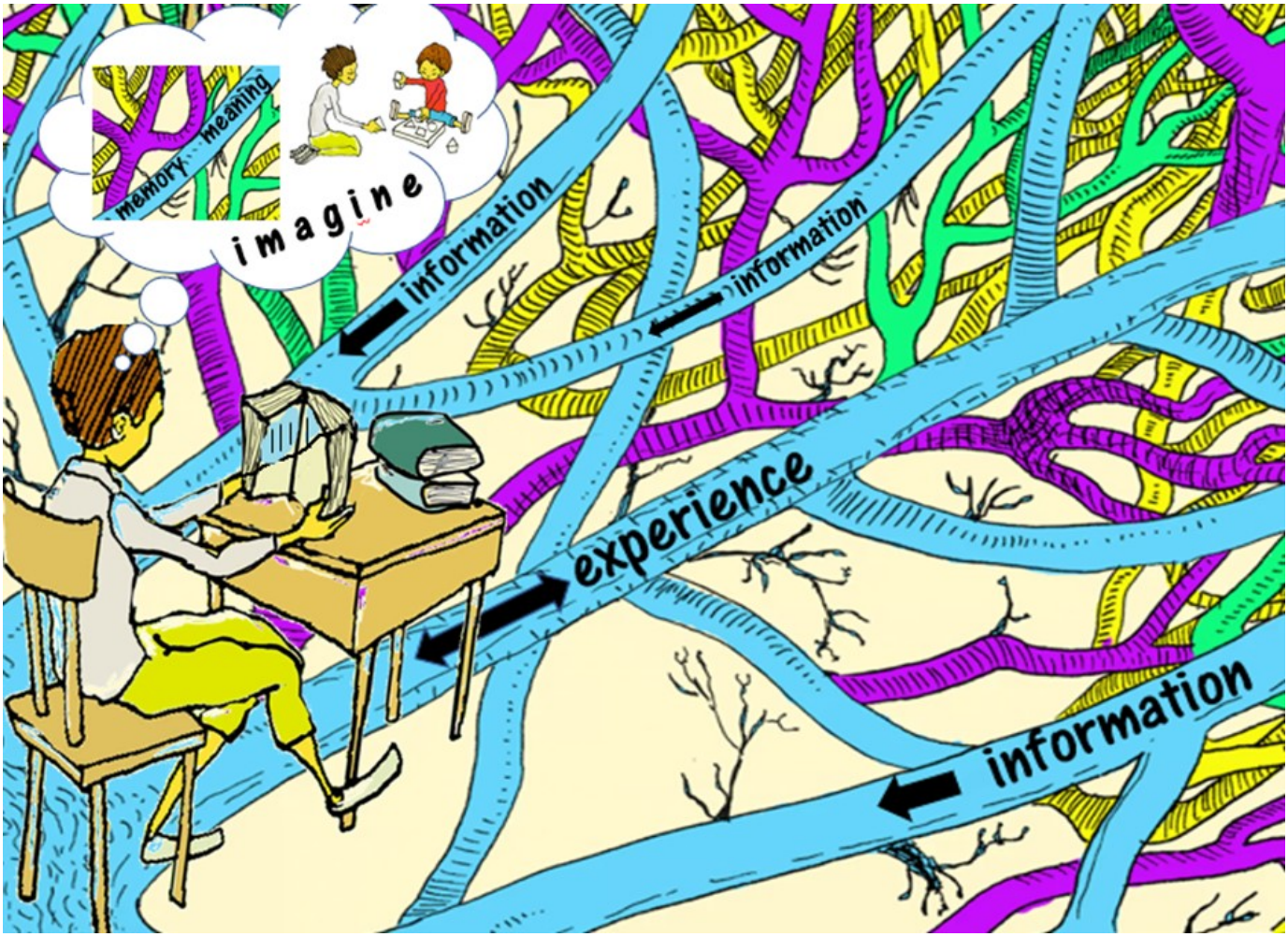


"All that is the work of the human hand, the whole world of culture, is distinguished from the natural world because it is a product of human imagination and creativity based on imagination."
Lev Vygotsky (2003)

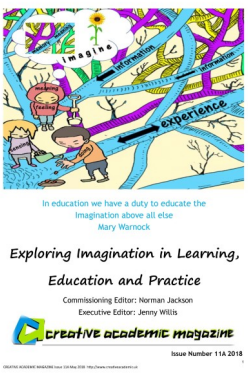
Using and Cultivating Imagination

Edited by Jenny Willis and Norman Jackson

creative academic magazine

Issue Number 11B 2018

CAM #11B Inside this issue:



Companion to CAM#11A

INTRODUCTION TO USING & CULTIVATING IMAGINATION #creativeHE APRIL 15-21

Norman Jackson

Every year Creative Academic facilitates an open conversation on some aspect of creativity during World Creativity and Innovation Week to contribute to this worthwhile global event. This year we picked the topic of Imagination – more specifically 'Using and Cultivating Imagination'.

I have always believed if you put your imagination to a purpose you care about and work at it good things will emerge: the Creative Academic & #creativeHE communities provide excellent examples and by helping people connect and share a common purpose we can engage in social imagining – sharing our imaginations. That is the real and moral purpose of our #creativeHE platform.

In Canada Gillian Judson is doing something similar to encourage and support imaginative education and the development of imagination as an integral part of learners' educational experiences through her ImaginED project. Fundamentally we share the same interests and values so it's not surprising that eventually our two community-based movements came together to explore the idea of imagination in the context of higher education.

Gillian is the sort of person that rarely says no to an opportunity to positively influence the thinking and practices of educators, so we were delighted when she accepted our invitation to not only guest edit this magazine but also lead an on-line conversation on the #creativeHE platform. As you will see, Gillian led from the front provoking, nurturing and sustaining the conversation ably assisted by her partner Jailson Lima, another member of the ImaginEd team, who acted as co-facilitator.

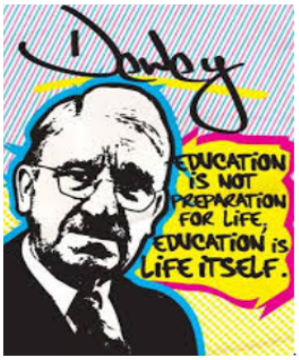
In this section of the magazine we include some edited highlights of the conversation through which we were seeking to share understandings of what using imagination meant to participants in educational, work and other settings, and how they stimulate and cultivate their own imaginations and the imaginations of others. From the perspective of educators, teachers and professional developers we sought imaginative examples of how they engaged learners and/or peers through their own imaginative pedagogies.

This is not a systematic curation of the conversation. Rather it offers a flavour of the topics discussed. You can experience the richness, twists and turns of the conversation in all its glory on the Google+ #creativeHE Forum posts. Click on the IMAGINATION category in the side bar.
https://plus.google.com/communities/110898703741307769041?hl=en

We would like to thank everyone who participated and shared their ideas, experiences and practices so that others might learn.

The meanings of imagination

John Dewey talks of imagination in two different senses and we can see both of these in action in participants' responses to the first question.



John Dewey talks of imagination in two different senses (Fesmire p345):
(1) Empathetic projection. Taking the attitudes of others stirs us beyond numbness so we pause to sort through others' aspirations, interests, and worries as our own.
(2) Creatively tapping a situation's possibilities.

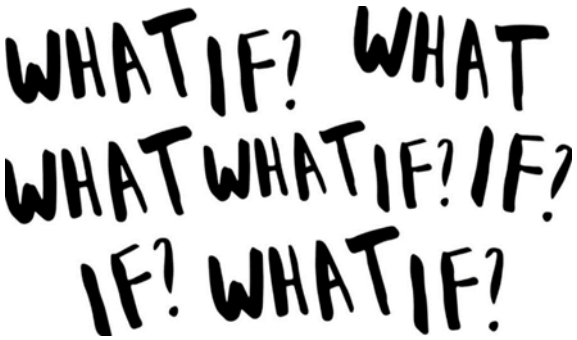
By amplifying perception, imagination "constitutes an extension of the environment to which we respond. This is true of both senses of imagination

Stephen Fesmire Cultivating Ecological Imagination: John Dewey and Contemporary Moral Education
http://www.artsrn.ualberta.ca/symposium/files/original/c5a12e5a1eb9b7a7861cd7f4fd3e9257.PDF

Q1 Why is your imagination important to you? What concepts of imagination do you hold and how are these concepts useful and relevant in your every-day life?

Gillian Judson

I love this question. In my work life, I frequently talk about imagination in the context of schools and pedagogy. But, I can't remember the last time I got to describe why it matters to me and how it shapes who I am.



For me, the imagination is the wonder-full(y) messy, hard-to-hold -onto-or-nail-down, what iff'ing feature of the human mind. It is an emotionally-charged way of thinking (and feeling) that frees us to enter a world of the potential, the perhaps, the "if this was me"… Our imaginations allow us to get lost in a good story (experienced in conversation, through reading or watching etc.) We are narrative beings due, in part, to the "reaching out" feature of the mind that the imagination provides us and the emotional connections imaginative engagement creates. I really don't know how I (or anyone) would live without it.

In my role as a parent I constantly engage my imagination to conceive of ways to connect with my teen-aged daughter. Imagination helps me reframe challenging issues and topics in ways that we can both connect to. Imagination allows us to be moved by what is happening in the world around us. (There is no empathy without imagination!) Imagination fuels the engagement that is a precursor to the feeling of empowerment I wish for my daughter.

Norman Jackson

I've decided to think about how I'm using my imagination today. It's Sunday morning and I am enjoying a cup of tea and chatting to my wife.. she is imagining her forthcoming trip to see her family in Iran and she is asking me what presents should she take.. immediately I am picturing her parents in their home and imagining the sorts of things they might like. It's quite a pleasurable experience.

In this mode of thinking I am empathizing with my wife's dilemma (YIKES time is running out what presents should I take) using my ability to imagine to visit my wife's future, drawing on memories of my own past experiences, to explore possibilities and help solve a problem in the here and now while sitting in bed drinking a cup of tea. Having imagined a possible gift I am now searching on Amazon.. I have put my imagination to a practical purpose. What a fantastic thing my imagination is.

Joy Whitton

I don't often get the opportunity to answer this question - so thank you for asking it! My imagination seems to be something that requires exercise. I NEED to read fiction for example; it would not be possible for me to live without it for long or a part of me would be parched. Some part of my mind appears to need to picture and actively perform meaning-making relations that is satisfied by reading fiction.

However, my imagination is active all the time I think. My mother was just admitted to hospital because on an outing with me, she fell and broke her neck of femur. When she had fallen, I used it I think to judge from her expressions and posture, what she was feeling to know how to respond in what I anticipate is a useful, helpful and caring or reassuring way - so I try to anticipate/predict her response to my various courses of action. I don't have a pre-programmed course of action, never having been in this situation before so I'd be stuck without my imagination to help. This is imagination as Dewey described it as inference from what is given to what is possible.

But whether I'm effective or not as an advocate for her in the complex health system will depend also on my ability to coordinate all the possibilities I imagine with facts such as knowledge about common outcomes of bone breaks in an old person, and the impacts of general anaesthetics on old people's brains and minds and assumptions about age that can limit medical expectations. This motivates and guides my guides my behaviour. For example, I purposely seek out the anaesthetist to ask what kind of anaesthetic s/he would use and why and make him/her aware of what an optimum outcome would be in her case. This is pragmatic imagination at work!

Jailson Lima

Imagination has a central role in my personal and professional life. I grew up in Brazil but have lived in Canada since 2000. I am fascinated by the work of highly imaginative artists such as Matt Groening, the creator of The Simpsons, a cartoon masterpiece that has continually cultivated legions of cross-generation fans from diverse walks of life. One should watch each episode several times to appreciate the subtleties, the references, the connections and the symbolisms. But what is the secret of such a masterpiece of imagination that, although can be seen by children, is best suited for adult audiences? I believe that Groening's unique way of perceiving might be one of the reasons. Through satire, he manages to make multiple connections and invites viewers to reflect on what makes us human.

Simpsons world of pure imagination https://www.youtube.com/watch?v=Nf6xT2W4-Ww

Perception is intimately linked to the development of the required sensibility to understand the world through a process of connecting and restructuring symbols, ideas, and feelings. Enhancing this sensibility by training and challenging our perception is a powerful key to opening the doors of imagination through which we can conceive of things that have the potential to become real even though they do not yet exist. Culture development through individual development is one of the outcomes of the process of cultivating imagination. It is the fuel that triggers social and cultural progress and prevents stagnation. In terms of late 20th-century Western culture, The Simpsons is just one example of a masterpiece imaginative cultural product.

Gillian Judson

I love that you bring up the Simpsons and the amazing work of Matt Groening. The success of that show (terminology from which has now moved into the vernacular...) is a testament to his imagination but also to the fact we are all imaginative beings. How else would we understand or appreciate the subtleties of the satire? Do you know if the show has the same appeal in other countries? (Thinking about the influence of cultural on the "shape" of imagination). In response to your question, I have to return to Joy Whitton's mention of fiction. I read a book last month ("Lullabies For Young Criminals") which continually surprised me with depictions of everyday items using incredibly evocative metaphors. The author was describing the world in ways I felt I experience, too, just didn't know how to articulate.

For me, this exercise of being somebody else, what you called "if this was me," is the seed of the creative thought from which imagination flourishes. In high school, history was the first subject for which I developed a strong passion. I used to spend hours imagining the daily routine in my imaginary life in ancient Greece or being part of the group of explorers that discovered the New World. To my delight, in 1999, I read the book What if? The world's most foremost military historians imagine what might have been. In each chapter of the book, a watershed historical event was changed, and a historian imagined what might have been the consequences. Until then, it never occurred to me that a pure exercise of imagination could be applied to history. Imagination is limitless: it even allows us to imaginatively change the past!

References

Cowley, R. (1999). What if? The world's most foremost military historians imagine what might have been. New York: Berkley Books.
Cowley, R. (2001). What if 2? Eminent historians imagine what might have been. New York: G. P. Putnam's Sons.

Paul Kleiman

As a dedicated ‘day-dreamer’ (I was the child who always sat as close to the classroom window as I could so that I could look out and imagine a different world) I find the question both fascinating and difficult. Turn the question 180 degrees and you see the difficulty: Why is your imagination NOT important to you?

Those familiar with the great Russian director and teacher Stanislavski will know that his whole ‘method’, and the release of the actor’s imagination, starts with asking the question ‘What if.....?’.

But to matters in hand. This weekend has been a very practical DIY weekend. We have an old narrowboat, which means there is always work to be done. The main job this time round was to fit a new kitchen tap. The problem was that the previous tap had been very badly fitted (though it still worked until it broke), mainly because the hole that had been drilled in the worktop was too large. So I knew that to fit a new tap properly required a great deal of improvisation. In addition, the connections that came with tap were fine for the pipe work in a house but not for the plastic pipe work on a boat, so different connectors had to be found.

This is where imagination kicks in, but it needs something tangible to kick-start it. In this case it was handling the actual new tap, seeing how it worked, how it all fitted, seeing the problem though I did not know at that point how to solve it.

I sat down, closed my eyes, and started to run it through my head, picturing the tap in place and how it might be secured. Running various scenarios and rejecting them when it became obvious it wouldn’t work.

Eventually I came up with an idea of how it might actually work, and what was needed to make it happen. That entailed an early evening trip to B&Q - a massive hardware warehouse - which was still open to try and find the connectors I needed. That took a while, but I persevered despite some rather useless assistance from the store assistant, and eventually found what I was looking for tucked away on an out-of-reach top rack.

Back at the boat a couple of spare wooden drinks casters were brought into service and drilled with a smaller, correct sized hole. They were placed on the top and under the existing hole, secured and sealed, and the new tap fitted as I imagined it would be. And the bonus is that it also looks great....which is important to me.

I have spent hours just fiddling and trying loads of different things....and getting very frustrated. But imagining ‘What if?’ and combing that with my existing knowledge/experience of what might work and what probably won’t....saved a great deal of time, energy.

Norman Jackson

You introduce the idea of handling materials (the tap) at the site of the project as a way of generating knowledge to facilitate the imagining process. Do you think this type of interaction is essential to using imagination in this sort of practical problem solving context? Put another way could you use imagination to solve the problem without handling the essential materials?

Paul Kleiman

The importance of having some sort of physical contact with the materials, or space, is definitely a design ‘thing’, though I don’t think it’s essential nor confined to designers. Alongside that experience there is also, when it comes to solving practical problems, the importance of having some relevant technical (or transferable) know-how...which you may be pushing to or even beyond its limits. But there is also using one’s imagination ‘to dream the impossible dream’, ‘to play with ideas’, etc. where there is no practical or tangible outcome, and when one’s prior experience/skill etc can act as an inhibitor or block.

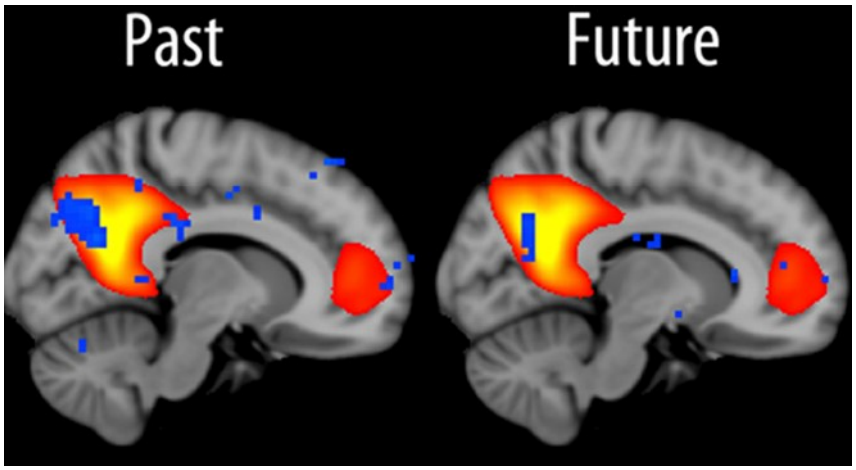
Gillian Judson

Thank you for turning the question around Paul Kleiman: **Why is your imagination NOT important to you?** Some people would say it is a "distraction". As you likely know (not sure of your background) thinking about education/ pedagogy during the 1920s (often called the "efficiency movement" in education) considered the imagination to be antithetical to productivity (!?) it was "like sand in a motor". Of course, applying an industrial metaphor for education is incredibly problematic...and so I think of that first as the "other" perspective. But that idea lingers in education today... I frequently work with educators of high and higher education that think imagination is important but also takes time away from what needs done. So interesting. Thank you for describing your highly imaginative day! This description brings me back to the MAKING challenge a few weeks ago. Imagination is involved all the way through.

Paul Kleiman

My professional background was first in the arts (mainly theatre but also visual arts) - which probably explains a lot, and then the arts in higher education - which also explains a lot! The industrial metaphor applied to education is, unfortunately, precisely what we’re experiencing in the UK. We’re increasingly moving towards what I and others call the ‘Gradgrind Curriculum’ which is all about facts and which creativity and the imagination are viewed as antithetical.

Norman Jackson



I have tried to be a bit more conscious of how I have used my own imagination today - a very ordinary day. I have been surprised by just how active it is… it seems to be firing away most of the time but particularly when I'm by myself – like when I was chopping brambles in the garden. A mundane but physical task that seemed to provide a good space for imagining - except when I got prickles in my finger! It enabled me to mentally visit a number of past experiences and think about things that were going to happen in the not too distant future – a sort of mental time travel. I realized how easy it was to flip between the past, present and future. I did a search on mental time travel and came up with an interesting article that claimed the same parts of the brain are active when we think about the past and the future. I must have deliberately steered away from unhappy thoughts as I have felt happy all day.

