

In education we have a duty to educate the  
Imagination above all else  
Mary Warnock

# Exploring Imagination in Learning, Education and Practice

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Issue Number 11A 2018

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# Commissioning Editor's Introduction

Norman Jackson



Imagination is often misunderstood and, as a result, neglected in education. All too often imagination is associated with young children playing, or the frivolous or the anti-intellectual, rather than being integral to learning and achievement in all subjects and domains, and the mother of all invention and innovation.

Because we value critical thinking so highly it is a challenge to bring "imagination" centrally into the practice of educators. Imagination in education and practice is the central theme of this issue and the core contributions are formed around the concept and practice of "Imaginative Education." Originally created by Dr Kieran Egan, and developed by the Imaginative Education Research Group ([www.ierg.ca](http://www.ierg.ca)), this is an approach to teaching that centralizes emotional and imaginative engagement in the learning process.

Creative Academic is very grateful to Guest Editor Gillian Judson for drawing our attention to the work of the Imaginative Education Research Group and for inspiring and facilitating the production of this interesting collection of articles. We are also grateful to everyone who has contributed to this issue of the magazine.

We have timed publication of this issue for May 2018 to coincide with World Creativity and Innovation event. This year our contribution is framed around the idea of Imagination in learning, education and practice.

## Reference

1 Blenkinsop, S. (2009) *The Imagination in Education: Extending the Boundaries of Theory and Practice* Cambridge Scholars: Newcastle upon Tyne

*For thousands of years humans have wrestled with the questions and possibilities of the future, made stories of the past, and wondered at the present. It is within this miasma of possibility that the concept of imagination has salience...The challenge of making sense of the imagination has always been like trying to catch smoke with one's bare hands. How does one define it such that it isn't so amorphous as to slip through one's grasp, or so rigid as to become simplistic to the point of uselessness?<sup>1:ix-x</sup>*

## WORLD CREATIVITY AND INNOVATION DAY, APRIL 21 AND WEEK APRIL 15 - 21

Wouldn't it be great if everyone felt the strength, and social and emotional support to navigate life's challenges?

That's the purpose behind World Creativity and Innovation Week (WCIW) April 15 - 21 and World Creativity and Innovation Day, April 21 (WCID). To make solving problems in new ways an annual event.

The overall purpose is to encourage and remind people to use their creativity (generating new ideas, making new decisions, taking new actions and achieving new outcomes) for innovation that makes the world a better place and makes their place in the world better too.

Since its founding as World Creativity and Innovation Day, April 21, 2001 in Canada, people in over 50 countries in businesses, schools, associations, organizations, communities and homes have celebrated every year.

WCIW/D is a time to encourage people to use their creativity to make the world a better place and to make their place in the world better too.

WCIW/D provides a time to inspire new action, create novel ideas, make new decisions; to solve problems in new ways, using a new pair of eyes.

WCIW/D provides time to educate, engage, celebrate and open doors that help people experience freedom from suffering and open up to new worlds of what's possible.

Please join with us - honour and embrace creativity and innovation during World Creativity and Innovation Week April 15 - 21 and celebrate World Creativity and Innovation Day, April 21.

WCIW/D are do-it-yourself observances - they happen where you are. They are non-commercial and no fees are paid for participating.

# Introducing CAM#11A

## Gillian Judson, Guest Editor



Dr. Gillian Judson is Co-Director of the Imaginative Education Research Group and a Lecturer in the Faculty of Education at Simon Fraser University. Her published work and teaching show how we can routinely engage students' imaginations (pre-K through to graduate school) to ensure effective learning across the curriculum. She is particularly interested in sustainability and how an imaginative and ecologically sensitive approach to education can lead to a sophisticated ecological consciousness. Her recent books include *The Walking Curriculum* (KDP, 2018), *Engaging Imagination in Ecological Education: Practical Strategies For Teaching* (UBC Press, 2015) and *Imagination and the Engaged Learner: Cognitive Tools for the Classroom* (Teachers' College Press, 2016). She runs a blog all about imagination in education for pre-K through Higher Education ([www.educationthatinspires.ca](http://www.educationthatinspires.ca)). Gillian joined the Creative Academic team in 2017 and immediately offered to Guest Edit this magazine, for which we are very grateful.

## Imaginative Education

This edition of *Creative Academic Magazine* (CAM#11A) focuses on imagination and what it means and how it is used in education, especially higher education. At its core is a collection of articles that have been produced by higher education practitioners involved in Imaginative Education—a “new kid” on the (educational) block. Imaginative Education, or IE, is not just an approach to teaching, it's also a theory of human understanding through which we can, as educators, reshape and develop our practices. Although you might not be familiar with IE, it certainly isn't “new”. In fact, it's been articulated in many books and well over a thousand articles. It's been studied in universities around the world for over thirty years and it's been driving the work of scholars in the Imaginative Education Research Group ([www.ierg.ca](http://www.ierg.ca)) since 2001. IE is an educational philosophy and practice that centralizes imaginative and emotional engagement in teaching at all levels of education. If you survey educational theory and curriculum conversations more broadly, you'll see that this imagination-focused practice and perspective is uncommon. (Learn more about Imaginative Education [here](#).)



