more experienced practitioners. [19 p179-80]

In higher education, cognitive and practical apprenticeships are facilitated by teachers employing the signature pedagogies of their discipline. Signature pedagogies, 'are types of teaching that organize the fundamental ways of educating future practitioners, and are used to transfer skills of how to think, to perform and to act with integrity in their professional work'[32 p.52]. Through signature learning experiences, the novice geologist develops the knowledge, skills and perceptual awareness needed to make a geological map. Placed in an unfamiliar field environment, they learn how to interpret and assess geological problems, decide what to do and act using appropriate tools and methodologies, mindful of the results of their actions and adjusting where necessary[33 p.18].

Figure 15 Geology students' signature learning experiences relating to 'making a geological map'

Making a geological map involves novice geologists using tools like a compass/clinometer, geological hammer and hand lens to take measurements, collect, describe and identify rock samples and record their observations in a notebook and on a base map. Through a signature experience, learners make use of the knowledge and skills they have acquired through lectures and reading, and develop new knowledge and skills in an experiential and embodied sense while in the company of peers and experienced teacher practitioners in the field. As they develop (undergo) they learn what it means to be creative in the context of their work as a geologist. Creativity is not taught as such, what is taught, demonstrated and learned through what Baker calls 'guided participation'[34] and the experience of 'being' a geologist, is what it means to be creative when immersed in the authentic task of making a geological map in an authentic real world environment.

Education is so much more than the transmission of knowledge. At its best it is about enabling human beings to flourish to develop their potential, to undergo and become the person they want to be in every sense of what that means. That is why we argue that recognising an ed-c contextual-cultural domain would help draw attention to and acknowledge the important role of education in developing the creative potential of people.

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World Creativity and Innovation Week

April 15 - April 21

CALL TO ACTION

https://wciw.org/

Everyone is welcome to celebrate World Creativity and Innovation Day, April 21, (#WCID), **a United Nations International Day of Observance (A/RES/71/284)** and World Creativity and Innovation Week, April 15 – 21 (#WCIW).

World Creativity and Innovation Day, April 21 and Week, April 15 - 21(WCID/W), exist to promote using creativity in problem solving and optimize opportunities to Innovate:

Creativity: "...is a person-centered process of imagining possibilities and taking embodied expressive action to make ... ideas real." Dr. Marta Davidovich Ockuly

The status quo is not meeting needs for creating a decent life for all on a sustainable planet.
Therefore:

- It is important to galvanize independent thinking and exploration of new, fresh, and innovative solutions
- Innovation - technical and otherwise - is critical for governments, businesses and communities to create new futures
- Creativity is necessary in aspects of all fields
- Curiosity and imagination are essential for finding contemporary solutions to challenges

- People everywhere will feel inspired, motivated and welcomed to use imagination, creative problem-solving, and ingenuity to explore potential first steps to effect:
- Better living conditions and positive social change
- Shared sense of survivability
- Global citizenship which includes collaboration and inclusive co-creation
- Progress toward achieving the 2030 Global Goals https://www.globalgoals.org

- During WCID/W society provides and leverages opportunities to:
- Establish environments that give people agency to tap into their creativeness and advocate for new solutions
- Help address challenges using creative problem-solving skills, research, and positive actions
- Create and learn ways to advance ingenuity, imagination, and innovation
- Find new economic solutions that benefit all
- Strengthen outcomes through co-creation
- Learn from one another
- Bolster resilience through shared humanity and purpose

***During WC&IW Creative Academic in collaboration with Dr Marta Davidovich Ockuly (Creative Potential Institute)* will be hosting an open conversation on the theme of personal creativity in the #creativeHE Forum— please join us https://www.facebook.com/groups/creativeHE/**

CREATIVE ACADEMIC

Creative Academic champions creativity in all its manifestations in higher education and beyond. Our goal is to support a global network of people interested in creativity and committed to enabling students' creative development. Our aim is to encourage educational professionals to share practices that facilitate students' creative development in all disciplines and pedagogic contexts, and to connect researchers and their research to practitioners and their practice. Our ambition is to become a global HUB for the production and curation of resources that are of value to the higher education community. We value 'openness' and most of our resources are published under a creative commons license. We value collaboration and the partnerships we have formed with individuals and organisations. Membership is free and open to anyone who shares our interests and values. Our resources and activities are provided and supported by a great team of volunteers and we welcome new volunteers to the team.

website with resources

http://www.creativeacademic.uk/

#creativeHE Facebook Forum

for conversations about creativity

https://www.facebook.com/groups/creativeHE/

Creative Academic Linked-in Group

for conversations about creativity

https://www.linkedin.com/groups/8755256/

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