Mental time travel and default-mode network functional connectivity in the developing brain

Ylva Østby, Kristine B. Walhovd, Christian K. Tamnes, Håkon Grydeland, Lars Tjelta Westlyeand Anders M. Fjell PNAS October 16, 2012. 109 (42) 16800-16804; pnas.org - Mental time travel and default-mode network functional connectivity in the developing brain

Sandra Sinfield

I find the imagination a refuge when the world is harsh. I was that child with imaginary friends - who went on imaginary adventures... Of course, I then loved to read and read... perhaps too much. Now, I like the provocation of an imaginative challenge - something to kickstart my imagination in a positive way, yes, but also that the challenge is coming from outside of me and what could be my claustrophobic, more insular self. And imaginative challenges shared here allow me to 'be with' the imagination of others...eg some responses from the #creativeHE conversation

Rebecca Thomas

When I think about imagination I think I've been interested in in-between the imagination and actual things. As I child I remember particular environments where I transcended into a place of the imagination. As a Visual Theory MA student, I remember reading books like Robinson, G 'rethinking imagination, culture and creativity' (1994). This book reimagined Hume and Kant. Theory sparks my imagination and sometimes fear fuels things.

Serendipity plays a role –I'm developing a creative learning space and envisaged visual arts-related activities. Two people came into the space and started dancing this morning-this was unexpected.

I'm surprised as an artist how I haven't really tried to articulate imagination. I remember in early paintings talking about that my images developed to include imagined spaces inside the body.

Teryl Cartwright

I think the concepts I hold most dear in imagination are seeing or creating from what seems like nothing, taking something flat and giving it depth and unexpected shape, and intentionally making rules and ideas that may never get "published" but function as our internal framework for wondering and seeing what is not there yet (but yet is).

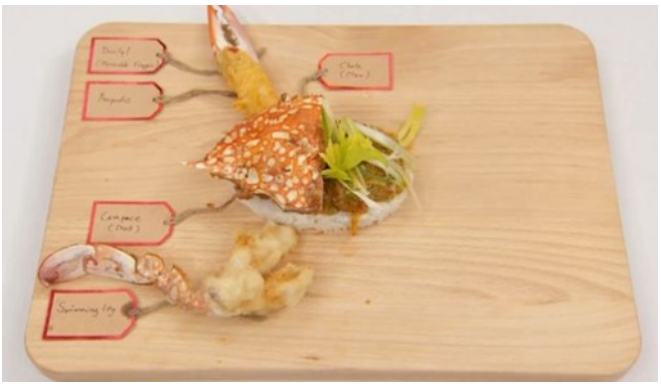
Jenny Willis

Before I come to an illustration of using imagination, I address Gillian's question. It's difficult to do this impartially, as I have just finished summarising an article on developing scientific imagination in secondary school students in Taiwan (those interested will be able to read this in CAM #11). The article was irritating for me, in that it was focused on the use of imagination as a problem-solving tool. Whilst I accept this valuable use of creativity, from the artist's perspective, I want imagination and creativity to have a non-practical use (if that is ever technically possible!) By this I mean art for art's sake. The production of a beautiful image, moving words, novel music.

Here, I use the word 'novel' advisedly: for me, imagination and creativity are both individual and absolute. Context will determine how I judge the product. From this, I extrapolate 2 conclusions:

1. Imagination can be a problem-solving tool, deliberately deployed in order to address a perceived need, or is the source of artefacts whose function is to make us feel good, i.e. have a non-practical aim of improving the quality of our lives.
2.Imagination functions at both relative and absolute levels.

Both of the uses in conclusion 1 are important to our existence as sentient beings, but I recognise that the luxury we enjoy as developed nations allows us to address Maslow's higher human needs in a way that would be impossible if we were striving to meet our basic survival needs.



I can illustrate the distinction by reference to one of my favourite programmes: Master Chef. I guess it is the teacher in me that loves to see the growth in contestants as they develop over 2 months' competition. In the series that has just concluded, the degree of imagination shown by these amateur cooks was incredible. Amongst them, one finalist, Nawamin, a medical doctor, stood out in his ingenuity. On one occasion, he produced an autopsy of a crab, laid out on a board with labels of each carefully cooked and presented element; on another, he used elements of a dessert in his starter and vice versa, inventing new gastronomic sensations. This was far removed from his humble Thai roots, where food was purely functional. Take a look for yourselves at http://www.bbc.co.uk/programmes/profiles/23Fm1ftDcQLqw20zRHfc5Gl/nawamin

What can we learn from this example? Imagination draws on past experience and what we know, but it harnesses our willingness to experiment and take risks that what it leads to could be rejected. It calls for self-confidence but also requires a sound knowledge of the basics (in this case, culinary skills). Nawaman is creating novel dishes not for a practical purpose (though this may arise, should he set up a restaurant that specialises in such food). Rather, he wants to enhance the everyday pleasure of those who taste his dishes. We come, full circle, to my 2 conclusions.

Shawn Tomlinson – a trainee vicar's perspective

"Mmmm that's a good one. I often wake up in the middle of the night with a thought, a song or a verse of ancient scripture in my head. So the one that came for me was 'whatever you do, do it with all your heart' The theme for next Sunday is vocation. So I thought I would talk about vocations as something we all have.

I was inspired by an email from a member of the family on a possible sermon theme relating to my husband's porridge art.

I then began to read about St Thérèse of Lisieux who at a point of crisis, though inspired to do great things, could not. She wrote the little way. In there she speaks of her greatest revelation as she sought to discern if she was the hands, feet etc of Jesus, figuratively, as an act of service.

But because she was unwell, in fact very sick, she could be neither. At that point, in her deep longing to be or do something God showed her his heart in the image of Jesus. She could love, her vocation was to love. She needn't do great things, but little things with great love. Mother Teresa of Calcutta went on to take St Thérèse' name at ordination of her vows and often quoted the above.

So my inspiration from my sermon has been porridge art and a humble saint.

Life is funny at times

Paul Thomas – A GP's perspective

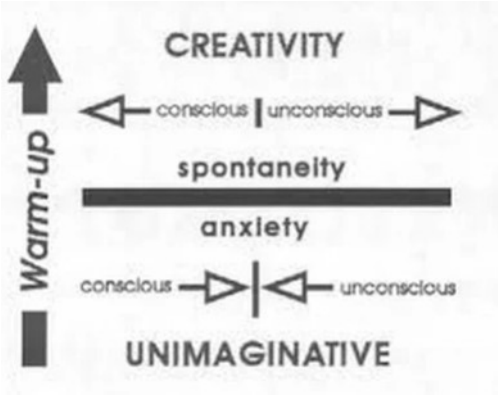
'Patients' consult general practitioners (GPs) often with concrete problems for which they seek concrete, 'linear', 'evidence-based', 'solutions'. So at first sight there is little room for imagination. Previous posts in this discussion have used words like creativity, learning, metaphor, perthinking to show that imagination develops non-linear and meaningful connections between diverse factors. With this interpretation, GPs use imagination all the time – to explain the nature of illness, to make connections between different symptoms, to surface hidden beliefs and hopes. I also think that GPs often improve health by holding an 'imaginative space' – not presenting answers but making it OK for the person in front of them to think deep and dream broad.

There is another, potential to use imagination in general practice. When improving Health, rather than treating diseases, GPs can/ could help people to develop what MacIntyre and Antonowski might call a Positive Narrative Unity - developing one's life story in positive ways. This requires imagination, both to do this and to help others to do it. As society gets its head around what health means I suspect that the ability to travel hopefully with imagination will appear on curricula at all stages of life.

Image: http://www.myscvb.com/index.php/custom/21768/

Rebecca Morely – Drama therapist'sperspective

Working as a dramatherapist, I am often in the position of needing to think on my feet. When a client presents difficult material, I must, in the moment offer containment and thus need to draw on instinctual imagination in a way that captures prior learning and experiences whilst also thinking about the future consequences of each word said and action made.



This image highlighted the importance of being completely present for each individual and in my role as dramatherapist. At least fifteen minutes before each session I will take myself to the space to prepare for the client's arrival. For me, accessing my imagination can be difficult when I have been stuck in the headspace of office work. Therefore, in warming up and reacquainting myself with my materials and the space, I am reconnecting body and mind and therefore accessing imagination becomes second nature again.

Working with a diverse range of clients, work never 'stays still', but instead remains fluid, creative and opportunistic. Imagination is not one-sided but instead is a product of the client/therapist relationship.

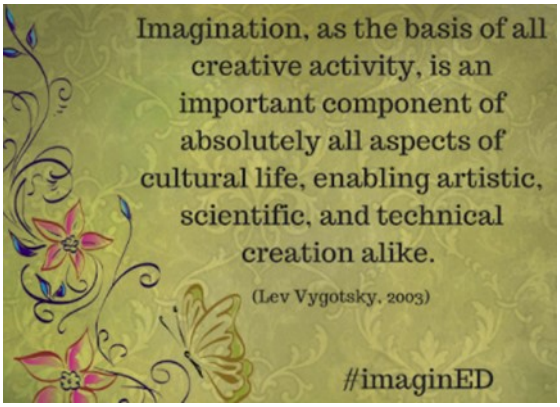
Once upon a time, spontaneity would have made me anxious and I would consider myself 'unimaginative', however now it creates excitement and an opportunity for learning.

Joy Whitton

I find the way you bring yourself into the present, and by accomplishing that, allow yourself to bring your past experience flexibly to respond to the client in the moment - if I am reading you right! - really interesting. There is a lot of complex observation in your account here about time. On the surface, being in the moment to be open to what the client is showing you appears to be opposed to past experience/expertise but it's clearly not opposed. Being able to bring them together heterogenously in relationship sounds vivifying. I think that heterogenous combing of opposing elements is the imagination at work. It's a beautiful example from drama therapy.

Q2 What is the role of imagination in your discipline or area of work? How do you use your imagination in your practice?

Gillian Judson



A huge part of my work in the Faculty of Education at Simon Fraser University is about pedagogy that puts imagination first; this is the heart and soul of my practice/research/writing. So, it won't come as a surprise to anyone that I believe imagination lies is at the heart of learning. As an educator I always seek the emotional significance of the topics I am teaching—identifying this emotional core (much like a reporter seeking "the story" on a topic or the emotionally engaging angle) allows me to shape my teaching in a narrative mode. Within this narrative context I use multiple "cognitive tools" (read next paragraph) to tap into my students' imaginative lives. My aim is to leave my students feeling something about the topics we study.

If you read the upcoming CAM edition you will learn more about the Imaginative Education, or IE, approach to teaching. The IE approach to teaching (for preK through Higher Education) was developed by Dr. Kieran Egan (google him and lots will come up). He has done a ton of theoretical/philosophical work on the role of imagination in learning (his background is in anthropology/ history). He also offers very practical support to educators by identifying cognitive tools that ignite the human imagination. These "cognitive tools" (theoretically aligned with Vygotsky's notion of psychological tools, though Egan proposes they come in "sets" with oral language, written, theoretical and reflexive forms of language) help human beings think. These are tools educators can employ today with any subject area to engage their students' imaginations more routinely in learning. Practical examples of cognitive tools and how to engage them in teaching:
[educationthatinspires.ca - Tips For Imaginative Educators]

Paul Kleiman : Using imagination on the theatre/performance/visual arts

Given that 'my' disciplines are theatre/performance/visual arts it's virtually impossible to think that imagination is not at the very core of those disciplines, especially in regard to those areas of those disciplines concerned with the creation and production of work. There are, of course, more academic/theoretical areas of those disciplines where imagination plays a rather more minor role.

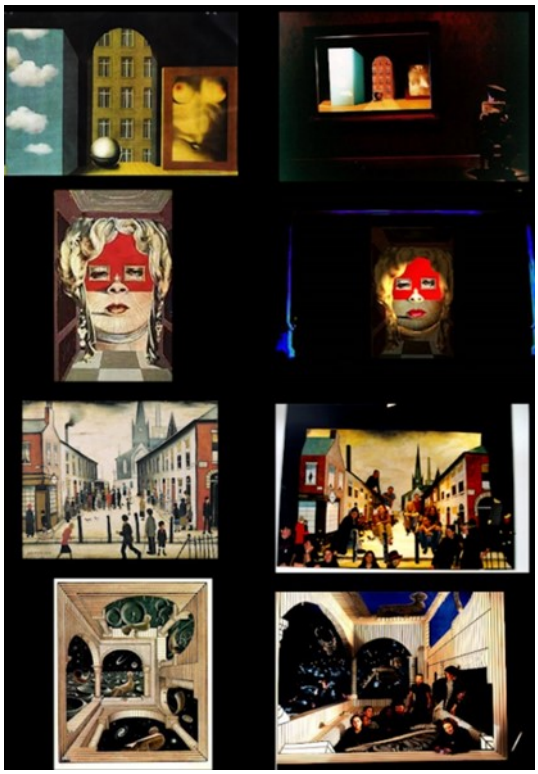
But, for the last part of my career I have been involved in enhancing learning and teaching, and my doctorate (on conceptions of creativity in HE) was undertaken in a Dept. of Educational Research. So I have, certainly to some extent, another discipline.

As a teacher I used my imagination to create projects, assignments and assessment tasks that would release the imaginations of my students. So my imagination was focused not so much on actually creating work but on creating the conditions and environment that would allow the students to really exercise their imaginations and to create truly imaginative work.

Often that work - harking back to yesterday's exchange about having a physical 'something' as a starting point - would start with something tangible which required the students to transform it. Some of my favourite student work started from a well-known painting which they had to transform into a 3-dimensional performance piece, with a rule that at one point in the performance a vision of the original painting had to appear.

Having a clearly defined starting point is much easier than starting with a completely 'blank canvas'. The latter is a bit like the conversation between Alice and the Cheshire Cat: "Could you tell me in which direction I need to go?", Well, where do you want to go?", "I don't know", "Well then it doesn't matter which direction to take."

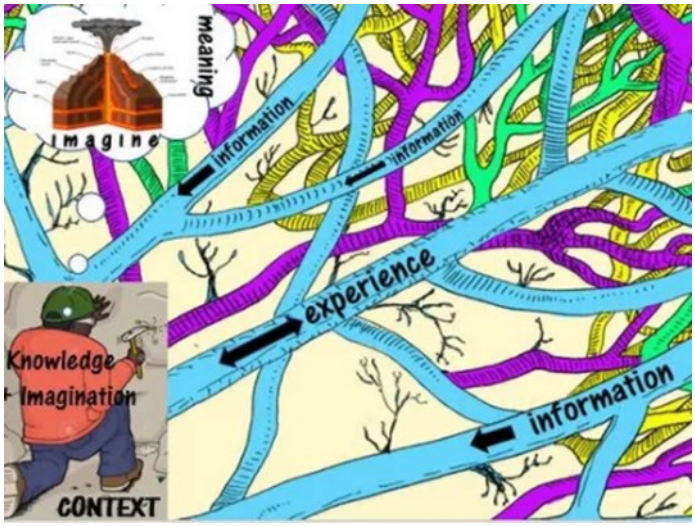
Those 'Performing Paintings' projects always started with an open-ended, value-judgement free "What If?" session, and the results always required huge amounts of imagination, resourcefulness, bravery, perseverance, etc. As a teacher I always had to make an effort to rein in my own imagination in order to allow the students the free sue of theirs!



Here are just a few examples of paintings transformed into performances. From the top (original on the left) Magritte, Dali, Lowry, Escher.

Norman Jackson: How a field geologist uses his imagination

The cognitive and practical apprenticeships served by students on their journey to becoming a doctor, engineer, lawyer, teacher or any other practitioner, is an apprenticeship in how to think and act like a practitioner when they are engaged in the situations of a practitioner. An integral part of this apprenticeship is learning how to use imagination to deal with the problems, situations and opportunities that emerge in the context of practice. Cultivating these forms of imagination is integral to becoming an effective practitioner. Of course this is alongside the imagination the person has already cultivated through other life experiences so they already know how their imagination works!



I was once a field geologist so I can understand how a practitioner in this field uses his imagination. If we take for example the context of a geologist making a geological map when he enters the field area (after of course imagining what it will be like and anticipating what he needs to anticipate) he will encounter entirely new geological problems it contains and he will enter a liminal state in which there is a significant gap between what he knows and what he needs to know so he is forced to make new discoveries in order to progress his understanding. Add geological complexity and poor rock exposure to the situation and we have a difficult challenge requiring a lot of perceptual work (identifying the rocks and structures) and scientific (inductive, deductive and abductive) reasoning and a lot of imaginative speculation in order to create meaning.

Making a geological map is like solving a giant jigsaw puzzle where most of the pieces are missing. The geologist's learning project is one of continuous inquiry driven by his curiosity and need to understand. His project requires all forms of reasoning and the use of imagination to speculate and project from the known into the unknown to try to visualise and make sense of the patterns and the stories he is seeing in landscape. He draws on the full range of his cognitive space as he strives to understand his problem while interacting physically, intellectually and emotionally with the physical spaces of his natural environment. As he works and learns he constructs a narrative to represent the geological history of the area: a story that embodies his own interpretations and theories and all the uncertainties and unknowns that drive further inquiry.

The mental processes of perceiving, imagining, reasoning and reflecting enable him to develop hypotheses about what is being perceived and experienced and these thoughts and feelings influence his actions. The activities he

chooses to undertake enable him to test and evaluate his theories, to find the pieces of the geological puzzle he is trying to solve (rock outcrops and structures), sense (observe, feel, measure) the rock materials, and record (often sketching or photographing and making notes) what has been perceived. In this entangled of thinking and action he uses tools like a hammer, compass, clinometer, camera, notebook, base maps, and aerial photographs to help him sample measure and record information that is important and relevant to his problem solving. In this way he develops the knowledge he needs by directly interacting with his environment and he advances his ideas about the geology through the imaginative hypotheses, models, scenarios and stories he creates and tests as his actions unfold.

Through the challenge of making a geological map the intermingling of perception (observation), imagination (speculation and conceptualization), reasoning (analysis and judgement), reflection and emotion, offer endless possibilities for creating new understanding and meaning. When we explore and try to solve a problem, challenge or opportunity, we use both our imagination and our critical ways of thinking in a complex synergistic interplay: what Ann Pendleton-Jullian and John Seely Brown call 'pragmatic imagination' 'a productive [and purposeful] entanglement of imagination, reasoning and action'.

I wrote a narrative about this process.
Jackson N (2017) Making a geological map through an ecology of practice Creative Academic Magazine CAM9
http://www.creativeacademic.uk/magazine.html

Jenny Willis: The role of imagination for a linguist

My original discipline was languages, modern and the classics, but I have moved so far away from them that I feel a fraud in trying to answer this question from that perspective.

For the student, the first thing that occurs to me is that imagination relies very much on having laid a groundwork: without knowing the grammar and relevant vocabulary, it is difficult to reach the level of creating something new in the target language. Having said that, I can recall, more than fifty years on, the sense of joy at first being able to put together a sentence of my own invention in French. It was the last lesson of the day, in winter, so dark outside…

Another issue is that we use language for different purposes. There is little scope for imagination when learning paradigms such as Latin and Greek declensions – the best I can do there is use colour coding to highlight the endings, to aid memorisation. Real imagination comes only when we are more advanced and are able to write an essay in the target language or to make a free translation of a piece into the foreign language or back into English. Again, I have a vivid memory of an essay I wrote for A-level French where I discussed whether having a disability, such as Ray Charles being blind, gave the artist an advantage. This was quite a sophisticated issue to discuss even in one's mother tongue, so it has stuck in my memory over the decades.

Free translation is another opportunity to exercise imagination: you have to feel what the author was feeling, go beyond the surface of the words alone, in order to grasp the essence of what they meant. This is a difficult balance if translating in an examination context, where you have to show that you understand the literal meaning, and digression too far may lose you marks. It is again only once you have reached a more advanced level that you can risk being more imaginative.

Still looking at the question from the perspective of the learner, the imagination came very much into play for me through the literature of the languages I studied. I was introduced to worlds that were chronologically and geographically distant, and could imagine life there. I liked playing with the literature: although studying Russian, when an undergraduate, I took a copy of Anna Karenina in French to read on the beach during a stay in Nice.