As the articles in this edition of CAM#11 reveal, imaginative educators think about teaching through different lenses. They are centrally concerned with “cognitive tools” and “kinds of understandings”. Imaginative educators tap into the unique features of their students' emotional and imaginative lives.

## Emotion Matters

Emotion. Imagination. Feeling. These words rarely take centre stage in conversations about teaching and learning in higher education. The odd thing is that I have never met an educator that doesn't value emotional and imaginative engagement. All educators want students to be *engaged*. All educators want their students to be *imaginative*, to experience and demonstrate creative and flexible understanding of knowledge. But we rarely discuss how we achieve it in our practices. It's a sad fact that there is far more talk of “imagination” in the context of educating our younger learners than in Higher Education. Through this edition of *Creative Academic Magazine* we want to encourage more discussion about imagination in higher education teaching and learning and share some of the ideas and work we have been doing through IE.

## Cognitive tools

All educators want students to *remember* what they are learning so that curriculum content has an impact on their lives outside school, college or university. “Cognitive tools” are the means through which we can tie up knowledge with students' emotions and imaginations and, in this way, make the knowledge memorable<sup>1</sup>. We all make meaning by employing cognitive tools; when we purposefully use these tools to shape our teaching, we help learners use their knowledge to create meaning that is more embedded in their memories.

People of all ages frequently and routinely think about the world in ways that evoke their emotions and imaginations. For example, human beings universally enjoy stories or narratives of all kinds. We all enjoy jokes and humor. We all identify and interpret patterns in the world around us and are able to spot new patterns as they emerge in our lives. We can be fascinated by extremes of experience and limits of reality--the stuff in the *Guinness Book of World Records* or amazing and sometimes dangerous feats recorded on Youtube.



We may associate with heroes and may (quietly—or not-so-quietly) idolize people, ideas, or institutions. Words cause images to arise in *all* of our minds. We all enjoy a good mystery and can be left awestruck by unanswered questions or strange events. In the context of Higher Education particularly, we enjoy abstract ideas and theories that represent them. I could go on and on; our emotional and imaginative lives (including learners) manifest themselves in many varied ways.

These different forms of engagement are not insignificant; they are actually ways of thinking that help human beings learn. Dr. Kieran Egan calls these features of our imaginative lives "[cognitive tools](#)"--they are emotional ways human beings make meaning in the world. The crux of the matter is you can nurture the heart of learning—engaging emotion with your curriculum content—if you know what cognitive tools your students employ and if you can use them in your teaching.

## Meet “Kinds of Understanding”

In IE, “kinds of understanding” describes the ways we differently make sense of and imaginatively engage with the world. The cognitive tools described above profoundly shape our “take” on the world. Consider your students—and yourself as a younger student--as you read on.

*Have you ever noticed that our youngest students’ imaginations are alive with stories?* They envision the world in ways that are ripe with dramatic images and fantasy, rhythmic with patterns, rippled with mystery and awe. Our youngest students make meaning of their experiences—of the curriculum—through the tools oral language provides. These include story, dramatic oppositions, rhyme/rhythm/pattern, engagement of the body, and a sense of mystery. (Find a summary of the tools of oral language [here](#) .)

As a result of employing these tools, our youngest students predominantly have a MYTHIC kind of understanding of the world<sup>1</sup>. Their worlds are shaped by the richness oral language offers them. These tools are very valuable in Higher Education, too. We never lose those tools and would be wise to employ them to bring our teaching to life in students’ minds. Evocative imagery and story-shaped teaching (not fictions) can give the most abstract theories and concepts new meaning and deepen student understanding.

*Have you ever noticed that learning to read often coincides with a shift in the kinds of things that emotionally and imaginatively engage children?* When human beings learn to read, a whole new set of cognitive tools functionally “rewires” the brain—now, the stories that engage us tend to have dramatic extremes and limits within them, they have strong heroic and human dimensions, they evoke a sense of wonder. Literate students are less likely to believe in the fantasy of, say, Santa Claus, because they are now fascinated with reality and its fantastic dimensions. Now we not only make emotional meaning of our experiences through the tools of orality, but also and primarily through the tools of literacy. These cognitive tools include narrative structuring, extremes and limits of reality, heroic qualities, humanization of meaning, sense of wonder, revolt and idealism, and change of context. (Find a summary of the tools of literacy [here](#).) Outside of “school”—whether hanging out with friends, playing an online game or reading a favorite book—these “tools” are the features of the world literate students find most engaging. They have what Egan<sup>1</sup> refers to as a **ROMANTIC** kind of understanding of the world.