Russian, Greek and more recently Japanese and Korean have another attraction for me: their scripts were an opportunity for me to create forms of writing which appealed to my artistic eye. This goes back to the point I made about using colour to aid memorisation. I have a very visual memory and need to have a vision in my mind.

As a teacher of languages I hope I have been able to be more creative. This is not only because I have reached the level of 'expert', but also because I attempt to respond to the needs of the learner. I have written in previous conversations about the need to capture the interest of demotivated adolescents during my years teaching in Inner London. But this does not stop when learners are motivated; in my current privileged position of teaching small groups and individual children, most of whom are able and have high aspirations, I do not fall back on simply following a text book. The challenge now is to open their minds beyond the subject in hand. I do this still by creating much of my own material, by bringing in realia (fossils, a squidgy brain, grains, foreign coins, medals, you name it), in order to stimulate their imaginations.

So, to summarise, what do linguists need? Motivation, analytical skills, memory, visual skills, patience to reach the stage of relative competence, empathy, creativity … Sorry, no image today!

Gillian Judson

Having also taught French as a Second Language for 7 years at the secondary school level I can personally relate to/understand your feelings/comments here. I don't have the theoretical, linguistic background but I know what it is like to struggle to create imaginative learning contexts for students when/if their grasp of the target language is limited. In the more limited "imaginative engagement supports memory" feature of imagination's role I think we can teach those specific language rules with cognitive tools. Here is a link to a piece I wrote a long time ago on that--likely all things you have done, but also another way imagination contributes to language learning? I loved teaching the seniors whose grasp of language was stronger and we could, indeed, explore the worlds offered in fiction/music etc. Anyways, a few thoughts from Canada! Thanks for participating this week! From #imaginED educationthatinspires.ca - Calling All Second Language Teachers! What's In Your Toolkit?

Jennifer (Jenny) Willis

Yes, making learning fun is part of my philosophy, too, but I hadn't actually articulated the making the usual unusual. I guess it's what I do when we practise the gutteral 'r' sound and imagine we are being sick!

Implicit in your piece is something else that is important: having a sense of humour. When learners of German first encounter the word for 'father' (Vater - 'v' is pronounced as 'f') you just have to share the joke with them. Similarly, distorting your mouth to emphasise unfamiliar sounds both makes the learning more memorable and builds rapport. How many times have I felt like Moliere's nouveau-riche Bourgeois Gentilhomme as I extol the wonders of being able to purse my lips to make a high acute sound or stretch them into a grimace (for those who don't know the play, you end up saying ee-aw, ee-aw, like a donkey!)

By the way, did you know a London teacher has just won the global teacher award, based on her learning some rudimentary sentences in 30-odd languages so that she could speak to her pupils in their mother tongues. Check it out: globalteacherprize.org - The Global Teacher Prize » The Global Teacher Prize

Another fine example of using creative imagination!

Jailson Lima : The imagination of a science teacher

The work that I have been developing since 2009 was inspired primarily by the ideas of the Imaginative Education Research Group from Simon Fraser University. Learning from Kieran Egan's books and the IERG website opened my eyes to the possibilities of exploring imagination in higher education. I owe you guys big time.

In many disciplines, learners start from a set of concrete, tangible concepts and eventually move to more abstract ones. For example, the study of history usually starts with the significance of events and issues, followed by the description of pattern changes over time. In advanced stages, students are introduced to the analysis of cause and effect and develop a sense of multiple perspectives through which the past can be analyzed. In science, we observe an exactly opposite trend going from the abstract to the concrete. For example, chemistry starts with highly abstract, often counterintuitive, mental models that involve invisible sub-microscopic entities such as molecules, atoms, ions, radicals, and electrons that cannot be visualized in the same way that biologists see invisible cells and their internal organelles through a microscope. From these abstract concepts, chemists explain the behavior of matter based on data collected in lab experiments.

Although the ability to imagine—to create a mental model of those abstract representations—is crucial in chemistry, imagination is often neglected in traditional schools' curricula. Why such a fundamental power tool has not yet been widely used in the pedagogical practices employed in the teaching of science remains a total mystery to me. Schools are more concerned with the correct replication of concepts presented as concrete facts than with emphasizing the transitory character of mental models. It is not surprising that learners encounter insurmountable hurdles to even start appreciating the conceptual framework of this discipline.

To guide and design my practice as a teacher, I rely heavily on my past experiences as a student: the struggles, the pitfalls, and the shortcomings of dealing with counterintuitive, highly abstract mental models. I also want to connect with my students to find out how they process information to construct knowledge. Since imagination is knowing by becoming, it is an exercise of imagination to wear somebody else's shoes and see the world through their lenses. It is a powerful tool unique to humans: we continually reshape our own identity by cataloging and processing information through the lenses of other people's views and imaginations.

Jailson Lima: Imagination in my discipline: The Molecular Shape of You

I would like to share an amazing work that combines creativity and imagination to promote scientific literacy through visual representations. Tim Blais is the creator of Acapella Science, a collection of videos available on YouTube. His videos have been seen by millions across the globe and promote science to the public, including students from all levels of instruction.

I particularly like his video The Molecular Shape of You, which explains chemical bonding, the shapes of molecules, and makes links with biology and physics. It is incredibly well done. By the way, it is short: only 5 minutes. https://www.youtube.com/watch?v=f8FAJXPBdOg

I am currently using this video in my chemistry classes, and the students' response is fantastic. They started discussing the interesting connections made through the animations. This is an example of a product that uses imagination and creativity to promote science.

IMAGINATION CHALLENGE

Gillian Judson

Sometimes we need to change our contexts (eg actual locations, ways of engaging, practicing or thinking) to get our imaginations going; we need to purposefully step outside of our typical practices to more easily envision new possibilities and alternative perspectives.

The goal of this challenge is to stimulate the imagination of someone else and the challenge requires you to literally (and figuratively) get outside. We want you to take a walk with wonder and curiosity guiding you. Have something in mind that you teach or you might help someone else learn. Let your wonder and curiosity guide you in noticing what your local community might teach. What lessons or knowledge does the Place afford? How is your imagination ignited?

If you are a teacher or educational developer seek the affordances for teaching/learning this topic outside. What imaginative task or activity might your students do while outside (walking or in stillness) that could enhance their imaginative engagement and meaning-making and enable their creativity to flourish?

If you are a parent/guardian or grandparent, or an auntie or uncle, seek the affordances for teaching/learning something outside. What imaginative task or activity might your son/daughter, grandchild, nephew/niece do while outside that could enhance their imaginative engagement and enable their creativity to flourish?

Alternatively, if neither of these scenarios work for you, then perhaps you can imagine a scenario in which you engage the imaginations of some friends while out on a walk.

Please plan to share your idea(s) and engage with others at the end of the week. I can't wait to hear about your experiences.

Note: This challenge is inspired by a resource called *The Walking Curriculum: Evoking Wonder And Developing Sense of Place* (2018). It is a cross-curricular resource I developed that puts imagination and inquiry in the foreground. I am in the process of expanding the resource and its approach (ideas/insights/inspiration) to Higher Education. Want more information? Click here and visit **imaginED** or look on http://amazon.co.uk : http://www.educationthatinspires.ca/walking-curriculum-imaginative-ecological-learning-activities/

I literally have not seen the sun through my office window in weeks. Today around noon I felt a great urgency to #getoutside and take on this walking challenge.

#CreativeHE challenge
walking, wondering
#walkingcurriculum

My focus: To imagine how I might teach the difference between the/a "story" and the "story-form" through a walking-focused, imaginative activity.

Rationale: Educators have deeply rooted notions of "story" and its role in their teaching. NO matter how many times I seem to talk about using the story-form in teaching (or that our teaching can be viewed as story-telling and us, story tellers) *and* despite many examples, a significant percentage of my students don't seem to really understand the difference. (I see this in their assignments and reflections.) Many miss the profound power of the story for learning and believe that *teaching as story-telling* means that they must tell actual stories (the who/what/why/when/where) or create fictions for their teaching. Maybe an experiential, emotionally and imaginatively engaging activity will help them really understand the difference? Stay tuned! and I'm off...

Sandra Sinfield

I'm very excited to see your Gillian Judson book on walking and the curriculum. The work I mentioned came out of a few ideas. My own practice is largely to do with walking, being in, even immersed in the physicality of the landscape itself and this influences my teaching

In 2004, I made a video entitled Walking on Moel Y Ci. For this work, I found a very particular spot I knew well. I walked through the landscape and cited passages from Wanderlust by Rebecca Solnit (2001).

My interest in walking and the sound of feet on various terrains was explored in a recent video about walking in grass, sand and snow. This is split into four screens and all sounds cross over each other.

Navigation with strings attached

Initially this was a cross-discipline transitional project taking place right at the start of the first-year intake. My project combined collage and concept mapping. Drawing on Paul Klee's notion of 'taking a line for a walk', a different approach was used-giving students lengths of string and asking them to work in relation to this, encourages invention, self-reflection, and problem-solving. (Other key references here are to string pieces by Marcel Duchamp and to the Greek Labyrinth).

'Picnicification'

The value of staff working outside the institution for short periods of time cannot be underestimated. A change of environment brings a fresh perspective, allowing difficult problems to be resolved and new ideas to be developed. Examples are a picnic of Hampstead Heath and lunches at members of staffs' homes. In the first case we discussed streamlining assessment, in the second we focused on rewriting the Photography BA. By picnification I mean taking on a more positive approach, livening things up with a change of scene. Working outside the University (possibly abroad) is a good training for adaptability and the widening of perspectives. Discussions concerning working across programme teams can also be a part of these trips, as can meetings concerning planning procedures.

Nicholoas Bowskill: IMAGINATION CHALLENGE #walkingcurriculum

I worked as a volunteer for a local museum which has a connection with Dickens. Using an app called Findery (see below), I created a tour of the town's links with Charles Dickens. Anyone can use the app or a browser to and walk around the town. When they come to a building or place with a link your phone will come to life and tell you about it.

I think of creating the tours as an imagination challenge. Wondering round town on a treasure hunt is a bit like an imagination challenge and finding something sparks information about the building in front of you. That hopefully gets the user to imagine the spot where they are in a moment back in time.

People can add notes either online or when they are outside in front of the building. There's all sorts you can do with it.

You can see the tour I made from a browser via the link below. But the real impact is when you experience the surprise of finding information as you walk around. You can also create your own tours for your university, school, work-place or town. Better still, set it as a task for learners to create. Its free and its easy to do.
https://findery.com/DickensMaltonMuseum/notemaps/dickens-trail-malton

Jailson Lima: IMAGINATION CHALLENGE - The Palimpsest Project

In the 1990s, I taught high-school chemistry at the Colégio Vera Cruz, a private institution in São Paulo, Brazil. During one academic year, 12th graders developed a project called Palimpsests in which they were asked to look at cities as something having diverse layers or aspects that usually remain hidden beneath the surface. In the first phase of the project, students walked around the school's neighborhood to explore the landscape, looked at its topography, took pictures of buildings, houses, parks, etc. Later, those pictures were compared with older pictures available in the local library so that students could create awareness that cities are constantly changing.

Later, the project focused on the city of Rio de Janeiro during the 19th century, a period in which the city was the nation's capital. Excerpts of novels, essays, official documents, and paintings of the period were used to contextualize and integrate the different disciplines—history, geography, literature, and the visual arts. The topics were complementary and created a mosaic that was analyzed through a multidisciplinary perspective. The group took a field trip to Rio de Janeiro in search of the 19th-century layers of its modern palimpsest—governmental buildings, historical houses and commercial centers, and the old port. This, of course, required a lot of walking too. After the trip, students watched movies based on literary works of that period, which gave them the opportunity to experience 19th-century novels through the lenses of 20th-century cinema. The pre-readings, field trip, and post-activities created a continuum that helped students developed a sense of seeing cities as palimpsests. Being exposed to this project as a teacher, changed my own perspective and made me aware of the richness of seeing cities as palimpsests. When visiting ancient cities like, for example, Rome, I now look at them and try to separate their layers: Imperial Rome, Medieval Rome, Renaissance Rome, Modern Rome, etc.

Now I live in Montreal and teach in a college whose building used to be a convent for nuns. Montreal does not have thousands of years of history like Rome, but a visit to the old port can teach about the ways humans choose to build their cities: the availability and proximity of water sources, the accessibility of means of transportation, etc.

Walking around the college campus, I pass by two small 19th-century graveyards, and I wonder how many students actually notice them. Just analyzing those gravestones would be a history class in itself.

The project Palimpsests starts with a walk around the neighborhood, and it can be easily adjusted to the specifics of each city. It is a great way to connect students with their surroundings and give meaning to "school stuff."
https://www.vaniercollege.qc.ca/about/history/nbldg.html

Norman Jackson: IMAGINATION CHALLENGE - Taking my imagination for a walk

Our imagination accompanies us everywhere we go and it is often triggered by our interactions with our environment. So going for a walk holds a lot of potential for it to be exercised along with our body.

Imagination is often aided by serendipitous happenings. On Sunday I went for a family meal in our local pub and picked up a leaflet called 'Walk for Health'. It described a local project to encourage people to get out and walk. I spotted a walk that looked interesting called the Deepdene Trail not far from my home and made a mental note to try it.

Unfortunately, I forgot my leaflet so I had to look up the location of the trail on my computer and discovered it had an app with loads of information on it. I really liked the interactive nature of the app and began to imagine that I could create an app for my own walk.

My daughter is home from university so I asked her if she fancied a walk - she did and we decided to try out the Deepdene trail. 10 mins before we went for our walk I discovered an online map making tool called Habitat Network offered as a free to use tool by Cornell University. Its part of a citizen science project to encouraging people to make maps of their gardens. I loved the idea..

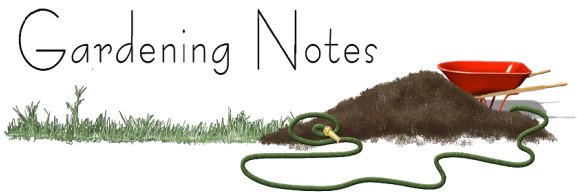
After a short drive we found the start of the trail and had a really lovely walk through some ancient woodlands that had been a deer park in the 1300's. The oak trees were magnificent and it triggered conversation about their age and what the area might have been like 500 years ago. We noticed the birdsong and I made a recording with my phone to try to work out what birds were singing.

With the #creative challenge in my mind I knew I was going to try and encourage my daughter to use her imagination.. I was quite open about it and told her about the #creativeHE conversation and our challenge and then, using a bit of reverse psychology I told her I was going to let her stimulate my imagination. She is studying biological sciences and interested in ecology and there were quite a few opportunities for her to share her knowledge – stuff I didn't know about plant growth for example. She's interested in ecology and we discussed the idea of using our garden for an ecological study. I told her about the Habitat mapping tool I'd just discovered and she sounded interested. When we got home I showed it to her and she remained mildly interested. I could see the potential it had for creating a habitat map of the garden and I thought if I made a start it might prompt her to make her own ecological study. I think the act of creating this map will make me see my garden differently.

I think the walk provided a natural and relaxing context to have a number of conversations through which we exercised our imaginations and prepared the ground for possible action. In my case the discovery of Habitat Network and making of a simple habitat map using the on-line mapping tool. What comes out of it for my daughter has yet to be seen. If nothing else it will be a memory of a nice walk that we share.

Post script
We had parked the car in a garden centre so we popped in at the end of the walk. I found a wonderful book called Lets Go Outside by Steph Scott and Katie Akers.. it was written for someone like me (grandad with 7 grandchildren) and it was full of imaginative ideas on 'foraging' finding and making stuff from the stuff you find outside. I love it. A fantastic example of people sharing their imaginations in a practical and accessible way so that other people can be inspired to use their imaginations.

SEE MY BLOG 18TH APRIL 2018 for illustrations and videos
http://www.normanjackson.co.uk/scraps-of-life-blog



And my new Garden Notes blog which hosts my first attempt to produce a habitat map
http://www.normanjackson.co.uk/garden-notes

Habitat Network https://www.youtube.com/watch?v=aqKEgLbba_U

Jenny Willis IMAGINATION CHALLENGE – Not quite a walk

This is not quite a walk, and it was totally spontaneous, but it illustrates how we can use our environment to stimulate learning.

Last Friday morning, I arrived to teach my 6-year old pupil only to find the learning centre was locked (I eventually received a phone call telling me my colleague was stuck in traffic, but was on her way). He and his mother also arrived and we huddled together in the cold but bright doorway. In the 10 minutes we waited, I exchanged conversation with his mother, but sought mostly to use the time creatively. His mother is Filipina and his au pair is Spanish, so I knew he was picking up some of the language. I got him counting and took him beyond the number he had learnt previously.

When his mother told me she had been following my advice not to help him with his comprehension work, she mentioned that he had found a certain piece difficult. She is a doctor, and the piece had been about the bones and muscles. Needless to say, a brief anatomy lesson ensued.

My pupil had brought along to show me a lego model he had designed and created. A great opener for his interests, which turned out to art and design. This helpfully linked to what I had planned to do during our lesson: imagine a planet and describe all its features. So we looked up into the sky and talked about the planets he knew (to my amazement, he told me the distance of the sun from earth!)

By the time my colleague arrived to unlock the building I did not feel we had wasted 10 minutes. The learning

may have been informal and improvised, but it was an example of how we do not need anything beyond our imaginations and the environment to stimulate learning. It reminded me of how, many years ago, I had stood in a Toronto DIY shop car park with our niece whilst the others were shopping. Amrutha and I spent the long wait expanding her French vocabulary. It didn't go to waste, either – she is currently applying to university in her home province.

Sandra Sinfield: IMAGINATION CHALLENGE - Get Outside!

We do get our students outside - and sometimes, when leading a session, they take us outside also.

A simple outside task we set our students is that they must wander the university and look at where learning is happening - or not happening. We ask them to explore formal and informal learning spaces - and to see what is going on... what facilitates learning - and what hinders it. They must then represent their findings (as poetry, animation, artefact, video, knitting etc) - and we hold and exhibition for them to showcase their work and celebrate their achievements.

A second outside activity is one that I undertook on an #artmooc - and which I want to set for my own students - and that is to get outside and explore a specific environment - like the university - and put up a small installation that is both within that environment and that comments on it or communicates with it in some way. They can film the process of putting up the installation - of people engaging with their installation - and even the taking down of the installation - for it must be removed at the end of the day.

Paul Kleiman: IMAGINATION CHALLENG Getting outside.

A Slice of Liverpool

When I was Head of Performance Design at LIPA in Liverpoool, we used to get our students 'out' a lot. Two of the activities in induction week were a city -wide treasure hunt (to get them familiar with the city as well as each other), and a trip out to the coast at Crosby where the seawall was constructed out of the bombed ruins of Liverpool during WW2 and where the students were encouraged to explore, find and make things. (I've written about that last activity before).

One of the projects we used to get our performance design to undertake in the first year involved was to walk around the area near to LIPA, which was in an old part of the city, and really look carefully and intensely at the physical environment. The buildings, the streets, the alleyways, the odd corners, etc.

Then they would have to select a small part of that environment, a doorway, a pediment, a derelict staircase, a flooded tunnel, a damp area where drainpipe, wall and ground met, a pile of rubbish bags, a booth in local pub, etc. and recreate it precisely and to scale in the studio - using whatever materials and techniques required - and also exhibit it alongside whatever they could find out about the history of that particular location.

A huge amount of imagination and hard graft went into creating these various slices, many of which were indistinguishable from their original source. By keeping the various pieces over the years we unintentionally created an architectural and social history of the area.

Gillian Judson IMAGINATION CHALLENGE

I took the **#walkingcurriculum** challenge! As I mentioned earlier in the week I wanted to see how I might teach my students about the difference between "story" (could be fiction/non-fiction, the *content* is key) to the story-form or narrative (more to do with the *shaping* of the information. Evoking emotional response/imagination is key).

Here is my idea: I would get my students out exploring the community around campus. They would be tasked to capture images (they could evoke them later with words for us; or take pictures) that would either fall into the **#story** or the **#story-form** category. We would debrief their choices and, in the process, unearth the power of the story as a way of human thinking/teaching.

Here's some reflection on that process and also my own work.

#story-form (Collage) How do we teach about Spring to kids? (My students are k-12 teachers) We could shape it in the story-form if we focus on colour. We can use colour as way of emphasizing the metaphorical (and literal) sense of rebirth and new life. The MAGIC of spring—the surprise? the beauty? (What might our *heroic quality* be to shape the narrative?) We could frame the actual biological process of life cycle of plant and/or situation of the Earth with dramatic emotional ideas of life/death or renew/end.

(Snore #notstory-form: "Spring is one of the four conventional temperate seasons, following winter and preceding summer." (wikidpedia) Snore.)

#story-form (Video) What's *the story* on walking? The #story-form might evoke what Dan Rubinstein (author of *Born To Walk*) calls "the maginificence of bipedalism". A story-form evokes the wonder, life- and world-changing impact of humans getting up on two feet. #notjustawalk

#story (Collage) Here I have images of particular things happening in my community or evoking something historic. The content is key.

Think—This is a local community arts project using ribbon. The next two words are "and wonder"
Vacant Lot—This lot is at the centre of a controversy between landowner and developers. Lawsuits!
Street Corner—This is the site of a tragic shooting a few years ago.

A nut—One chestnut. In the middle of the school field. How did it get there? What has this chestnut experienced?

Wooden village—For days local kids have been collecting sticks and building this village in miniature near my home in a local park. It is alive with stories for these children!

Bird house--Someone built this home to feed the birds--was it sunny on the day it was hung on this fence? How did it end up crooked?

Norman Jackson

Great illustration of how you think and act as a teacher +Gillian Judson to create an imaginative scenario (activity, process, context, anticipated learning) for your students. Its very ecological in its relationship to the spring environment. Your students are trainee school teachers. Would be great to hear how this approach might translate to other HE disciplines.

Q3 In your practice as an educator, teacher or professional developer what types of activities stimulate the imaginations of the people you teach or help to learn and why and how do such activities engage people in this way?

Rebecca Thomas - Going out and freedom stimulates the imagination

We launched 'Going Out' Project, which gave staff an opportunity to work together on issues and ideas within Learning and Teaching, developing projects on specific themes with the aim being to feed outcomes back into pedagogical practices across the School. What was unusual was that we persuaded the Dean of school to fund these inquiry projects.

1.Small groups of colleagues (2-5) from within or across programme teams identify an aspect of Learning and Teaching practice that they would like to explore together
2.Groups bid for funds, initially to enable them to go off campus for an informal period of project work. (The idea here is that mental/ physical space is often needed to generate new ideas and being away from the day-to-day working environment can allow more innovative thinking to take place. It's good to get away for a while...)
3.Groups meet for a day (or equivalent i.e. a few shorter sessions) ,away from UH, e.g. visit an exhibition or museum, go for a walk in a forest, go for lunch. (During this time they explore ideas around the topic, ways of developing the project, possible outcomes.)

The Going Out Project

The Going Out Project, is designed to provide new social contexts outside the University in which staff can meet and discuss their work. The idea is to meet away from the academic institution so as to gain a fresh perspective on a range of issues. The point of temporarily leaving behind the University is that different, less hierarchical conversations can take place, exchanges in which new communities of discussion can be built up. In the case of the picnic, the sense of friendliness and common purpose is further cemented and the conversations can be both convivial and productive (in terms of working practices) at the same time.

In particular, the use of the traditional picnic basket as a means of transporting food and drink was, over time, turned into a flexible educational tool, a receptacle or storehouse for ideas. Five different areas of interest emerged as key discussion themes, each being allocated its own basket as a sort of archival storage box in which ideas relating to the selected themes were stored for further use. Staff were invited to both contribute to the baskets or to use whatever they found there as starting points for further debate. The first five prominent education topics were assessment, online learning, creativity, 3D technologies, and student trips, and there was a sixth basket on hand to hold any miscellaneous ideas that could not be placed in the five established categories.

Jenny Willis: Stimulating imagination

One of my current roles is to develop the creative writing skills of the children who attend for tutoring, either to prepare for an examination (from 7+ upwards), or just to optimise their English literacy. After a career in education at most levels of teaching, research and management, teaching such young children was novel, as was the subject, when I first took on this role about four years ago. Not being a parent, I have found this a never-ending source of joy and wonderment as these young children reveal their creativity.

To answer today's question, I begin with some examples of effective activities I use, then will go on to extrapolate a few conclusions.

1. Inventing activities are always well received. A particular favourite is to create a new animal by combining parts of 3 real animals/birds/fish and then give the new species a name. Here, imagination is set free but still grounded in some reality e.g. how the animal feeds itself, where it lives.

2. Space and time travel are good for all ages. The children's imaginations are totally free here to create their own rules and situations, beyond the boundaries of our knowledge of the world.

3. Whenever we are starting a new theme, I begin with realia to stimulate the children's interest and go beyond the literary work. I try and use things they may never have seen before e.g. I have some square coins from my childhood; I collect shells and rocks whenever abroad, and bring them to classes; I have a squidgy brain (meant to

be a destressor) which causes uproar! A recent example was when we prepared for reading about Mary Anning. I brought in fossils and knew I had succeeded in interesting them when the twin Korean girls came in and said they had been to Sussex at the weekend to look for their own fossils on Mary's beach.

4. History is another source of endless possibilities. I have done a lot of research on WWI, and traced my family history back for centuries. So, extracts from my printed family story bring home to classes the reality of different periods – the workhouse where my grandfather was born, his wounds from WWI, medals, those who didn't survive etc. I attach the poem one Year 6 boy wrote a few years back, after our discussion of this period. He was a refugee from Jordan, and related his own experiences so movingly to the plight of those distant soldiers.

WAR POEM

Before I was at war,
I had way more,
Family and home,
Now I'm alone,
All I can hear is just bombs screaming in my ear,
Anywhere I look a man dies,
I don't want to fight,
It just hurts my eyes,
I'm just hoping every night I can come back alive,
I just want to be with my family and friends,
I don't want to do this, every day is the same,
This is all like a game,
You shoot, you lift, you meet, you greet, hunt,
shout, jump you cry, you die but this is real this
is your life.

By Mahir Miah

5. I have previously mentioned games, including magic dice, where the children have fun tossing the dice then individually or collectively create a story which must include all the items shown on the upper face of each die. The images are mostly related to the supernatural and supernatural powers. Again, the children can suspend reality.

6. More mundane ideas include giving the last sentence of a story and the children have to imagine the events that led to this. Resulting narratives are always amazingly diverse.

So, what conclusions can I draw from these and many more experiences?

1. The younger children's imaginations are totally unleashed and they feel free to go wherever they wish. The older ones acknowledge that they are becoming more inhibited with age. The conditions for this appear to be knowing that they are secure to do this without limitation of judgement.

2. The element of competitiveness contributes to imagination. This is motivated by intrinsic rewards e.g. knowing they won or did well, without extrinsic reward.

3. Their imaginations are caught especially by historical times – real and fictitious, e.g. Greek and Roman gods, dinosaurs. Images, video and other realia are great introduction which can stimulate their explorations.

4. They like to play both with ideas and with words, as when they invent the name of their new animal. We have examined previously the importance of play and the conditions that support this.

5. The activities need to be varied: you soon lose the interest of learners if the same type of stimulus is repeated ad nauseam.

6. Children of all ages can respond to these stimuli, but they will do so in different ways according to their cognitive, emotional and linguistic levels.

Why do these activities work? I must return to my old hobbyhorse: a positive learning environment and relationships. Without the children feeling safe to let go their ideas, their creativity would be impaired. So, I work hard to build this environment of trust and mutual respect. We can laugh and have fun whilst still respecting the boundaries of what would be acceptable to other people. And perhaps finally, leading by example. They see me working hard to get the best out of them, and this breeds a certain sense of reciprocity (on the whole!)

Norman Jackson – Field trip to Swaraj University

In January I visited Swaraj University which is located in the hills of Rajasthan 12km south of Udaipur. I had read a lot about their approach to developing self-managed learners and I wanted to see for myself. During the week I was there their task was to go out of the campus and interact with the world to develop a new perspective. They had a totally free choice in how they interacted. They had to decide on the output from the process and present the results of their interaction and what they had learnt to their peers. I was not able to see these projects from start to completion but I saw enough to appreciate the process, and in the context of this conversation appreciate how the task challenged them to use their imaginations.

The reason for my visit was to try to understand how Swaraj facilitated the development of autonomous, self-directing learners in the context of their mission to develop social entrepreneurs. Clearly, I was only able to see a snapshot of a substantial programme and the fact I had picked the week of my visit meant I could only observe what was happening in that week. However, my working hypothesis is that the best way to develop learners as consciously competent creators of their own ecologies for learning and achieving is primarily through projects that they conceive, design and implement themselves. Fortunately, the type of learning processes I was able to witness was the type of process I was hoping to see.

From my field observations I was able to see that a simple brief – interact with the world outside the compound and pay attention to what you are learning through the experience, provided the catalyst for imagining, self-organising, discussion and decision making, planning and preparation and then execution of a strategy in cultural/social situations that were unfamiliar, uncertain and unpredictable. Some of the contexts being worked in were quite challenging and required a degree of courage. Perhaps also there was a level of naivety in expectations of what could be achieved, but perhaps this was also necessary as it provided a good basis for learning from the experience. The involvement of experienced facilitators or former khojis (learners) with particular knowledge and skills was instrumental in enabling the current khoji's to make progress. In the short time I was there, projects were executed to varying degrees of success and some had yet to be fully implemented. Within the process facilitators encouraged participants to understand themselves and be aware of what was happening ie they were instrumental in developing conscious competence.

During the week I took it upon myself to undertake my own project using the same brief as the khoji's. I decided to interact with the landscape outside the campus and create a soundscape. I can definitely say that the simple open challenge undertaken in an unfamiliar environment engaged my imagination to a significant degree. You can read about my experiences in my blog posts on the 12th and 15th January 2018 http://www.normanjackson.co.uk/scraps-of-life-blog

Sandra Sinfield: What stimulates imagination in the people I teach?

We have tried to develop creative assessment challenges that excite the imagination of our students and invite them to engage with energy and enthusiasm.

For example, we developed a year-long first year module that was designed to facilitate student entry into university and into their course (and their epistemic community). As a year long module we could have three assessments - and they had been sketched in before we took over the Module:

1: Three learning log entries
2: Research project
3: Reflective essay.

We decided that the three learning log entries were not of sufficient challenge and would not motivate the students to engage - so we replaced them with something much harder and more time consuming - but that we also felt would be more engaging. We did dial way down our expectations of the reading that we expected the students to do as a result of this!

So - this is what we set instead of assessment 1.

Assessment 1: PROJECTS
We expect you to engage in at least the first FOUR projects in the list below – and to do a few more than that. Evidence from THREE Projects has to be submitted as portfolio items at the end of the year – you can choose your favourite three to submit - from:
Writing: Blogging to learn
Multimodal Exhibition
Develop a Digital Me
End of year Performance
Reading – Make it fun
Sketch Books
Art and Artists
Writers and writing
Learning Project.
The students did engage with enthusiasm - and surprised us all the time.

Russ Law – Guildford Adeventure

While working at SCEPTrE in 2008-09 at the University of Surrey, I tried to apply my ideas on explorativity (the orientation to explore) to the design and facilitation of a professional development experiences. The opportunity came in SCEPTrE's Experiential Academy led by Professor Colin Beard. We wanted to provide participants with the opportunity to experience being explorative in a physical context and environment that was unfamiliar, with people they did not know, with a challenge they had never encountered before. We wanted them to think about how they felt with all this unfamiliarity while trying to accomplish tasks and challenges that had been set. We also wanted them to use their imaginations to engage in the educational adventure which we called the Guildford Edventure

I spent many weekends designing and testing my edventure which I conceived as a team-based explorative stroll through Guildford, solving riddles, performing tasks and reflecting on the experience. The Guide I prepared can be downloaded from the Experiential Academy wiki http://experientialacademy.pbworks.com/f/Guildford+Edventure+2009.pdf and the basic idea can be adapted to any town or landscape.

Participants were organised into groups of 4. They were provided with a map of Guildford town centre, briefed on the nature of the edventure and then given their Edventure Guide.

The collective experience unfolded over the course of 3 or 4 hours as participants wandered with explorative purpose around Guildford, found their way from the graveyard on the hill, via the river Wey and the High Street to a pub or restaurant of their choice, discovering all sorts of things along the way. They solved riddles and answered questions, they paused to apply reflective questioning techniques learned earlier to apprehend their experiences more deeply. They were challenged to undertake some individual and group activities that they would not normally try, such as busking for passers by before visiting a pub, trying a drink they'd never had before, and having an evening meal together choosing something they had not eaten before. Each group had its own pocket video camera, mobile phones and camera to record their experiences and insights and participants were encouraged, through the activities in the Guide, to be aware of the effects of their individual and collective experience on their emotions. Through these shared experiences and wanderings, something remarkable happened: people who had not known each other before became friends and worked as a team to solve puzzles, perform challenges and reflect on their experiences.

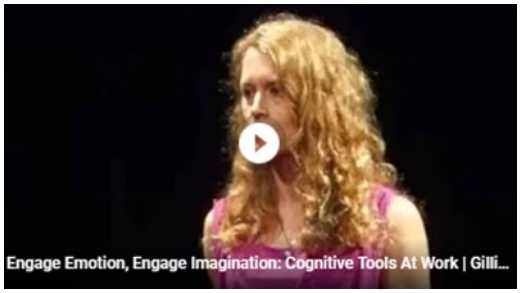
On the second day of Experiential Academy participants created their own digital stories describing their experiences and each team presented its own unique experience and shared the learning that had been gained through their edventure. By the end of the two day experience most participants claimed to have discovered aspects of themselves (and of others), that were life-changing, and that they would never forget, not least because they would apply their learning and new knowledge in the future. This was a powerful lesson for participants and facilitators on the educational value and potential in the practice of being 'explorative'.

In the context of this conversation about using and cultivating imagination, I can see how the edventure and then the digital story making about their edventure, encouraged participamts to use and share their imaginations as they wandered the town solving riddles and performing tasks and generally doing stuff they would not normally do in an environment they did not know for the joy of experiencing and learning. There seems to be good connections to Gillian's Walking Curriculum idea and to yesterday's challenge of going for a walk. This is the type of learning activity that I think provides the scope and freedom for the use and cultivation of imaginations in seasoned professional educators.

I wrote about my ideas on 'explorativity' in lifewide magazine http://www.lifewideeducation.uk/uploads/1/3/5/4/13542890/lifewide_magazine_18.pdf

Gillian Judson: How do I stimulate the imaginations of my students?

My TEDx gives an answer and example to this question. In the activity described here (which is always a hit with my undergrad/grad students) I employ a range of cognitive tools including the story-form, change of context, drama/role play, humanization of meaning, humour (of course). https://youtu.be/loIZyzPVgrU



Q4 In your practice as an educator, teacher or professional developer how do you show that you value the imaginations of the people you teach or help to learn? How does imagination feature in your assessments of learning and achievement?

The question of values emerged in the responses to a question I posed yesterday - 'Is imagination a skill, a disposition or both of these? It's a good question to be aware of when educators engage with the question of assessing learning in which imagination is being cultivated. I used a quotation from a report by Bill Lucus and Guy Claxton to emphasise the dispositional nature of imagination and creativity.

'we are convinced that real progress in developing ways of cultivating the wider skills of learning and creativity will be hampered unless we insist on speaking and thinking in terms of dispositions and habits of mind, rather than merely of skills. If the wider skills agenda is to fulfil its promise, it has to help young people develop not just abilities, but the inclination to make use of those abilities in the real world. This demands that schools and colleges think seriously about the cultural messages and values that they currently embody as well as the good intentions that they espouse.' (Lucas and Claxton 2009:31)

In her response to my question Jennifer Willis said, *"your last quotation refers to values. Dare I suggest that this is the biggest task, getting learners to see the value in something? From this, motivation can be sparked leading to a cyclical process."*

If imagination is the basis for the value we create, how do we as educators , parents/grandparents, colleagues, friends etc....value the imaginations that leads to what learners create?

Source
Lucas, W. and Claxton, G (2009) Wider skills for learning What are they, how can they be cultivated, how could they be measured and why are they important for innovation? NESTA available at: https://www.nesta.org.uk/sites/default/files/wider_skills_for_learning_report.pdf

Teryl Cartright

Last night I taught about confronting fears in the context of crime, race, terrorism, and politics. One of the things I did was ask them to be tourist agents that focused on safety to the extreme. I asked where in the world they would send me as a client and then, even more interesting, where in our city I could go. They had to factor in gender, time of day, and some other items.

Of course this helped bring up some issues and assumptions about our fears. I then had them imagine who is afraid of them--an interesting twist to a difficult discussion. While it is easy to bring imagination into positive topics, this asking them to combat one side of the imagination (worry/anxiety) with another (empathy) was something that made me work hard as the facilitator. (Note: we weren't using this exercise as therapy but exploration.)

Norman Jackson

Nice illustration +Teryl Cartwright do you think that 'exploration' 'exploring uncertainty, unfamiliar or unknown', is the key pedagocial practice to encouraging learners to draw on their imaginations?

Teryl Cartwright

+Norman Jackson I have been thinking about this. I think imagination also comes from exploring the certainty, familiar, and known as if it is unknown. When you explore the unknown, unfortunately, your imagination is subject to your fears and assumptions so it can be a negative thing. At least in the context of the study we are doing it seems imagination can have a dark side and perhaps educators need to be careful of its effects too.

Paul Kleiman

One way, as both a teacher and parent, that I value imagination and try to demonstrate that I value it, is to 'exhibit' it where other people can see it. Fortunately, with design students, they make lots of aretefacts which can be exhibited. Interestingly, when we gave our first year students six design problems to solve which not only weren't going to be assessed but they weren't allowed to discuss their work with anyone including tutors, other colleagues thought we were 'mad' and that the students would never engage with it.

However, we did say that all their solutions would be exhibited at the end of the semester and that we'd have a 'proper opening' with wine etc. and the institution's 'great and the good' would be invited.

Of course, the fact of the exhibition was a key motivating factor, but it also signalled to the students (which they appreciated) that we valued their work. Everyone engaged with it.

Similarly, any of us who are or were parents of young children, stick their work onto fridges, notice boards etc. as a way of valuing it. Occasionally there may be a 'stand out' piece. In this case it was our 8 year old son who, unbeknownst to us, decided to enter a drawing competition organised by the local bookshop. He drew a whale, and was among the prize winners. 20 years later that drawing, which we framed, still has pride of place in our kitchen/diner/workroom.

Nicholas Bowskill

I agree with Jennifer Willis. I think values and culture are vital. One way you can develop them is to have students explore them as part of the course. For instance, if you have values about learning you might give a list of attributes to go with it. Then you might invite students to reflect and identify which of those attributes is personally meaningful. They could then discuss and share their reasons etc. It helps internalise and make sense of the values perhaps?

Norman Jackson

I also think we need to connect and emphasise the link between imagination and culture. This perspective offered by Lev Vygotsky pretty much sums it up.

"All that is the work of the human hand, the whole world of culture, is distinguished from the natural world because it is a product of human imagination and creativity based on imagination." L.S. Vygotsky (2003)

The question for the whole of our formal education systems is how can we sustain and develop our cultures without paying attention to the cultivation and valuing of imagination?

Of course people use their imaginations without any help from our educational system because it is a driving force of the human spirit. But like many other things we could value more in education, there is an opportunity to do more. IMAGINE what might be if Governments all over the world said, 'right higher education your next task is to sort out how we might do a better job at enabling learners to develop and use their imaginations so that our society and culture might benefit now and in the future'.