*Have you noticed that teens—or perhaps later, or earlier, depending on the learning opportunities they have—may begin to ask different kinds of questions about the world?* The students in our Higher Education classes are making sense of the world with different sets of tools—they engage “mythically” with the tools of orality and seek out the “romantic” dimensions with the tools of literacy. But students in Higher Education may also have realized that a world of theory exists to explain the immediate experiences they have had and all of the events they have studied in school. When introduced to theoretical thinking, students who are encouraged to explore abstract ideas can begin to seek certainty and “Truth” in big ideas. The big ideas or theories that explain how society, government, culture, [or](#) nature work (or indeed these very concepts—society, culture, nature etc.) begin to contribute to their own identity. Theory now feeds an interest in gaining a sense of intellectual security and expressing personal agency. Here, tools of theoretical thinking shape a **PHILOSOPHIC** kind of understanding<sup>1</sup>. (Find a summary of the tools of theoretical thinking [here](#))

### KINDS OF UNDERSTANDING

- Somatic Understanding
- Mythic Understanding
- Romantic Understanding
- Philosophic Understanding
- Ironical Understanding

### MYTHIC COGNITIVE TOOLS

- Find the story in the topic
- Find a source of dramatic tension
- Evoke mental images with words
- Metaphors matter
- Laugh as you learn
- Engage the body
- Identify the unknown

### ROMANTIC COGNITIVE TOOLS

- Seek heroic qualities
- Humanize
- Engage the inner rebel
- Illuminate extremes & limits
- Let them obsess
- Play with visual formats
- Change the context

### PHILOSOPHIC COGNITIVE TOOLS

- General ideas and anomalies
- Metanarrative
- Search for authority & truth
- Senses of abstract reality
- Sense of agency

## A Flavour of this Issue

What I have outlined above is the philosophical framework within which IE is conducted. Eight members of the Imaginative Education Research Group at Simon Fraser University have contributed articles to this issue. These articles illustrate how the philosophical framework of IE is being or has been used in higher education practices. Here's a sneak peak: Dr. Kieran Egan considers how all instructors in the context of higher education can increase imaginative thinking, flexibility, engagement and creativity in their teaching by employing cognitive tools. Dr. Sean Blenkinsop describes practices that push the boundaries of imagination. He looks at how imaginative teaching practices in higher education are required to support understanding of reconciliation in Canada. Dr. Annabella Cant describes the role of imagination in assessment in higher education, challenging readers to "unswaddle their pedagogies". Dr. Theodore Christou considers what it means to be an imaginative instructor and storyteller in higher education. Dr. Jill Cummings explores ways to implement IE pedagogy in an online teaching context, identifying challenges and successes in her own practice. Dr. Jailson Lima connects the Arts and Sciences in his exploration of imagination's role in Science teaching in higher education. Dr. Petra Mikulan argues for the importance of teaching irony in higher education and how IE can help. Dr. Kym Stewart shares an imaginative approach to teaching Research Methodologies. She indicates how IE plays a key role in helping learners surpass preconceived notions about research. Dr. Tim Waddington shares his experiences as an instructor of new teacher candidates at a major Canadian university. With examples and reflection on his own practices, he shows how IE can be employed to challenge current practices in teacher education and reveal to new teachers the wonder of the subjects they will be teaching. And Dr. Jenny Willis describes a research study into how 5 award-winning secondary school teachers of science in Taiwan develop the scientific imagination of their students in the context of a competition for young inventors.

In addition to articles by the IE team, two articles explore imagination from a conceptual viewpoint. Joy Whitton, author of a new book on *Fostering Imagination in Higher Education*<sup>2</sup>, provides some case studies of the way higher education teachers engage learners' imaginations in different disciplines and shows how we might interpret our use of imagination using Dr. Paul Ricoeur's theory. In a complementary article, Professor Norman Jackson explores the idea of 'Pragmatic Imagination' recently developed in a book<sup>3</sup> by Professor Ann Pendleton-Jullian and Professor John Seely Brown, and illustrates how this theory might help us understand the way imagination connects to and enhance our ability to perceive, empathize, reason and reflect.

## Concluding Thoughts

I get it—this might all seem odd. I did say this was a “new” kid on the block—all “new kids” feel different at first. But this kid is also familiar—you know when your students are engaged. *Do you have a way of making that engagement stronger and more frequent?* This kid has a lot to offer you in that regard. Conceiving of your students as possessing different “kinds of understandings” gives you a frame of reference for how to best engage them with any and all subject matter.



*What other “kid” on our educational block takes the elusive goal of emotionally and imaginatively engaging all learners and translates that into practical teaching strategies?*

## Citations

- 1 Egan, K. (2005). *An imaginative approach to teaching*. San Francisco, CA: Jossey-Bass.
- 2 Whitton J (2018) *Fostering Imagination in Higher Education* Routledge
- 3 Pendleton Julian, A. and Brown, J. S. (2016) *Pragmatic Imagination* available at: <http://www.pragmaticimagination.com/>

## Get To Know The “New Kid”

imaginED is a blog dedicated to disseminating the work of Imaginative Educators around the world—not to mention expanding understanding of the role of imagination, emotion and creativity in learning. (Check out the [Tools of Imagination series](#) to get details on each cognitive tool.)

And lastly, learn why [imagination matters](#) for all learning.

Contact me ([gillianjud@gmail.com](mailto:gillianjud@gmail.com) or at imaginED) and tell me about your imagination-focused practices. I would love to share them with our community of imaginative educators worldwide.