Jennifer Willis

Thanks +Nicholas Bowskill. Your post reminded me, though, of the line I tread not to inculcate my own values but rather show different perspectives so that the students can make informed choices.

Many of my students are Korean, and they are Christians. I have to be very vigilant when talking about e.g. Darwin and evolution not to contradict the values they have acquired in their culture.

I had a good example of how I had not had an adverse influence last week. My boss's son is very able and I tutored him formally a few years ago when he was in the junior school of St Paul's (a leading public school). Now that he is in the upper school, he often asks me to help him informally on diverse subjects. Over Easter, he had to write an essay on absolute evil, and had been introduced to existentialism. Not an easy subject for a 13 year old! He had already planned that he would conclude by saying he is a Christian - I had taught him about evolution some years ago, and he had asked about my own beliefs. To my relief, these have not influenced him.

Another anecdote springs to mind: I was once using a Hindu story as the basis of an English lesson (my husband is a Hindu, so I am familiar with practices). My boss stormed in and told me no more work of this sort. She had failed to grasp that I would not have talked about a single religion without later contrasting the values of another. Sadly, the children are the losers in such situations.

Nicholas Bowskill

I think you're right Jennifer Willis about avoiding a top-down approach to values. I've done it both ways. The way I described with the idea they selected those which are personally resonant etc. The other way, we use for induction, is to base it on sharing concerns and stories (just echoing your point Rebecca). We then visualise them before discussing them together. That way the students are co-constructing their classroom culture and developing their values together. Both approaches work but context and audience is everything.

Religion has been something I've avoided in class. However, as you rightly say the multiple perspectives it brings on culture, life etc is a rich source for reflection.

I think regardless of the approaches & topics, diversity is the engine of learning and imagination don't you?

Sandra Sinfield

We had our students engaging in Showcases and Exhibitions - where the work was not assessed - unless they chose to put reflections on certain elements in their portfolios.

As with you, people kept assuming that if it's not assessed, students won't do it... But - we found, that if it was an Exhibition etc - they did - and they literally danced with excitement about it as well.

Gillian Judson

These "exhibitions" got me thinking of educators exhibiting imagination in an ongoing way. Valuing imagination requires educators to exhibit their own imaginative growth, to show themselves taking risks, demonstrating flexibility. Age-old idea: walk the walk.

Norman Jackson

Exactly +Gillian Judson the problem is there are quite a lot of unimaginative teachers and even good teachers rarely reveal the way they use their imaginations. How many teachers in higher education for example explain how they had to learn in order to develop the course they are teaching? 'We' generally prefer to keep such things hidden. So there needs to be cultural change that encourages practitioners to be more open and honest about their teaching practices with their students.

Jailson Lima- Valuing and fostering imagination

Yesterday, Norman Jackson raised an interesting point: Is imagination a skill or a disposition, or both of these things? The discussion that ensued pointed out the necessity of both an environment that is conducive to imagination and the need to have a system in which the imagination of learners is valued. By the way, I think imagination has a variable composition of both components in a sort of a “skill-disposition duality.”

I valued students' imagination by giving plenty of room for their voices. I avoid rigid constraints in my creative assessments. As a result, when creating visual artworks to portray scientific concepts, the variety of themes that emerge is remarkable: from Marvel superheroes to Saint-Exupéry’s Little Prince, from the TV series Breaking Bad to the Thalidomide case, from the chemistry of cheese to the chemistry of explosives. They have the chance to dive in their own interests and express their passions as long as they talk about science.

In the traditional schools that I attended, there was an obsession with the “correct” answer, as if in real life, there is always the one right answer for a problem. The expected learning outcomes revolved around verbatim replication with no room for divergent thinking. The recognition and celebration of diverse modes of thinking were never in the big picture. There was no interest in finding out what was in students’ minds: we were simply tabulae rasae. Our imaginations had no value. We only learned to admire the creativity, imagination, and ingenuity of brilliant artists and scientists. We were constantly told that geniuses were creative but there was little, if any, encouragement to foster our imaginations.

In my opinion, these are the big misconceptions surrounding imagination in education:

1. Imagination is innate: only certain people have it. Don’t bother wasting your time if you don’t belong to this select group.

2. We don’t know how imagination works.

By combining misconceptions #1 and #2, we arrive at a third:
3. Imagination cannot be taught, instilled, nurtured, developed, or cultivated.

Sandra Sinfield
Beautifully put +Jailson Lima! It's one reason i find myself going back to the seventies theorist, Ivan Illich - and his proposal that we need to 'de-school' society. I think that is what we try to do in that first module, de-school then explore...

Norman Jackson
some great points +Jailson Lima I guess you might have added another sentence - AND THEREFORE HAS NO VALUE? I like the idea that there are no single right answers where imagination is concerned only lots of possibilities.. and just because we might find what seems to be a right answer.. there may be better possibilities if we take the trouble to explore

Gillian Judson
+Jailson Lima +Norman Jackson +Sandra Sinfield And so why Imaginative Education rams up against oppositional ideas! One of the values of the cognitive tool language of IE is that we, as educators, know we have a role to play in developing and enriching our students' imaginations. The imagination is educable!

I appreciate how you value imagination Jailson--through giving time and space for the arts and broad flexibility to students among other things. I also notice you say "in creative assessments". It is important to comment on this point because when we talk about imagination or creativity in Higher Ed it seems some assume there will be no more defined or quantitative assessments. Not true. Both/and have their place.

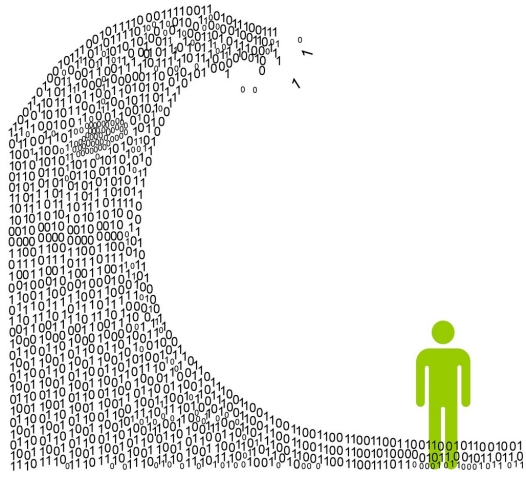
Norman Jackson
Isn't it relatively easy to recognise someone has used their imagination but difficult to quantifying how much? and what quality? Generally we steer away from the processes within which imagination is embedded and grade products - the results of imagination and lots of other mental and physical processes. When we mark a dissertation we are to some extent valuing a student's imagination but how often is that explicitly recognised in criteria?

Sandra Sinfield: Showing that we value the creativity or imaginations...
I have been working in the field of Learning Development for decades now - and have since moved into Education Development as well. I work in what in the UK is termed a widening participation university - that reaches out to 'non-traditional' students - that is, those who are often the first in their families to enter HE, or are mature...

Much of my early work with students was making transparent the forms and processes of HE itself - and of helping the students develop the active learning strategies they might need to succeed; and so that they were not dependent on the good pedagogy of their tutors (this is slightly different to the Lea & Street model of skills, socialisation and literacies - though it is related in that de facto this helped students navigate HE more powerfully).

In the last decades in the UK we have moved to a much more transactional model of teaching pre-university - with high stakes assessments and schools themselves placed in League Tables of academic success (and irrespective of the sort of pupil that they were working with. That is, the same measures pertained whether you worked with predominately white middle class pupils or a cohort with multiple socio-economic deprivations and English as a Second Language).

We realised that for our students this meant that schooling did not build self-efficacy neither did it nourish the whole person or prepare students for a critical engagement with the HE system.



Thus in our first year, year-long orientation module, we wanted to develop a curriculum, pedagogy and assessment that first welcomed the students for who they actually were, that developed self-efficacy and self-belief, that revealed the forms and processes of education - and that helped them to navigate these more on their own terms, whilst still being able to achieve academic success.

We devised a creative and ludic module - that disrupted taken for granted notions of what teaching, learning and study were, that fostered active learning and student voice. We were not quite Freirean, for we did know that we wanted this playful and creative approach - whilst the students themselves at that moment might not appreciate the point of that. They definitely did not see themselves as 'creative' and were initially quite depressed by the idea that we were going to make them be so!

So we asked students to make self-representations, to engage in roles plays, to draw to learn, to 'Develop a Digital Me', to have Exhibitions and Showcases, to give performances as they took responsibility for the last few weeks of the course itself. We also gave some choice as to what they would submit in their final portfolio.

As a year-long module there were three assessments. We hoped that they piqued curiosity, allowed voice - and also that they provided an invitation into their epistemic communities. This was not an easy module!

The three assignments were:
1: Evidence of three projects - but they could choose what evidence and which three...
2: A small piece of qualitative research - but on a topic of their own choosing and using a creative research method
3: A reflective essay.

The students fed back that they found this module to be the most useful - that it enabled them to make sense of all their other modules - and it was the one that fostered the most collaboration and the most learning.

Not something usually said about what is often derided as the 'skills' module.

So creativity, playfulness and choice were important here... and the way that we delivered the course, showing the students that we valued them - also that we valued their creative, imaginative selves as well.

But also there was our own inclination to be surprised and impressed by our students' work.

When they Showcased their 'Digital Me's - we could not use the technology ourselves the way that they did. We were not the experts here - and we could show how impressed and pleased we were with their work.

So - I think that a slight 'ignorant schoolmaster' (Ranciere) approach is something to hold on to...

If I am judging an essay or a Dissertation, well. I have been doing that for decades, I really am an expert... and this has its place.

But sometimes I feel that we should set tasks that allow the students to surprise and delight us - and then allow ourselves to be surprised and delighted.

PS: The picture is of our Brazilian nephew, Gabriel, who spent a few months with us recently. Here he is celebrating cycling to Paris. Now he was not one of our students - but if he had been - and he had chosen as a project - cycling to Paris - and reflected on that in his final portfolio... Then that would have counted!

Image credit https://www.haikudeck.com/digital-summit-2015-business-presentation-bCJENZTBK3

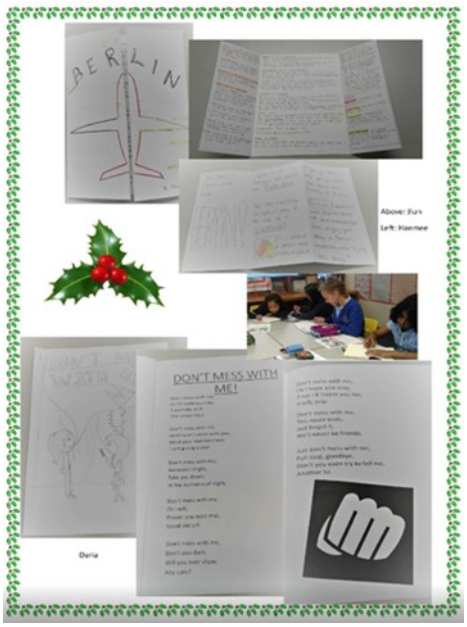
Jenny Willis

Once again, teaching English gives me a ready-made set of assessment criteria which include content – creative ideas. Not that I need the formal assessment process to appreciate students' creative use of their imaginations.

The nature of the environment where I teach limits the possibility of displaying individual work, though we do display copies of any certificates they have been awarded. Instead, I have taken the initiative to produce occasional newsletters in which I show pieces of work (I attach an example). The children take home copies of the newsletter and we have copies on display in the entrance foyer. This both publicly validates individuals' work and enables potential patrons to see what we do in one subject. Students cannot all be included, so aspiration to appear in the next one can be encouraged. The younger children also like to see their photos in print, and if I tell them they have been shared on-line, they are ecstatic!

Validation happens all the time, though, in less obvious ways. I always try to say something positive about a piece of work and then set a target for what needs to be improved next time. Standard practice, I guess. We often do peer assessment, which most ages love, and I turn into a game with a serious underlying purpose. In KS1 and 2, they like to hide their eyes (or themselves!) while each student scores them by showing fingers. They compete for who can tally up and write the scores on the board! Gradually, I am trying to teach them how to appreciate their peers' work objectively, not according to the degree of friendship between them.

The older students are sometimes shy of reading their own work, but will allow a friend to read it. Assessment for them is more formal, and I have equipped each with the GCSE English criteria for writing. At this age, I am aiming still to appreciate each individual, but in a more rigorous way. By hearing each others' work, they get an insight into the standards that will achieve higher marks, and see how alternative approaches to the question can produce equally valid responses.



The nature of our learning centre means that I know most of my students' parents. This enables me to give oral feedback when they bring or collect their children. We thereby join in appreciation of their efforts and achievements.

I strongly believe in intrinsic rewards, but paradoxically, my colleague/ boss has a tin of sweets which each student can take from after their lessons (for those avoiding sweets, she has tokens). I do, however, always bring each child a small gift when I have been away, or sweets at Easter and Christmas. This is my implicit way of showing them I value them as individuals and think of them even when abroad.

So much for me valuing them; how do they show me that they do or don't value me? One obvious indicator is the way they behave in lessons and their regularity of attendance. A more subtle indicator, though, is that they come early to lessons (much to my colleague's annoyance!), want to prepare the room for me by writing the date and name of the class on the board (sometimes with a greeting), and some will vie to sit close to me. When I am marking their individual work, some will drape themselves over me or stroke the prominent veins on my hands (all very politically incorrect, and I have to be aware of boundaries). I recognise that these are very different relationships from those that are possible in school settings, but I do believe they share a common need for respectful and trusting relationships. To that extent, there has been consistency in my approach whether teaching children or adults.

Twelve conceptions of imagination (Stephenson)

1. **The ability to think of something that is not presently perceived, but is, was or will be spatio-temporally real.** In this sense I might imagine how my daughter looks as I speak to her on the phone, how she used to look when she was a baby, or how she will look when I give her the present I have bought her.
2. **The ability to think of whatever one acknowledges as possible in the spatio-temporal world.** In this sense I might imagine how my room will look painted in a different colour.
3. **The liability to think of something which the subject believes to be real, but which is *not* real.** Stevenson talks of 'liability' rather than 'ability' here to indicate that there is some kind of failure in the cognitive process. In this sense I might imagine that there is someone out to get me, or Macbeth imagines that there is a dagger in front of him.
4. **The ability to think of things one conceives of as fictional, as opposed to what one believes to be real, or conceives of as possibly real.** In this sense I might imagine what the characters in a book are like/or imagine the actors in a film or play as the characters they portray, aware that the characters are only fictional.
5. **The ability to entertain mental images.** Here I might conjure up an image of a large, black spider or a five-sided geometrical figure.
6. **The ability to think of (conceive of/or represent) anything at all.** Here I might imagine anything from an object before me being transformed in some way to an evil demon systematically deceiving me.
7. **The non-rational operations of the mind, that is, those kinds of mental functioning which are explicable in terms of causes rather than reasons.** Here I might imagine that smoking is good for me since I associate it with the cool behaviour of those I see smoking in films. It may not be rational, but there is a causal explanation in terms of the association of ideas, upon which advertisers rely so much.
8. **The ability to form beliefs, on the basis of perception, about public objects in three-dimensional space which can exist unperceived, with spatial parts and temporal duration.** Here I might imagine that the whole of something exists when I can only see part of it, or that it continues to exist when I look away.
9. **The sensuous component in the appreciation of works of art or objects of natural beauty without classifying them under concepts or thinking of them as practically useful.** In looking at a painting or hearing a piece of music, for example, I may be stimulated into imagining all sorts of things without conceptualising it as a representation of anything definite, or seeing it as serving any particular purpose.
10. **The ability to create works of art that encourage such sensuous appreciation.** In composing a piece of music, the composer too may imagine all sorts of things without conceptualising it in any definite way in the sense, say, of having a message that they want to get across.
11. **The ability to appreciate things that are expressive or revelatory of the meaning of human life.** In contemplating a craggy mountain range at dusk, for example, or a painting by Caspar David Friedrich depicting such a scene, I may imagine how much we are subject to the awesome power of the natural world, and yet ourselves have the conceptual and imaginative power to transcend it all in thought.
12. **The ability to create works of art that express something deep about the meaning of human life, as opposed to the products of mere fantasy.** Michelangelo's Sistine Chapel, Shakespeare's *Hamlet*, Goethe's *Faust*, Beethoven's late string quartets or Wagner's *Ring* cycle might all be offered as examples of this final conception of imagination.

Sources

Beaney, M (2016) Imagination: the missing mystery of philosophy Free Open University Course Available at http://www.open.edu/openlearn/history-the-arts/culture/philosophy/imagination-the-missing-mystery-philosophy/content-section-4

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SUPPLEMENTARY QUESTIONS & PERSPECTIVES

Is imagination a skill or a disposition, or both of these things?

It's an interesting question in the context of creating activities to facilitate the use and cultivation of imagination and it connects to Russ Law's idea that an explorative disposition is more likely to make use of imagination than one than a less inquisitive mind. Bill Lucas and Guy Claxton offer an interesting perspective.

'One particular reason why the notion of 'dispositions' has gained a good deal of recent currency is the recognition that the idea of 'skill' conceals a very important real-life problem: that of realising when to make use of the skill, as well as of merely 'possessing' it….. The development of this readiness, as well as of the ability itself, thus becomes of crucial importance, one which is finessed and obscured by the casual use of the word 'skill'. Consider these statements: 1. 'Paula can use her imagination.' 2. 'Paula does use her imagination.' The first sits in the territory of skill. It merely tells us that Paula has learned a capacity to imagine. However, the second tells us that if we zoom in on Paula's life we may notice how in her writing, in her personal life, in her dealings with her parents Paula demonstrates on a daily basis that she not only can but actually does use many facets of her imagination. Here we are speaking the language of dispositions. Paula is actually using her skill. It has become a habit of mind for her to do so.' (Lucas and Claxton 2009:10)

'we are convinced that real progress in developing ways of cultivating the wider skills of learning and creativity will be hampered unless we insist on speaking and thinking in terms of dispositions and habits of mind, rather than merely of skills. If the wider skills agenda is to fulfil its promise, it has to help young people develop not just abilities, but the inclination to make use of those abilities in the real world. This demands that schools and colleges think seriously about the cultural messages and values that they currently embody as well as the good intentions that they espouse.' (Lucas and Claxton 2009:31)

Available on the #creativeHE discussion resources page

Lucas, W. and Claxton, G (2009) Wider skills for learning What are they, how can they be cultivated, how could they be measured and why are they important for innovation? NESTA available at: https://www.nesta.org.uk/sites/default/files/wider_skills_for_learning_report.pdf

Jenny Willis
For me, the word 'disposition' implies a sense of wanting to do something i.e. motivation. Interestingly, your last quotation refers to values. Dare I suggest that this is the biggest task, getting learners to see the value in something? From this, motivation can be sparked leading to a cyclical process.

Paul Kleiman
To 'getting learners to see the value in something' I'd add that that they need to know that their work is valued, by us as teachers. In the university where I used to work my department shared a corridor with the English Department. At the end of the corridor, near the dept. office, there was a box into which students 'posted' their essays. I often used to wonder how that felt to a student, and what it said about how their work was valued.

Nicholas Bowskill
Interesting. Is it skills or disposition? I can see how both are important and both facilitate imaginative work. However, shouldn't we add the social element to this view?

1. Paula can use her imagination
2. Paula does use her imagination
3. The social environment is conducive to Paula being imaginative

Jenny Willis
Quite agree +Nicholas Bowskill. And if we follow +Paul Kleiman, we should have:

4. The social environment values her imagination

Norman Jackson

Haven't we forgotten the most important thing? **Paula herself values her own imagination**

I always look for the opportunity to introduce my favourite concept of the creative process namely, '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'.

Carl Rogers omitted the role of imagination so I'd like to tweak his concept a little, 'through a process of imagining and connecting particular things to achieve a particular goal, new, novel relational products (or performances) are grown out of our uniqueness as an individual on the one hand, and the materials and circumstances of our life'.

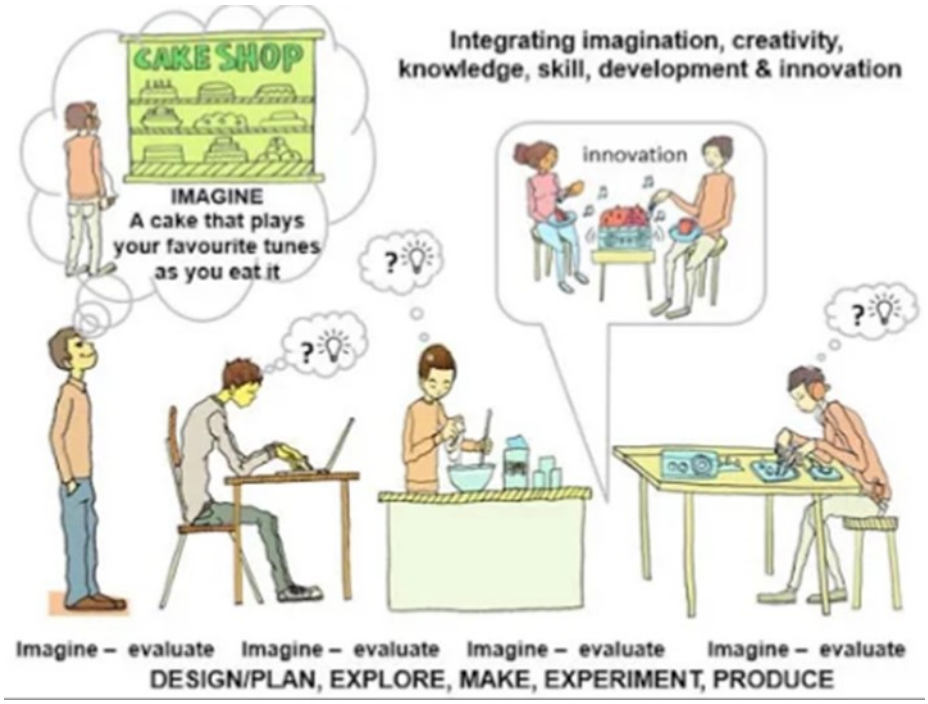
Gillian Judson

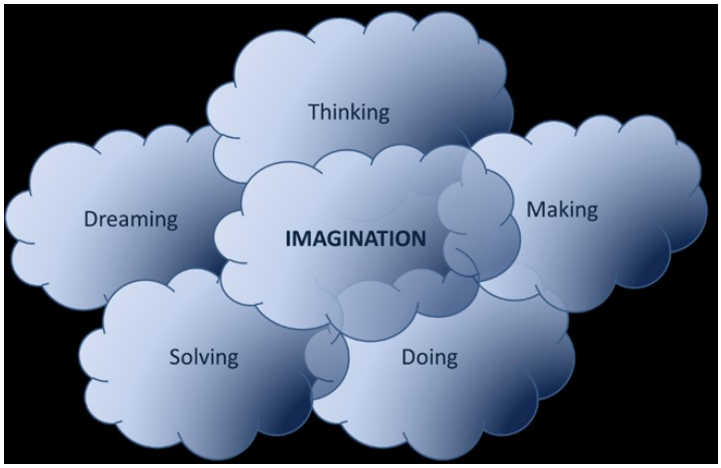
and that environment (cultural context) also shapes (in some ways) what she imagines?

I feel much more comfortable describing imagination in terms of a disposition rather than a "skill" (skill feels to robotic to my pre-coffee mind). It's a disposition or a *willingness* that comes, as you note, when such thinking/feeling is valued. Ideally, we remove imagination from "kids' stuff" and "imaginary" and create a culture in schools (and beyond) in which imaginative people are considered the most prepared, the most grounded (!), the most "educated" for this rapidly changing world! I would propose, too, that this disposition can lead to joy. Imaginative activities can be pleasurable (gasp--imagine the implications for school!) I know, multiple "cans of worms" officially **OPENED**

Norman Jackson

Refering back to my earlier posts I think 'imagining' is a process entangled with perception, reasoning and action. My creativity in development narrative tries to capture this.





Paul Kleiman

Reading through this thread (and the links) it struck me that one way to 'picture' imagination and where/how it might fit is to place it at the centre of some previous work I've undertaken. My doctoral thesis was on conceptions of creativity, and its title 'Thinking, Making Doing Solving, Dreaming' came out of the research I undertook categorising the words and phrases academics across a range of disciplines use to describe creativity or being creative. I collected c. 2500 words and phrases, and they fell into the order of the title. Rather than the either/or of skill or disposition, perhaps it's both/and I just drew this to visualise how it might fit with those categories.

Jailson Lima
In an interview for Ken Robinson's book The Element, Paul McCartney tells that he'd always loved music but never enjoyed music lessons at school. He went through his entire education without anyone noticing that he had any musical talent at all. He even applied to join the choir of Liverpool Cathedral and was turned down.

I agree with +Paul Kleiman +Nicholas Bowskill +Jennifer Willis +Gillian Judson +Norman Jackson regarding the necessity of a system that not only is conducive to imagination but also values it. Throughout my career, I have met students that although were highly imaginative, were not aware of their "skills" (?) because they were never asked to use their talents in schools.

The way I see it, imagination is like intelligence. It has a "skill-disposition duality" component. It is linked to the capacity for associating, comparing, relating, connecting, creating, and innovating. It is part of a process that requires a nurturing environment in which mistakes are considered a natural part of the learning process. Unfortunately, the current system penalizes mistakes heavily, especially in the natural sciences. This pervasive approach is not conducive to imagination since students are scared of making mistakes.

I like this video that shows an alternative approach that is more conducive to imagination.
youtube.com - Dreaming in Math

Then again, I am aware that this is not an ordinary school. The combination of small class sizes, engaged teachers and students, and full support from the administration is not easy to find.

How Vivid is Your Imagination? Is everyone's imagination similar? Norman Jackson

I love the #creativeHE conversations because it sparks new questions that I have never really thought about before. These questions were two new ones that emerged for me.

The first thought I have when I think of my imagination is that it helps me form images in my mind (our minds eye). If I ask you how many windows do you have in your house you will see what I mean. The chances are you will imagine yourself in a room looking at them as you count them.

But I discovered that there is a neurological condition called "aphantasia," and sufferers cannot form mental images. https://www.youtube.com/watch?v=q1moO05PbqY

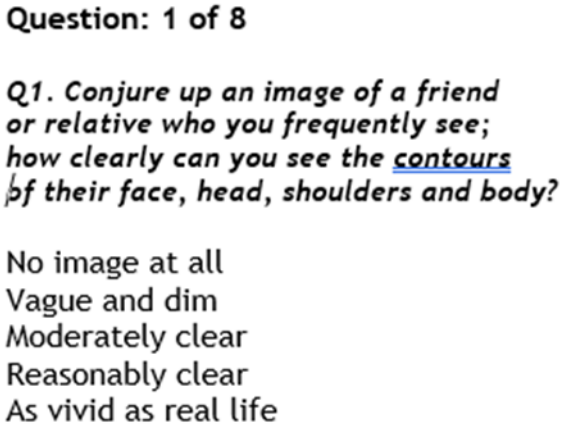
Nobody really knows how many people experience aphantasia, but surveys estimate around 2 to 3 percent of the population genuinely don't have an imagination – which probably means that if you are a teacher you must eventually come into contact with students with this condition.

More importantly, we all inhabit a spectrum of vividness when it comes to accessing memories and to using them when we imagine.

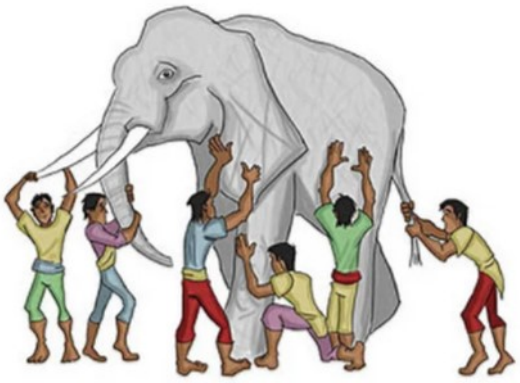
Take the aphantasia test

Is it possible to see what someone else is picturing inside their head. Psychologists use the *Vividness of Visual Imagery Questionnaire*, which asks you to rate different mental images, to test the strength of the mind's eye. The University of Exeter has developed an abridged version that lets you see how your mind compares with other people who have taken the test.

You can take the complete test and gain a score out of 40 and an indication of how the vividness of your imagination compares to the population as a whole.



http://www.bbc.co.uk/news/health-34039054



How do blind people imagine?
If our imaginations are so dependent on visual imagery - images that have been learnt through our visual perceptual experience, how does imagination work for blind people.?+Jennifer Willis raised this question and I have become fascinated by it and I would really like to hear from anyone who can offer a perspective on this.

There is of course the 6 blind men from hindustan proverb which hints at what imagination might mean for someone who is blind but I'd like to know what it really means.

My searches have surfaced very little so far. But I came across this interesting and enlightening conversation involving two people who became blind.

Seeing in the Dark
Monday, October 22, 2012 - 07:00 PM

John and Zoltan are both blind, but they deal with the world in completely different ways -- one paints vivid pictures in his mind, while the other refuses to picture anything at all. In this short, they argue about the truth of a world they can't see.

When John Hull, a theology professor in England, lost his sight he became convinced that the images in his mind -- like his memories of his wife's face when she was younger -- no longer matched the reality in which he lived. He didn't want to live in a world of fantasy, so decided to stop picturing the world altogether. Zoltan Torey, on the other hand, simply couldn't stand living in a world without images, so he resolved to visualize everything. He constantly creates a world of pictures inside his head that (he says) matches up with the world as it really is.

Because they settled on diametrically opposed ways of living without sight, we wondered what would happen if we got them on the phone together to duke it out. So we patched them through our studio, and recorded their conversation for our live show In the Dark.

While John finds truth in darkness, Zoltan sees an emotional void. And as they argue, they reveal some very powerful truths about how we connect to one another.

LISTEN TO PODCAST
http://www.radiolab.org/story/245482-seeing-dark/

Nicholas Bowskill

I was listening to a podcast from OU on consciousness recently (search "What is Consciousness for?"). It connected to this question in a tangential sort of way. See what you think. The suggestion is that consciousness provides the ability to distinguish between imagination and reality. Consciousness is facilitated through synapses etc etc (for both consciousness and sub-consciousness) but also through language. This gives us the ability to describe perceptions, experiences, imagination and 'reality.'

Implicit in all of this, I would imagine, is that consciousness and language are enablers of imagination for anyone. This includes those with sensory deprivation (though this will obviously depend on the nature and extent of that deprivation and any other aspects of deprivation). A blind person clearly still has consciousness and language. Therefore, they may imagine and be imaginative in a similar albeit altered manner.

Then there are different levels of consciousness. We might label them C1, C2, C3 etc.

C1 might be an ability to distinguish between imagination and reality and to describe experience
C2 might be an ability to classify this experience
C3 might be an ability to relate this imaginative experience to another

I could go on but 'consciousness' and 'language' would be my main response to the question posed. If this has been said already forgive me. I'll try catch up when I can.

You can access the podcast through a browser at
open.edu - Cognitive Psychology

THE POWER OF IMAGINATION

Whilst the structured discussion was taking place, a parallel conversation was unfolding initiated by daily contributions from Kevin Byron. We have kept this conversation separate in our curation of the week's posts, to ease navigation. Because of the complexity of the discussion, we have excluded the social comments e.g. 'thank you'. As with the first section of this account, readers are encouraged to read the discussion itself and to dip into the rich exchanges that took place and which are continuing to be posted even as we write six weeks on (https://plus.google.com/communities/110898703741307769041?hl=en).

DAY 1

Kevin began the week with simply posting this image on story-telling, without further comment, and awaited responses. At first, this resulted in a duologue with Gillian Judson, but as the week progressed, others joined the conversation.

Gillian Judson

This is a great graphic. The power of story indeed! The story-form and its associated features (vivid images, rhythms/patterns, the unusual, dramatic oppositions and so on) are tools of memory and meaning incredibly powerful in creating feelings of identity and belonging--for bringing people together in those "circles" you show here! You might enjoy latest post from #imaginED: By God, It's Full of Stories! (By David Futter) educationthat-inspires.ca - My God, It's Full Of Stories .

Kevin Byron

Many years ago I was a member of a group called: 'The College of Storytellers'. This was at a time when the storytelling tradition had virtually disappeared in England except for some odd remnants found amongst The Mummers.

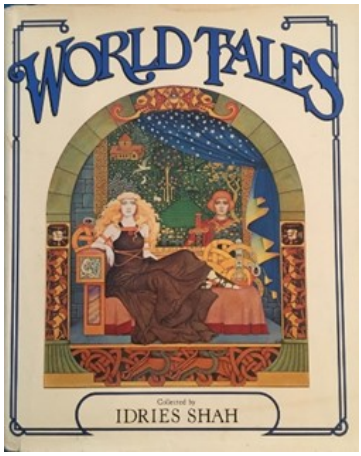
We used to meet once a month in a pub in London. Seated in a circle in a candle-lit room, someone would tell a traditional tale (not personal anecdotes as they have a quite different function), and then someone else might pick up on a sub-theme and tell another tale. So there was a tenuous thread that ran through these tales of wisdom and folly, and the nearest analogy is to describe it as a musical 'Jam' session (The word 'Jam' has its origin in an Arabic word that means 'Coming together'). Even though this sense of unity within the group didn't always happen, when it did it was very special. The College only lasted a couple of years, but it revived the tradition, and many storytelling groups are flourishing across England (they even have a Storytelling Laureate!! which I'm not sure is such a good idea).

I'll comment on the role of stories in education when we cover that theme later in the week. I think it's worth commenting on the difference between story and narrative because these two words are often used in place of each other rather like creativity and innovation, when their meanings are quite different. In brief 'Story' concerns what is told, and 'Narrative' is about how something is told (i.e. technique not content).

Gillian Judson
I typically use the term story-form (as opposed to "story") to make the distinction. I agree that using the term "story" does refer to the contents--in my work I am much more concerned with *how* knowledge is shaped in the context of teaching when it comes to engagement. This is, as you note the narrative or story-form.

Kevin Byron
One can easily invent a story from imagination. It could range from an embellishment to a personal anecdote that one has heard, to a full blown flight of fancy based on a day-dream. Life-changing dramas apart, such stories form part of a healthy diet in our daily attention exchange with other people, though they are soon superseded by the next mini-incident or imagined idea. There is however another order of stories in circulation that have stood the test of time, sometimes originating many hundreds of years earlier, and that appear around the world in numerous forms having been adapted locally by various cultures. Generally known as traditional tales, these stories often have a social element to them, but they are more than mere inventions of the imagination, because they also carry with them a significance that can resonate deeper within our minds. Such stories written by the wise require one to search them out.

The social element of traditional tales fulfils the various functions illustrated in the slide above. This includes providing an early education, sustaining the mores of a culture or tribe, providing entertainment, and enabling groups of people to bond at times of trouble.



This social dimension in a traditional tale is the means of transport for the deeper meaning that somehow by-passes our analytical, literally interpretive mind. To quote from the writer Idries Shah in his book 'World Tales' (1): "Perhaps above all the tale fulfils the function not of escape, but of hope. The suspending of ordinary constraints helps people to reclaim optimism, and to fuel the imagination with energy for the attainment of goals: whether moral or material."

(1) Idries Shah; World Tales. ISBN 0 7226 6860 0.

Gillian Judson
Nice distinction. Indeed, one I wish more people thought more about! The earliest form of "school", as you know, was for the purpose of socializing/sharing cultural knowledge. The story as you describe secondly here with cultural lore to share was the master communication/ teaching tool in that context.

The cognitive tools I talk about in IE are the tools invented oh-so-long ago to make that cultural story (traditional tale/myth etc) meaningful and memorable.

Can of worms opening: (Egan's IE theory is a "cultural recapitulation" theory in so far as he argues as individuals learn oral language today, they develop the same "kind of understanding" , a mythic sense of the world, that emerged in oral cultures historically. His "recapitulation" theory is not problematic in the ways so many were in early educational thinking as he is talking only about the *repeating for ourselves* the way of making sense of the world shaped by cognitive tools as opposed for particular knowledge, for example.)

It is the shaping-form of story (to evoke emotional response) using cognitive tools that we are mostly talking about in IE. I think you would enjoy the book *The Educated Mind.* Does a better job of explain the recapitulation piece that is so important to the theory but also tricky.

Kevin Byron
My work is now exclusively with Ph.D students, PostDocs and researchers in Higher Education and industry, and that doesn't offer any opportunity for being outside. However last week I presented a two day workshop called 'Researcher to Entrepreneur' at Oxford University and the venue was the Natural History Museum which has an area of lawn in the grounds. It so happened that the sun made its first appearance this year, so we did go as far as having lunch outside!

Many years ago I used to present workshops with much younger people, and I developed something called 'From Biology to Technology' where the aim was for groups of kids to observe ideas in nature whilst walking through the woods. Then back in the classroom, they would transform these ideas into inventions that could be used by humans. I posted some results from this workshop here some time ago so I won't re-post.

About seven years ago I attended a Knowledge café in London at The CASS Business School, and that evening was all designed around learning by walking. This idea was facilitated by Prof Clive Holtham who has been using this technique for some time: [nowgocreate.co.uk - Take your creativity to the streets | Now Go Create]

Finally it's worth mentioning 'Open Space' meetings which are not literally outside, but I did once facilitate one in a garden with Chemistry academics. Again I posted this here some time ago so I won't re-post here.

(…)

My workshops are all designed for the environment of the training room. Wherever possible I request a large space (expanse), I design the workshop to ensure there is always flow (rivers. streams, hills and valleys) in the group dynamics, so the attendees spend some of the time working at their (picnic) tables in groups, then in pairs, then individually. Some of the time the attendees leave the tables (following different paths on a mini trek) and add things to their creations on the Magic Whiteboard attached to the walls (crags) and this 'exhibition' is also where they network (in the 'garden of forking paths') throughout the session. By the end of the workshop they have travelled a long way (in uncharted territory), and hopefully return home with new knowledge and discoveries about themselves.

So yes - everything I teach is augmented by being outside! ;-)

I think you highlight a problem with HE Creativity, because it's not often clear who we are referring to, in terms of the students, when we describe our T&L ideas. Some folk are working in the primary, some in the secondary, and others in the tertiary sectors.

My work is aimed at the development of research skills in staff in higher education and industry. This embraces a wide field which includes academic writing, planning and project management, IPR, creative problem solving, public engagement, influence & negotiation, entrepreneurship and personal effectiveness etc.

I don't have an overall strategy or framework in the design of my workshops, except to ensure a shifting group dynamic throughout the day, lots of 'hands-on' exercises, and supporting explanations with published evidence that justify why I'm doing what I'm doing.

So I tend not to abstract things back to terms like 'Ecology or 'Affordances'. It's been my experience that my clients don't relate to such frameworks. Indeed I'm also very cautious about leaning too heavily on 'Tools & Techniques', and I always emphasise their limited use as the means of progressing only when we are stuck. Once we have re-aligned ourselves, the tools are to be dispensed with.