# Developing a Deeper Understanding & Appreciation of the Role of Imagination in Higher Education

Joy Whitton



Joy works in the Office of Learning and Teaching, at Monash University, Melbourne, Australia. Her research is focused on the subject of imagination and creative practices in non-art-based disciplines/ professions. Her book, *Fostering Imagination in Higher Education*, is based on her doctoral research.

The imagination is where the ideas come from.<sup>1:22</sup>

## What does it mean to use imagination in higher education?

Generally speaking, people think they have a pretty good idea of what imagination is. However, many people tend to associate imagination with creative arts or high end science or business innovation (think Picasso, Einstein, Steve Jobs) meaning they misunderstand and under-appreciate its role in everyday thinking and also in disciplinary and professional practices. In this article I hope to disturb some assumptions about imagination in higher education learning and try to develop some fresh perspectives on what working with imagination looks like in higher education.

I believe the challenges the world faces now are so complex and interconnected that flexible thinkers and problem solvers are needed in every walk of life and professional field. And I thought learning using imagination was inadequately described and theorised in non-arts education. To engage with the challenge of understanding what imagination means in these teaching and learning contexts, between 2012 to 2017, I conducted research on how university educators cultivate the imagination of their students in a range of non arts-based disciplines and professions, namely finance, pharmaceutical science, history and physics<sup>2</sup>. Using ethnography, I observed classes and kept notes, and collected data from course documents, student work, interviews and focus groups with educator and student participants. Even though I focused on imagination, the subject of my primary concern, as might be expected my observations touched on other aspects of creativity that imagination needs to be combined with in order to make it effective in the world, namely, curiosity; fluency in disciplinary knowledge, methods and skills; persistence; and collaboration<sup>3</sup> (Lucas, Claxton and Spencer, 2013). Thus, I observed and included in my account, the simultaneous development by educators of these other dispositions in their students.

Asking higher educators to foster imaginative capacity may be interpreted by some as trivial or demonstrating a lack of comprehension of the verifiable or evidentiary base to knowledge, to hard-won acquisition of disciplinary skills and disciplined methods of inquiry.... or the sheer hard work and persistence involved in discovery. Most academics focus on the knowledge base but neglect teaching how it might be put to work creatively<sup>2:3</sup>

## Physics ethnographic case study example

In a fourth year quantum physics class, imagination was integral to its way of working. One fundamental observation was that the students were led by the educator (whom I will call Simon) in cycles of diagrammatic, mathematical and linguistic forms of reasoning. Each of these thinking tools (diagrams, maths procedures, language) acted as proximate terms<sup>4</sup> (Polanyi's term, 1967), such that students directed their imagination through these proximate terms, in combination with each other, to dialectically compose their interpretation of the physics phenomena being studied. In this way manipulating these tools *cumulatively and in combination* synthesised the students' understanding of quantum concepts. What appeared to be going on was a dialectical process in which, in this instance mathematical and linguistic representation and physical interpretation, were necessary for, and a condition of, each other.

To interpret what was happening, I applied Paul Ricoeur's (right) notion of 'productive' imagination<sup>5-8</sup>, which builds on Kant's idea of imagination as a synthetic operation. Ricoeur maintains that imagination combines heterogeneous things into some new whole which changes our outlook or perspective. Metaphors are a linguistic technology that Ricoeur uses to illustrate this imaginative operation, this 'restructuring of semantic fields,' as he refers to it<sup>8:173</sup>. A poetry example may illustrate what he means:

Footfalls echo in the memory  
Down the passage which we did not take  
Towards the door we never opened  
Into the rose garden

T.S. Eliot *Four Quartets* 'Burnt Norton' lines 11-14



While the imagery of footsteps and doors in a passageway is simple and given by our senses, when the new way of ‘seeing as’ strikes us as readers, in a way that is different to that given by our senses, we see the finiteness of life choices taken and the loss of joy in those not taken, and of past and future combined in the present’s ruminations. Imagining is the operation performed at the crossroads of this process. It is imagination that enables us to make a mental leap and combine heterogeneous ideas or domains of experience, and in doing so, tell us something new about their referents. In this way, imagination extended into metaphors produces not merely a rhetorical ornament but ignites genuine cognitive changes<sup>5</sup>. The metaphors act as filters, suppressing some details and emphasizing others, organizing our view of the similar. When they do, the amalgamation offers up a model that can generate new connections that lead to scientific hypotheses, or new and coherent ways of apprehending facets of the world. These new models augment and redescribe our experiences - and, potentially, generate propositions for new actions.

To imagine, then, is not to have a mental picture of something but to display relations in a depicting mode. Whether this depiction concerns unsaid and unheard similarities or refers to qualities, structures, localizations, situations, attitudes, or feelings, each time the new intended connection is grasped as what the icon describes or depicts<sup>6:150</sup>

This is why imagination is important to discovery, as well as to solving problems. Ricoeur is critical of Hume and others’ over-emphasis in philosophy of imagination of conjuring an image as a weak trace of the existing (real) object) rather than the making of new connections. This way of perceiving imagination understands imagination in a limited ‘reproductive’ or mimetic sense. This reproductive meaning of imagination tends to suggest that experience involves a passive subject who is imprinted on by sense impressions from the outside world. This emphasis on imagination as image or mental picture of some thing<sup>6:150</sup> underplays the generative activity involved in productive imagination. Ricoeur’s theory of productive imagination, however, points the way to the importance of ‘mind tools’, which are artefacts and skills of working with them that are given to us in culture, and which can supercharge the imagination and thus our cognitive ability<sup>9-12</sup>. Ricoeur focuses on metaphors, narrative, scientific models, and probable imaginary constructions, but we can also add thought experiments, hypotheses, and theories. An understanding of the role of imagination in the development of abstract thinking also appears in Vygotsky’s view that imaginative games contain implicit rules governing what possibilities for action are ruled in and what are ruled out<sup>13:95-96</sup>.

The educator, Simon, constantly modelled the thinking processes of working physicists, and did this with an attitude of self-awareness, as though this was a ‘master class’. Working with the possibilities offered by the mathematics was another way in which physics offered opportunities to be imaginative. There is no one right way to proceed - a fundamental point that some students struggle with.

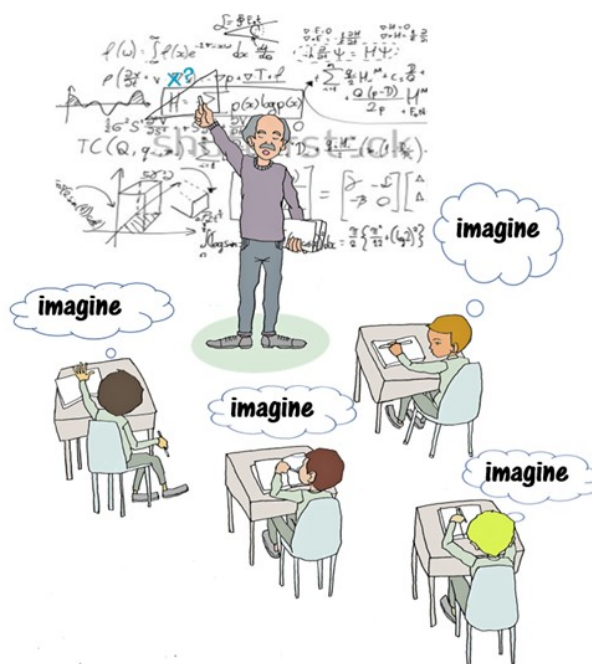
$$e^{i\hat{\phi}} = \frac{1}{\sqrt{\hat{n}+1}} \hat{a};$$

$$e^{-i\hat{\phi}} = \hat{a}^\dagger \frac{1}{\sqrt{\hat{n}+1}}.$$

Another notable pedagogical technique was the use of historical examples to problematise concepts and knowledge and encourage learners to question assumptions. In 1927 Paul Dirac a professor at the University of Cambridge<sup>14</sup> introduced a ‘phase’ operator into his equations, which was a case in point. Although the equations were accepted, nearly 30 years later in 1963, they were found to be wrong. Dirac made some unjustified assumptions that his amplitude and phase operators were ‘Hermitian’ (a mathematical condition meaning they represented observable properties), when they were not. Consequently, this rendered all further arguments contained in his

equations invalid. ‘Why didn’t they find out it was wrong sooner?’ Simon asked.

A constructive pause followed in which the students were given time to think about the many possible reasons for the delay. And the inevitable question arose: If Dirac’s operator was found to be wrong, what other maxims could, upon closer examination, be found to rest on false assumptions? It was a pregnant moment! The implications were clear. Those same assumptions that serve to push the boundaries of thought, can simultaneously obscure alternative insights. Simon pointed out, ‘You don’t need fancy maths to win Nobel prizes. You need insights and the breaking of hidden assumptions.’ He constantly urged the students not to believe what he said or his equations, but to work them out for themselves. The historical example served a profound pedagogical purpose. His teaching was far away from just transmitting the contents of a textbook; he was modelling a certain kind of knowledge and standards for making use of that knowledge. Those standards involve an internal locus, where alternative perspectives and operations are considered.





Another example came from the teaching of the harmonic oscillator, which is one of the most important model systems in quantum mechanics. It formed another interesting example in which Ricoeur's notions of reproductive and productive imagination were useful. An analogue of a quantum harmonic oscillator is a classical harmonic oscillator, such as a vibrating violin string, or hitting a tennis ball when it is connected to an elastic rope, or a 'slinky', a toy wire spring. It was apparent that analogies with classical systems, which are used to describe the familiar everyday world, were still referred to in order to initiate students' engagement with quantum concepts.