Where's Imagination?
https://www.weforum.org/agenda/2018/04/education-systems-can-stifle-creative-thought-here-s-how-to-do-things-differently

DAY 2

Kevin Byron
The Imaginative Laboratory in your Head

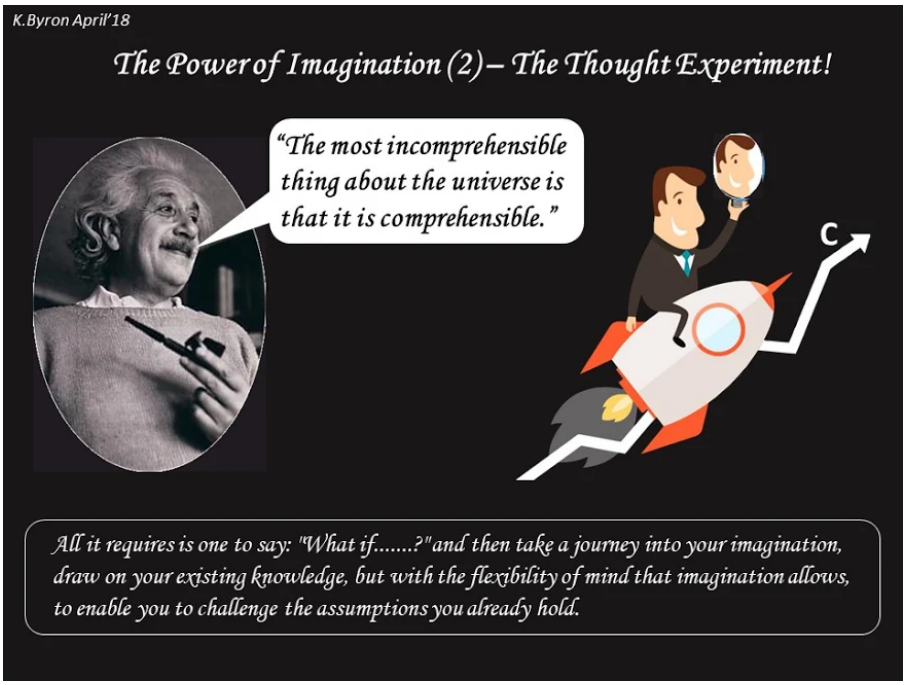
A thought experiment enables one to solve problems conceptually without recourse (initially) to an experiment. This technique was first described by the Greeks with their reliance on deduction from a set of premises to solve mathematical problems. Many great scientists have invented their own thought experiments to test and make sense of abstract concepts, prior to their verification by experiment. Examples in physics include Shrodinger's Cat and Maxwell's Demon, and other disciplines such as philosophy and law draw on this technique occasionally.

One of Einstein's thought experiments that enabled him to develop the theory of special relativity is illustrated below. Here he was wondering what would happen to his image in a mirror if he was travelling at the speed of light. According to classical Newtonian physics, the light from Einstein's face would travel at his rocket speed plus the speed of light and be reflected off the mirror so that Einstein would still see himself. However Einstein had already postulated that nothing could travel faster than light, so in theory his image would disappear because the light would never reach the mirror. But according to his theory what would happen if he travelled very close to the speed of light? Would his image form very slowly as the light took longer to reach the mirror. This did not make sense, given that the laws of physics are supposed to be invariant. Einstein resolved this dilemma by suggesting that the speed of light always remained constant, and instead it was time and distance (space) that varied with speed.

This idea turned Classical theory upside down, and counter-intuitive as it seemed, it was correct and later verified experimentally. Interestingly, like all good scientific progress the earlier Newtonian physics didn't turn out to be wrong, but was a specific case of Einstein's relativity in which the speeds involved are slower than the speed of light. So we live in a Newtonian world, but whenever you use your Sat Nav you enter Einstein's world because a small timing correction due to time dilation needs to be made due to the speed of the orbiting satellites.

Einstein developed this famous theory of special relativity in the earlier 1900's along with four other great ideas that changed the world of physics.

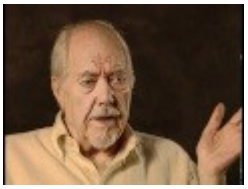
Thought experiments are a great way to teach and indeed to develop ourselves. All it requires is one to say: "What if.....?" and then take a journey into your imagination, draw on your existing knowledge, but with a flexibility of mind that imagination allows, to enable you to challenge the assumptions you already hold.



Jailson Lima

Indeed, learning science can be an exciting experience. One way to spark students' curiosity and interest is to incorporate a "what if" in a multidisciplinary way so that new knowledge can be effectively constructed and integrated with students' prior notions.

Recently, I came across a beautiful project conducted in a private school in NYC:


youtube.com - The Rashomon Project

I totally understand the hurdles to making such an imaginative approach mainstream in public schools everywhere such as the change in mentality of the powers that be, the necessity of small class sizes, the availability of teacher training, and the support from the institutions, both material and logistic. Even with all that considered, it is comforting to know that there are ways to bring excitement and a sense of wonder to our schools.

Gillian Judson

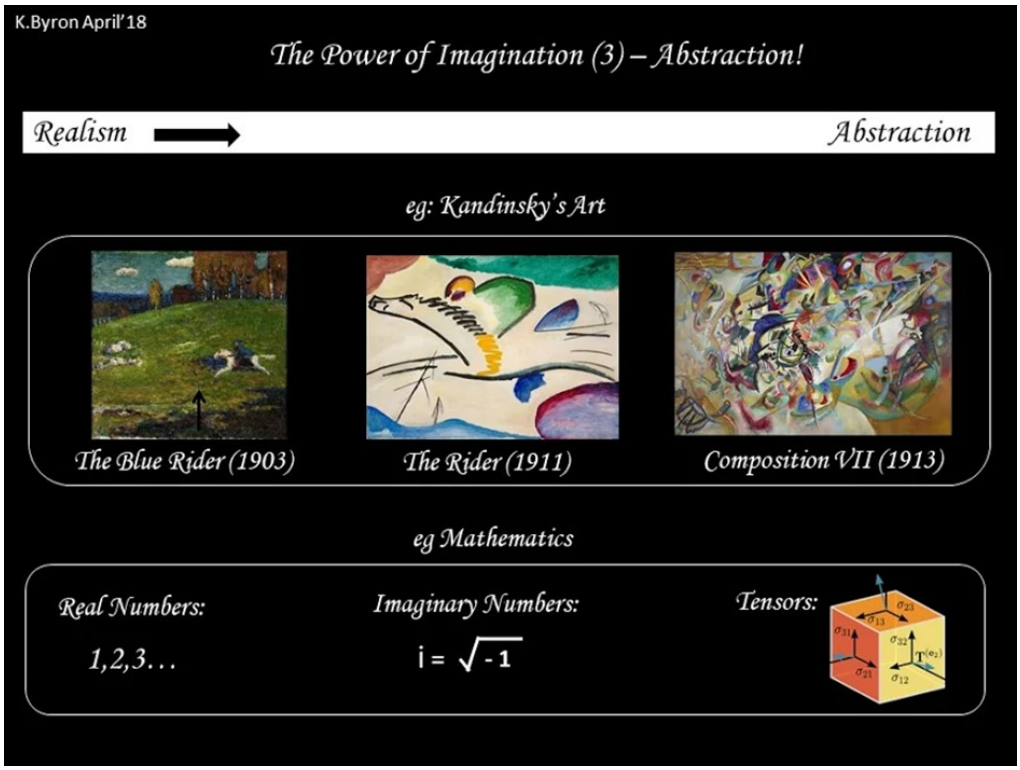
This is a wonderful explanation of the power of the "thought experiment". Thanks for articulating this example with Einstein. The *what iff'ing* feature of imagination is, indeed, one we can quite readily apply to many disciplines of work. Indeed, to flip the question (as +Paul Kleiman will have us do maybe?) in what discipline is the imagination **not** useful? I am not sure I can think of anything...

To return to the "what iff'ing" ...I am thinking now of my recent work with school leaders and using cognitive tools with them to deepen and expand their understanding of issues in schools AND (importantly) how they can employ the tools to engage their school communities. Our work together started with some extreme *what if'ing* (*In a staged-process, we played with the concept first, we generated "outlandish" ideas, we took on different perspectives, we focused on developing mental images.) Jailson I will check out this video, thanks!

DAY 3

Kevin Byron
Knowing the Unknowable

Abstraction concerns the mind's extraordinary ability to think about ideas, principles and things that have no spatial or temporal presence. For example we can arrive at the abstract concept of 'roundness' through seeing different instances of roundness such a football, the moon etc. The abstract can take on many forms, and two different examples are illustrated below.



Kandinsky is a good example of an artist who pioneered abstract art (the use of shapes, colours and forms to express feelings, thoughts and ideas) and transitioned his work from the figurative to the abstract in just a few years. When he first viewed Monet's Impressionist painting 'Haystacks' he said: "That it was a haystack the catalogue informed me. I could not recognize it. This non-recognition was painful to me." However he had an epiphany after seeing one of his own figurative works that had been accidently turned on its side. Later on as he began exploring abstract art he said: "Objects hurt my pictures!"

The second example illustrates abstraction in mathematics with the introduction of other dimensions to numbers. Even though 'numbers' is an abstraction from a specific number, we have a more concrete sense of real numbers, whereas the idea of the square root of minus one makes no physical sense to us. A complex number has both a real and an imaginary component, and is an indispensable tool of analysis in many branches of science and engineering. It

can be visualised as a two-dimensional graph, but the nature of 'i' is completely at odds with our understanding of numbers. Tensors appear in many forms but in the description depicted here they represent higher dimensional numbers. So a tensor is a higher dimensional complex number, and a complex number is a higher dimensional real number. We live in a 4 dimensional world (ie 3 spatial dimensions and one temporal one), and it's impossible to visualise anything higher, yet quantum theory involves many dimensions in its theoretical formulation. The theory has produced some very abstract ideas such as an infinite number of universes, negative time and temperature and teleportation. At an applied level quantum mechanics is one of the most understood, precise area of science, that has resulted in a huge diversity of technologies.

Understanding where the real ends and the abstract begins (or for that matter the imagination) is a challenge, because everything we experience is a construction in our mind, and the real tends to be based on a consensus.

Gillian Judson

As you may know from your reading more about IE, Egan proposes we have distinctly different kinds of understanding of the world and different imaginative interests in the world shaped by the cognitive tools we employ. The young learner, employing oral language has what he calls a "Mythic Understanding" (we don't lose this engagement but as we employ other tools our imaginative interests change) , the older student, employing primarily, tools of literacy has a Romantic understanding and so on (a crude summary!) Main idea: the features of our imaginative lives change. What you describe here is a wonderful example of the philosophical imagination and *lure of abstraction* that can develop when one begins to use theoretical forms of language. I wrote this a while back to discuss this particular feature of IE. If you're interested. [educationthatinspires.ca - Tips For Imaginative Educators #16: Take Them Out of This World]

Tips For Imaginative Educators #16: Take Them Out of This World educationthatinspires.ca

Kevin Byron

Nice explanation. I'd love to see an easy-to-understand explanation of why factorial 0 = 1.

Jailson Lima

I'll give it a try.

One idea of the factorial is that it is used to compute the number of permutations (i.e., combinations) of arrangements of a set of n numbers.

There is only one way to arrange a single element: 1

There are two ways to arrange 2 elements: (1,2) and (2,1)

There are six ways to arrange 3 elements (1,2,3) (1,3,2) (2,1,3) (2,3,1) (3,1,2) and (3,2,1)

There is also only a single way to arrange no numbers (the empty set), so 0! = 1.

Kevin Byron

Thanks - interesting logic but I don't buy the idea that there is only one way to arrange nothing. If that is the case we should be able to add zero to the sequence 1,2 so it becomes 0,1,2 which means there are 3 elements to 0,1,2. Likewise there would be 4!elements to the sequence 0,1,2,3. It is a deep abstraction to say 0 can be arranged one way because only 1 can. In a sense 0! is indeterminate even though we know the answer is 1, rather like 0/0.

The rigorous proof of 0! = 1 is horrendous.

$$0! = 1$$
$$1! = 1$$
$$2! = 1 \cdot 2 = 2$$
$$3! = 1 \cdot 2 \cdot 3 = 6$$
$$4! = 1 \cdot 2 \cdot 3 \cdot 4 = 24$$
$$5! = 1 \cdot 2 \cdot 3 \cdot 4 \cdot 5 = 120$$
$$6! = 1 \cdot 2 \cdot 3 \cdot 4 \cdot 5 \cdot 6 = 720$$

Jailson Lima

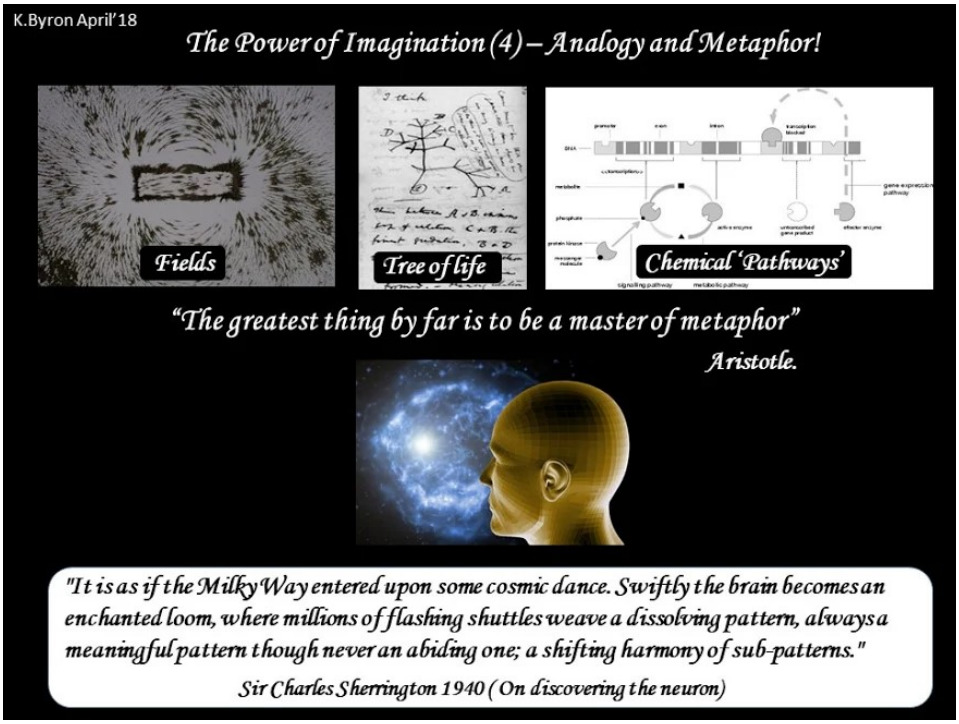
In your example, 0 is an element.

Nothing, or the empty set, is the absence of elements.

I should have used letters instead of numbers to not create confusion.

According to mathematicians, there is only one way to arrange the empty set.

DAY 4
Kevin Byron
It's like this.....!



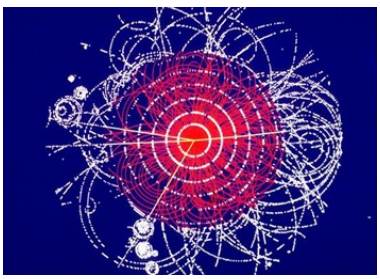
Whilst analogy and metaphor are a powerful means of communication in all disciplines, I will focus here on my understanding of their application in the sciences and engineering.

Analogy is an indispensable tool for enabling a better understanding of concepts, mechanisms and phenomena at all levels of education. Indeed analogy is written into the everyday use of the language of the scientific disciplines with terms like 'field', 'tree', 'wave', 'flow', 'bond' etc borrowed from other commonplace technical, and non-technical contexts, to provide a more concrete understanding of abstract ideas. Beyond such terminology, complete descriptions of common knowledge can illuminate scientific ideas that are difficult for non-specialists to visualise. Analogies can also guide the non-specialist away from constructed notions of ideas that are incorrect, thereby helping in structuring a better understanding.

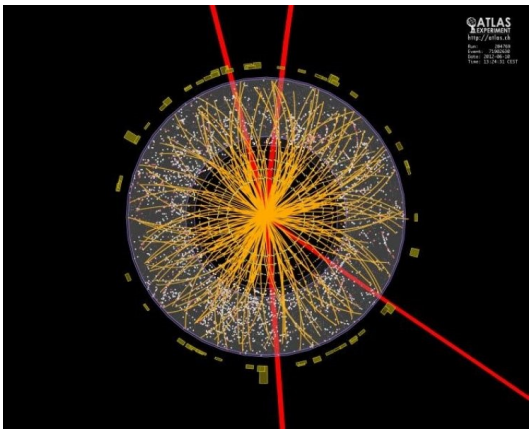
Analogies have been shown to improve the conceptual understanding of scientific ideas by helping in the transition of concrete thinking to formal (abstract) thinking. For example Sarantopolous and Tsaparlis (1) showed that concrete thinkers studying chemistry in which teaching the conventional curriculum also included analogies, performed twice as well in examinations compared with control groups for whom the analogies were excluded. Whilst educational theory based on studies by Piaget shows that most people develop the skills of abstract thinking before they reach the age of ten, when confronted in later life with ideas for which they do not have the background understanding, they revert back to concrete thinking, and construct ideas that may be incorrect. A good analogy which draws on shared common knowledge provides a corrective to this and enables a better understanding of the ideas presented.

In the UK, the research councils' Impact agenda includes 'public engagement' as one of the activities that can be undertaken by university researchers, in order to extend the reach of their research beyond the academic community. The skills of public engagement are a valuable asset in a researchers' career, though these skills are not directly transferable from the kind of presentations skills that work well with academic audiences. Given that researchers in many areas of science are working with ideas that would be considered abstract to the general public, it is important to find ways of communicating these ideas more effectively. Analogies help greatly in this respect, because they arise out of inspired connections between two disparate areas of thought – the topic itself (the Target domain), and the more widely understood area from which analogies are sought (the Base domain).

For example pulses of LASER light that are spreading due to temporal dispersion down an optical fibre can be envisaged analogically as sprinters of different running abilities on a race track where each sprinter represents a different wavelength. At the start of the race they are all bunched together, but as the race proceeds they start to spread out representing dispersion (ie pulse spreading) down the fibre. If the base domain includes a human element there is a great chance the concept will be understood by everyone.



One issue with analogies though is that they are limited, and if pressed too far they fall apart, and are unable to explain things at a deeper level. For example it is useful in instructing younger people how electricity flows down wires to initially view it as water flowing down a hose pipe. You can even extend this to rate of flow representing current, the water pressure representing voltage, and the shape and surface condition of the hosepipe representing resistance. However when you are required to explain how actual electrons flow down a wire, the analogy breaks down completely because they don't actually flow smoothly, and it can take an unexpectedly long time (based on the water-pipe analogy) before an electron arrives at the other end of the wire. A better analogy here would be a pinball machine. The ball (electron) is projected by the electric field and then immediately collides with a much bigger atom. It stops at that point and may even go backwards, and then the field accelerates it forward again until it hits another atom and so on. After a rather long random walk it arrives at the other end. The important skill is in knowing when to apply which model, and there is rarely a smooth interface between them. If we were however to speak factually about electricity we need to drop these models, and resort to hard science often underpinned by mathematics, and in this case building a circuit that works wouldn't be helped by drawing on analogies. Analogies then should be viewed as a bridge to understanding, not a permanent structure. A closer scrutiny of some everyday terms that analogically describe scientific phenomena are actually flawed at the outset. For example the Big Bang wasn't big, and it didn't bang, and a black hole isn't a hole, it's a very densely packed region of mass.



In the early 1990's there was a lot of publicity about efforts at the CERN laboratory in Geneva to find experimental evidence of a fundamental particle that been predicted much earlier, but had eluded efforts to find it. The particle was called the Higgs Boson and in 1993 William Waldegrave, the then UK Science Minister offered a prize in an open competition for anyone to come up with a simple analogical explanation of this particle. The winner of the prize was Prof David J. Miller at University College London and his analogy goes as follows:

"Imagine a cocktail party of political party workers who are uniformly distributed across the floor, all talking to their nearest neighbours. The ex-Prime-Minister enters and crosses the room. All of the workers in her neighbourhood are strongly attracted to her and cluster round her. As she moves she attracts the people she comes close to, while the ones she has left return to their even spacing. Because of the knot of people always clustered around her she acquires a greater mass than normal, that is, she has more momentum for the same speed of movement across the room. Once moving she is harder to stop, and once stopped she is harder to get moving again because the clustering process has to be restarted. In three dimensions, and with the complications of relativity, this is the Higgs Boson" technique that I have used to help researchers develop analogies for their abstract ideas is 'Analogical Brainstorming' which I'll describe at another time.