A student asked a question that Simon interpreted in a drawing on the board, involving laser light, candle light and light from a distant quasar, but the student said she didn't see it like this and pointed to an earlier drawing, from which they continued the discussion and elucidation. Another student asked what is the case if  $g=0$ . After several more calculations, Simon drew a graphical representation on two axes of the real oscillations between -1 and +1, with one student pointing out that when  $g=0$  the circle that is drawn collapses to a point, and expands to the outer edge of a circle when the fringe is at its maximum. For example, candle light, which is incoherent, meaning it has no fringes, will always have 'g' as zero. There was much discussion, with the students now answering each other's questions. All the students were laughing at one point, doing rhythmical movements with their hands and bodies to show different correlation relationships. Using his hands once again to illustrate the correlation, Simon, the educator, said, 'the disturbance being created means if I know where this is, (one hand in one position), then I know where the other is.'

In this example the body is being used, manipulated in fact, by educator and students to represent, physically, the nature of correlation. This is yet another example of how students learn cognitive practices. Here it involves teaching them the capacity to manipulate representations - in this case bodily manipulation of limbs - and thereby transform how they can conceive of, and think about, phenomena. From a Vygotskian developmental perspective, this appears to demonstrate how reasoning appears first on the 'intermental' plane, or plane of social interaction, where we can use the terms but may not understand them, before being internalised into and shaping the 'intramental' plane, the plane where we make sense of them, use them and can start to contribute to the process of public meaning making<sup>15</sup>.

It was interesting to me that in spite of the ineffability of 'understanding' quantum mechanical micro-states, there was a persistent attempt to construct physical understandings of it through analogues to physical systems and bodily experience - reproductive imagination in Ricoeur's terms - that is, bringing absent but existent objects into mind in memory. But the intent of bringing them to mind was in order to model aspects of the quantum world (parameters, shape and behavioural possibilities in hypothetical terms or postulate relationships

or functions) and so conceptualise the nature of its physical reality. The generativity produced by the making of models makes it 'productive' in Ricoeur's terms. Simon's teaching illustrated the relationship between reproductive and productive imagination when applied for pedagogical purposes. Ricoeur's point is that reproductive forms of imagination tend to be less illuminating in terms of understanding human action, agency, and creativity. However, 'productive' imagination, embodied in inventions, metaphors, models and theories are not intended to be straightforward descriptions of the world. They are working constructs - always open to reconsideration or falsification in the future. This openness to complexity and reconsideration is one reason fostering imagination is of fundamental importance to education, in particular to higher education.

At the same time as manipulating physical analogies for learning concepts, the students in the quantum physics class showed they were well aware of how analogies, while illuminating, would have limitations and break down, and that other analogies would have to be used. For example, in the interviews, one particular student frequently used the resources of objects in the room to explain things to me in the pre-class focus group.

Your metaphors - you often tend to use a lot of metaphor, which often really does simplify the situation. It also forces you to think of the situations where the metaphor doesn't apply. Especially as I got into more advanced physics.

This student's illustration demonstrated an internalised competence in a dialectical coordination of imaginative and critical thinking. Both are used to think about something which is as yet unknown, and thus, has transformed their capacity to learn how to learn.

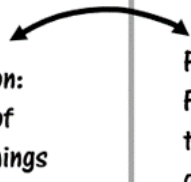
### Simon's imaginative pedagogical strategy

Construction of physical understandings through analogues to physical systems and bodily experience in order to

model aspects of the quantum world and so conceptualise the nature of its physical reality.

**Reproductive imagination:**  
Image is a weak trace of perceptions of actual things

**Productive imagination:**  
Fictional construct refers to that which is absent or non-existent.



## History ethnographic case study example

The methods of inquiry looked different in my observation of a course in Medieval European History, a first year subject, but there were interesting similarities. One of these was, again, the role of imagination in learning how to question assumptions. This extract will refer to the lecturer as Cecelia.

### *Imagination in historical methods*

In the very first class of the unit, the lecturer was teaching how to read a historical source document. She urged students, "From whatever way you approach the text, you have to be imaginative. If you know the Bible [the text document under discussion], you have to try to imagine you've never seen it before. I want us all to come at it with fresh eyes. You already thought you could read, but listen, you need to do it differently from usual... if you are already familiar with a source, you have to approach it as though it's new and for the first time.

Cecelia seemed to be suggesting that imagination has something to do with defamiliarising yourself.

You may think you know how to read. But go slow. Texts are meant to be confronting. Our job is somehow to leap from here to there. And why do we need to? Because our world is built on this. [Nevertheless] This comes from a place very different from us.

She appeared to be suggesting that care needs to be taken not to assume similarities between the present and the past. The challenge of educators is to create engagement with the past while avoiding ahistoricism.

Later I asked the teaching team to expand her explanation of this in the post-class interview.

Tutor: Because it's so foreign. One of the ways I see imagination playing out here is students have to come to terms with twin facts: 1. people were still people who you can rely on to act like humans with their own rationality etc., but also that that rationality is not ours and it's so different and so has to be respected within its own parameters. Some weeks particularly challenge this for students, so the week where we did the mystics and Catherine of Sienna's letters, some students just could not cope with that. They either just wrote her off as a complete nut job, or they just reduced their discussion to the safe boundaries of the political relationships that she had and the execution of the young man that she was talking about. ... And that's a really genuine challenge. To realise that the world can still be a human world, a human society, operating logically and yet nothing like what we think it should be like - and coming to terms with that is challenging.

Lecturer: I imagine that students who do anthropology and sociology have to do the same imaginative work where they are encountering difference and they're trying to respect the logic of it while enumerating the ways that it feels profoundly different. And I think that's great ethical work. And it's one of the things I'm proud of teaching medieval history and I think it makes them better people. (Transcript, Interview 13.12.13)

These comments suggest that historical empathy is not about being seduced into a sympathetic portrayal of the past; it is the act of embedding historical actors in their context. The discipline of history is required to help us to overcome what we cannot instinctively feel or see<sup>17</sup> - becoming aware of the past's difference from the present. Also, that this form of learning by expansion involves ethics.

Another example came from the development of historical skills in two assessments, a synthesis task in which students had to write an account of a complex history chapter, and a historical essay, which involves making an historical argument in prose that makes solid use of historical sources as evidence for a contention. The essay is the principal form of assessment in the humanities, especially in history. Why?

Although it was not obvious to me when I began this research, in analysing a number of essays, the idea emerged that an historical essay, or a video, is a vehicle that structures the development of a number of complex, inter-related skills. These are: formulating an argument (for example, that religions have places of sacred significance); linking smaller arguments - each one with an evidentiary base - to demonstrate the validity of the larger overall argument (e.g., pilgrimage was attractive because it could confer blessings, including miracles, from God; there has to be sacred places for there to be pilgrimage; there need to be saints before there can be relics that can exalt places); criticising and making judgements (e.g., that the configuration of the Ebstorf map centered on Jerusalem indicates a Christian worldview); categorising meaningfully (e.g., Santiago de Compostela and Canterbury Cathedral illustrated the growth in the importance of saints and relics in the 11th and 12th centuries; comparing (e.g. Jerusalem with Santiago de Compostela and Canterbury Cathedral); and combining

Imagination is rather unnerving for most historians. Imagination seems to demand that they loosen their grip on the reality that makes their histories different from fiction. But imagination need not be unnerving. Imagination need not be fantasy. Imagination is the ability to see those fine-lined and faint webs of significance. Imagination is hearing the silence because we have heard some of the sounds. Imagination is seeing the absent things because we have seen so much else. Imagination is an act of human solidarity, or rather imagination is an act of solidarity in our humanness.... Imagination is our capacity to see ourselves as somebody else<sup>16:208-9</sup>

pertinent arguments of others into one's own. Deriving evidence (or 'data') from the sources involves a dialectical form of thinking. Thinking about the possible reasons pilgrimage arose, the religiosity of the people at the time, and the centrality of sacred places entails speculation on the one hand, and checking against the evidence on the other. The historian's (productive) imagination illuminates the reason(s) things are connected; it does the work of combining, linking, and sense-making. This ability to combine elements shapes or configures the structure of the argument, confers meaning and coherence to the data. This choosing, combining, and constructing is the imaginative nature of history. It is constructed because interpreting the evidence located in the sources in order to shape an argument, paragraph by paragraph, involves imposing cohesiveness on sources, where the sources themselves possess no such cohesion - they are about all sorts of things. The rhetorical argument acts as a model for generating propositions about historical reality that interpret for the reader why and how this evidence answers the various question/s posed by the historian.

In encountering the past the creativity of the historian is directed to understanding unfamiliar structures, contexts, cultures and belief systems. Imagining what the past was like - how, why and when people did certain things, is central to being a historian. *Historical imagination*, is essential to grasping the 'other' times and places under exploration and to conveying both that difference and a personal understanding of it. 'The ability to see a situation from a perspective that is not present minded' is perhaps an essential ingredient of the historian's creativity and imagination.<sup>18:1</sup>

## My new found understanding of imagination in higher education

From my study on how university educators cultivate the imagination of their students in a range of non-arts-based disciplines and professions<sup>2</sup> I discovered abundant evidence that the cultivation of learners' imaginations is deeply embedded in disciplinary methodologies/processes and the pedagogical practices of higher education teachers, as they engage learners in what might be termed a disciplinary cognitive apprenticeship<sup>19, 20</sup> - learning how to think and act like a physicist, historian, etc.

Imagination forges links and relations that cross the usual boundary of the mind container by incorporating mindtools/ artefacts, disciplinary methodologies/processes and the ways that (relevant) communities work with knowledge. They encouraged them to take up different positions with respect to their learning and so to shift their perspectives.

They learned to apply disciplinary tools and to use them to think strategically, or to make predictions - which they could then check against evidence. I also witnessed how educators harnessed the emotions of learners - they surprised them, jolted them, encouraged them to follow their curiosity. It was allowable to have emotions about knowledge, and what it felt like to learn, in their classrooms.

Imagination is not only an aesthetic matter, but a way of thinking. Imagination has always been a capacity we can use in order to expand what we know and how we respond to situations - to learn, in other words. It harnesses mindtools and processes and is resourceful, using opportunities afforded in the materials in the culture and local environment to probe, make sense of, and act on our human needs and desires. Importantly for all fields of endeavour, not just arts-based fields, it encompasses how we learn practices and ways of thinking that are new, not only how we acquire existing knowledge.