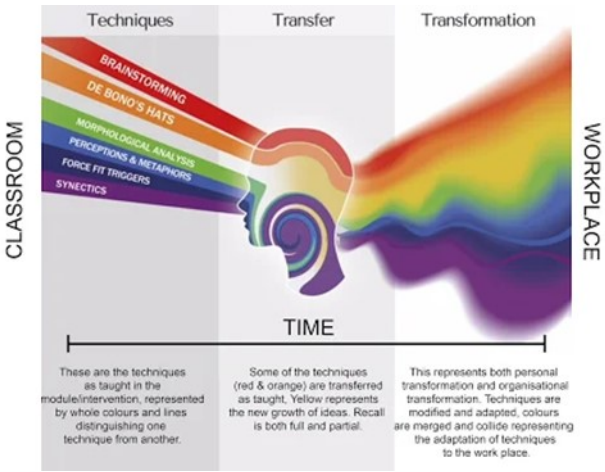
(1) Sarantopolous. P. and Tsaparlis.G. Chem Ed Res & Practice Vol 5 No 1 33-50, 2004
Image: https://www.sciencedaily.com/releases/2013/03/130314102140.htm

Gillian Judson

I look forward to those supporting notes (if you survive your day of teaching, that is). Metaphors matter and they absolutely kick-start and feed the imagination. I find it is one aspect of imagination that we "go to" in teaching a lot. And that's a good thing. A masterful use of metaphor is Bill Bryson--I find myself reading some of his work and having an urge to stop people on the street and tell them about it. Since you bring up the power (and pleasure) of a metaphor...Here is something I wrote on this cognitive tool in the imaginED Tools of Imagination series:
educationthatinspires.ca - Tips For Imaginative Educators #4: Metaphors Matter
Tips For Imaginative Educators #4: Metaphors Matter educationthatinspires.ca

Kym Drady

I completely support the notion that metaphors are amazing tools. They both extend and challenge our thoughts and beliefs, often in directions we would not have considered before. My 3 T's framework of creativity, (the outcome of my thesis. a longitudinal study of the effects of teaching creative interventions on individuals once they returned to workplace , a decade later) offers a lens through which I identified 3 phases of cognition and practice evident in the co-created classroom during the facilitation of teaching and learning creativity. (Techniques, Transfer and Transformation).



The metaphor I used was colour to represent taught techniques, a head to represent individual cognition and transfer, before personal transformation occurs in thought and action resulting in changed behaviours and new and novel routines in the workplace.

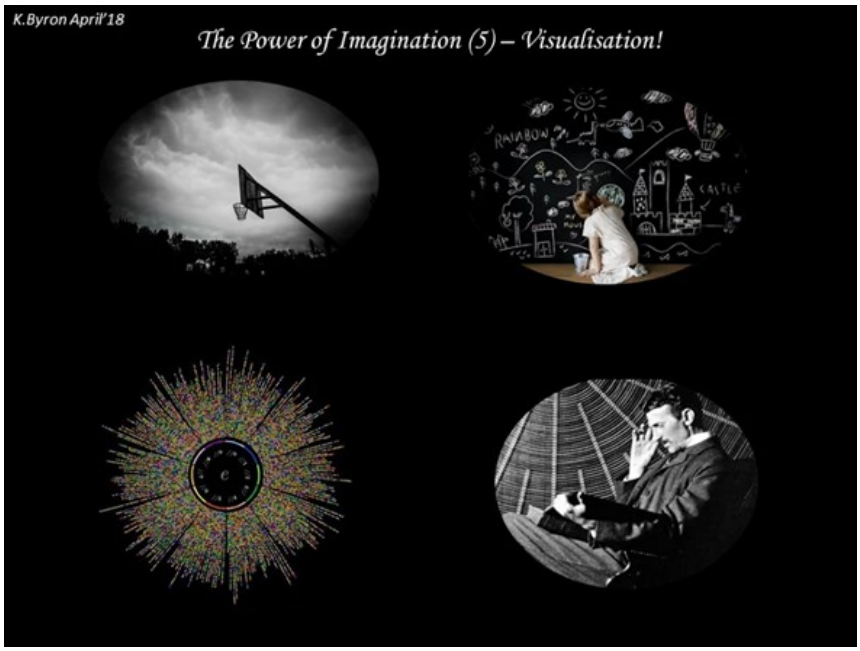
(…)

Notes now added above, and as there is ne'er a mention of analogy or metaphor in literature, I thought I'd include this weblink of a wonderful poem for children that gives lots of metaphors for the idea of a house: maryannhoberman.com - A House is a House for Me by Mary Ann Hoberman A House is a House for Me by Mary Ann Hoberman maryannhoberman.com

DAY 5

Kevin Byron
Seeing is Believing!

The boundary between our real and imaginary world has become more and more indistinct recently with developments in 'virtual reality', and research by neuro-scientists has shown that we can experience real-world and imaginary actions in similar ways. A great deal of research in this respect has been carried out on performance in sport, and it has been shown that the same neural networks are activated when we imagine performing an action, or actually perform that action. In an experiment carried out many years ago with basketball teams of the same ability, one team was invited to continue practising for twenty days, another team was invited to attend the basketball court, but they were not supplied with a ball, and instead simply visualised themselves playing. A third team were asked not to practice at all, and after twenty days the three teams played each other in a number of games. The practising and visualising teams had both improved their performance by over 20% (based on average scores) compared with the non-practising teams. Deliberately applying visualisation in sport, and indeed in restoring one's health after an injury, has been verified as a real effect, and the book 'Better golf without practice' by Alex Morrison is an example of several publications on this subject.



The second image in the slide hardly needs stating. Drawing and painting is one way in which we externally represent what we see and experience in 'The Mind's Eye'. Visualising is not just confined to one sense however, and we can transcribe anything we experience with any of our senses and indeed combinations of them, in into the real world with music, dance, writing etc. Again, the active practise of visualisation can enhance performance in many of these activities. Visualising success coupled to exercises to slow down our breathing when we are anxious, are very effective exercises in preparing for an interview, presentation etc.

The third image is an example of the rapidly growing field of data visualisation. The first examples of this were probably maps, and basic star maps were identified on the walls of the caves of Lascaux. The image shown below is a visualisation by Christian Ilies Vasile and Martin Kryzwinski of the first 1000 digits of the exponential function (e). Data visualisation is a creative combination of statistics and mathematics with graphic art, and simple exercises can be devised using physical objects to help students visualise numbers.

The fourth image shows the engineering genius Nikolai Tesla and he is an example of a number of scientists who have discussed visualisation as a tool that they have applied in clarifying scientific and engineering challenges. There is some overlap here with other tools of the imagination such as the use of analogy and 'the thought experiment'. Tesla had an unusally powerful imagination, and it was alleged that he could visualise the design of complex electrical engines before even beginning to construct them. To quote from him: “I observed to my delight that I could visualize with the greatest facility, I needed no models, drawings or experiments. I could picture them all as real in my mind.”

Jailson Lima

The way you connect pieces of information is remarkable. I wish I could take your courses.

I read an intriguing article about ways to explore the fact that the same neural networks are activated when we imagine performing an action. The article explained that when we imagine that we are playing a game of tennis, specific regions of the brain are activated and can be detected in the fMRI scanner. This amazing discover helps coma patients to communicate. Absolutely fascinating!

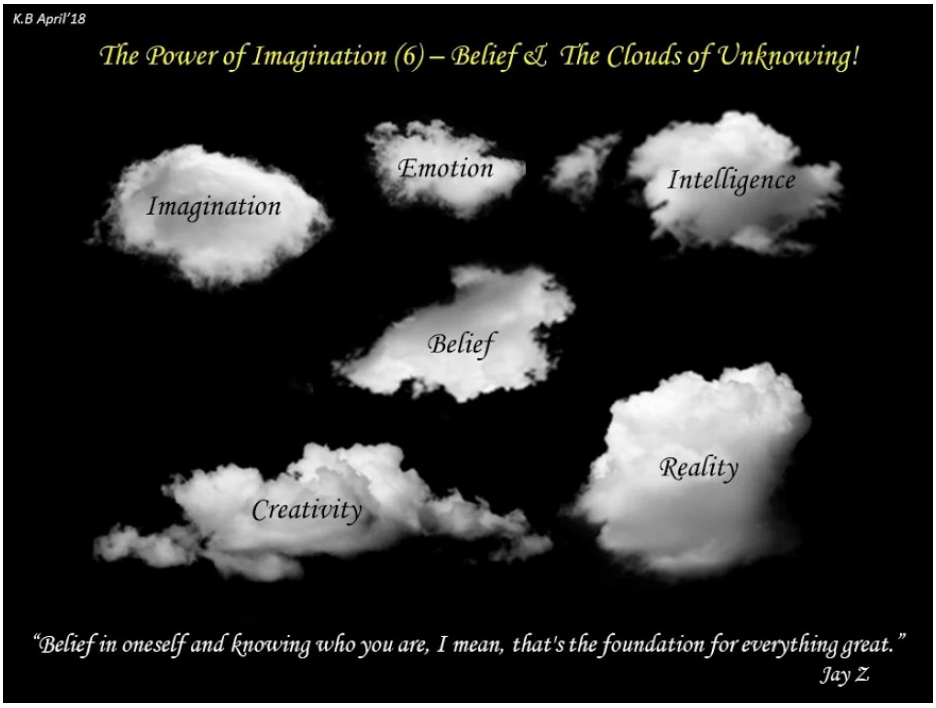
theguardian.com - How science found a way to help coma patients communicate | News | The Guardian
How science found a way to help coma patients communicate | News | The Guardian
theguardian.com

DAY 6

Kevin Byron

A Cloudless Day?

There is an on-going debate in philosophy concerning the differences and similarities between intelligence, belief, creativity and imagination. Some see overlaps between two or three of these things, and others try to integrate or separate them all. Similarly the role of emotion in all these cognitions is somewhat cloudy and lacking evidence, and by definition, given that there are very few absolutes in life, our idea of reality is also constantly changing shape.



Neuroscientists prefer to talk in term s of neural networks such as the Executive Attention network, the Default Mode network, and the Salience network, and some progress has been made in identifying their role with regard to the aforementioned terms. A great deal of questions remain unanswered however, for instance there is no understanding of what consciousness is, and recent research has suggested that the unconscious is an illusion.

Beliefs are inventions of the imagination designed to give some security to these and other imponderables in life. Many of our own beliefs have come from the imagination of others, not our own and were devised thousands of years ago. If they don’t touch our imagination, they represent little more than conditioned thought and action in our daily lives. For example we don’t need to think about whether or not the sun will rise tomorrow, even though one day it won’t.

In the 11th century St Anselm of Canterbury developed a number of proofs to justify a belief in God. One which follows a very logical line suggests that if one believes it is possible to conceive something that is greater than the greatest thing that can be conceived, then that inconceivable thing must be God. No-one escapes belief though, because if we believe that it is not possible to conceive such a thing, then that itself remains a belief nevertheless.

In spite of the organic, ever-changing shape of the ideas we discuss here, and the fact that we can't be secure in really knowing what we are talking about, given the lack of real understanding on these matters by specialists, it's important to try.

It's worth noting that this was not just Global Creativity week but also Global Innovation week too. In my view innovation starts with communication, irrespective of how clear the ideas are that we are trying to articulate. Innovation is about having a go, even if we fail. More importantly learning is not so much about holding knowledge or facts that are secure - the 'What' of knowledge, but more about the 'How' - ie how can I do something with this in order to learn, create more and stimulate my imagination further. Even if we can't clear the clouds, we can still enjoy the sunshine that shines between them.

Nicholas Bowskill

I've really enjoyed your series of images. They are thought provoking and interesting. Thank you for sharing them. Chris Frith talks about these ideas in a similar way. He argues its similarly difficult to martial all these parts. He says the challenge involves developing a knowledge of terms for these cognitive and affective parts of the system. We then need a way of monitoring and managing the parts. This, in turn, needs a language and the ability to manage all these parts in the reflective process.

It seems quite clear how these things may be cloudy for a while doesn't it? He does however say, that one way of coping is to understand how others think on the same issue. This can reduce the cognitive load etc. and help us imagine other possibilities.

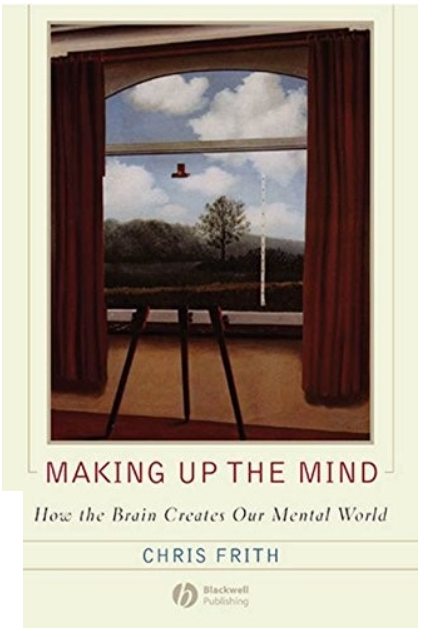
Frith uses the term mentalizing for imagining how others might feel and then relating it to our own thoughts. Others call it perspective-taking or empathy (although there can be distinctions between these terms). I can see how mentalizing here can support imagination. I think sharing views and your images etc can all support that too. Thanks again.

Gillian Judson

Does Frith's 'mentalizing' process have an emotional component? Does he talk about the emotional dimension?

Kevin Byron

Thanks Nicholas - that's really interesting and a useful way of looking at these things. I met Chris Frith a few years ago when he gave a lecture in London for The Institute for Cultural Research. His lecture was very well received because he didn't hang his hat on a particular theory, and presented his ideas as you have described. It's been an enjoyable week, and I didn't really plan ahead what I was going to describe. It kind of evolved in response to the themes offered by Gillian, Jailson and Norman and the other postings for which thanks are due.

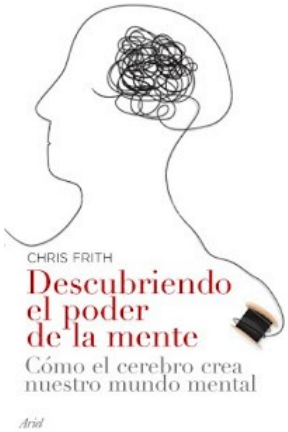


Gillian Judson

Lovely metaphor. In my neck of the woods, those cloudless days are infrequent! That said, I do think the cloudiness of all these ideas is part of the beauty.

Kevin Byron

We are enjoying such a day today which is perfect timing, and again a rare event in the UK.



Kym Drady
A thought provoking set of propositions and evidence if anyone/the education policy makers still need to understand the immense value of teaching creativity in mainstream curriculum. Thanks for sharing Kevin.

Kevin Byron
It was encouraging to see Complex Problem Solving and Critical Thinking up at the top. These skills are the antidotes to fake news, alternative facts, scams and deception. The reason I think the word Imagination doesn't appear in this list, is that creativity is regarded as the more 'moderate' skill than imagination that we access in developing new ideas. 'Use your imagination!' implies a more anarchic approach to idea generation that wouldn't go down well in commercial organisations. Imagination, however is precisely what is needed for younger people to enable a greater flexibility of mind than that resulting from learning by rote.

Additional image credits:
http://www.nickbontis.com/
https://www.pinterest.co.uk/pin/261701428325162952/
https://www.livescience.com/27893-higgs-boson-implications.html

Once again, thank you to everyone who contributed to our conversation. You have left us with much to reflect on!

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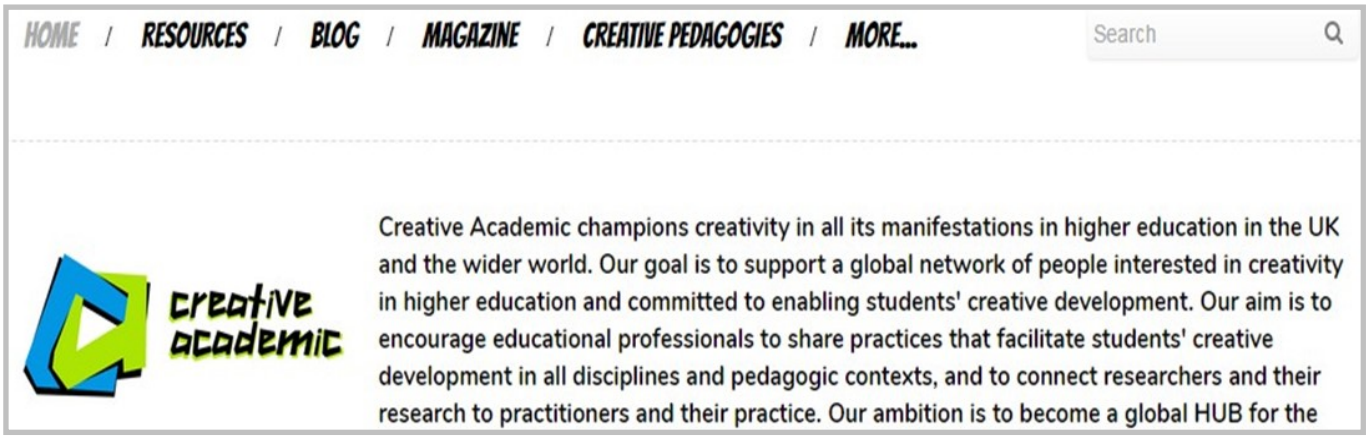

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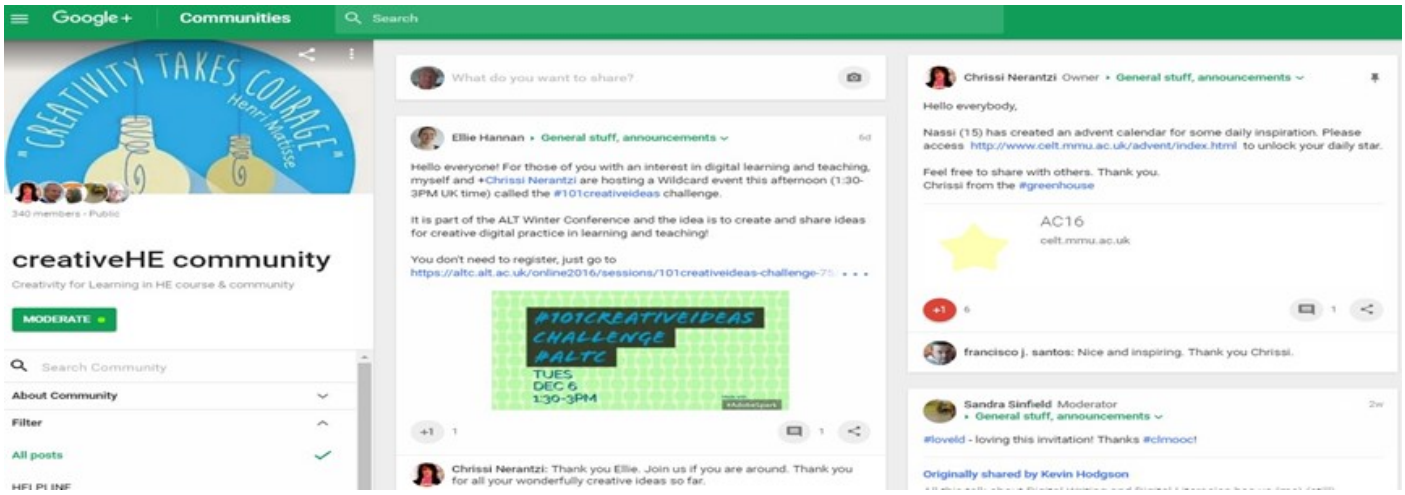

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