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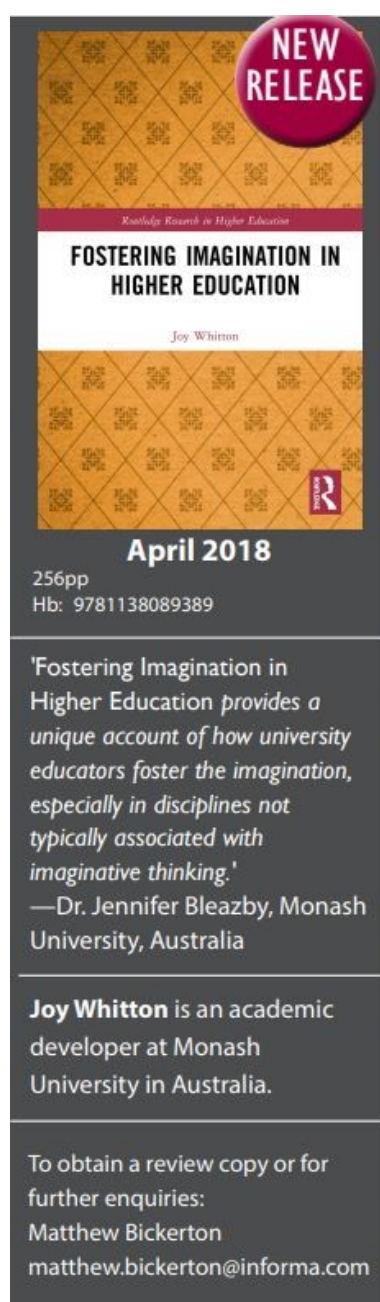
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# Mapping the Pragmatic Imagination: An Interview with Ann Pendleton-Jullian

Henry James



**Interviewer:** Henry Jenkins is the Provost Professor of Communication, Journalism, Cinematic Arts and Education at the University of Southern California. He is the author and/or editor of seventeen books on various aspects of media and popular culture, including *Textual Poachers: Television Fans and Participatory Culture*, *Hop on Pop: The Politics and Pleasures of Popular Culture*, *From Barbie to Mortal Kombat: Gender and Computer Games*, *Convergence Culture: Where Old and New Media Collide*, *Spreadable Media: Creating Meaning and Value in a Networked Culture*, and *By Any Media Necessary: The New Youth Activism*. Jenkins is the principal investigator for The Civic Imagination Project, funded by the MacArthur Foundation, to explore ways to inspire creative collaborations within communities as they work together to identify shared values and visions for the future.



**Interviewee:** Ann Pendleton-Jullian is an architect, writer, and educator of international standing whose work explores the interchange between architecture, landscape, culture, science, and technology within complex contexts. She is currently Full Professor and former director of the Knowlton School of Architecture at Ohio State University, distinguished Visiting Professor out of the President's Office at Georgetown University, and periodically co-teaches world building studios at USC's School of Cinema.

**Break down the core concept -- the pragmatic imagination -- for us. What do you mean by imagination? In what senses can our imaginations be turned into pragmatic tools for changing the world?**

When most people think of imagination, they mostly - or only - think of it in terms of the role it plays in artistic or speculative activities, those activities that we tend to associate with the word 'creative.' It has been deified within the realm of cultural pursuits and demonized when it emerges to get in the way of important thinking and serious work.

Those who trade in reason for a living recoil at its undisciplined nature. While others claim that we should not squander it on 'practical' work. Throughout western history, we have seen philosophers, artists and scientists setting imagination up against reason. *Pragmatic Imagination* proposes that the imagination is actually integral to all cognitive effort and therefore all activities in the world. But it is integral in different ways and to different degrees of effort. Understanding this allows us to unpack its role in the relationship between thought and action and then propose a way to think about how to amplify its capacity for meaningful activity of every kind. We began by defining imagination. Because imagination and creativity are too often used interchangeably, we started by uncoupling the two. To do so, you need to enter into the domains of linguistics, philosophy and the brain sciences. (I said earlier that *Design Unbound* was its own 'design' project. This is because it moved forward through questions and more questions around those questions. As we asked and wrestled with questions, we discovered unforeseen perspectives, openings and branchings in previous thinking. This whole chapter is a good example of that!).

In wrestling with a good way to think about the imagination we went back to word origins. Both imagination and creativity are associated with novelty. That's why they get conflated. But etymologically, 'imagination' is the capacity for, or the product of, imagining, which refers to the making of mental images. 'Creativity' is associated with the verb 'to create', and refers to inventive, productive and usually intentional action that results in the making of something.

Creativity is aimed at making things that enter the world, while imagination is a specific kind of cognitive function. It is the power or capacity of humans to form internal images of objects and situations. We usually think of these images as visual images, but they can also be auditory, olfactory, or motor 'images.'

My colleague, the renowned neuroscientist who directs the Brain and Creativity Institute at USC, Antonio Damasio, talks about how the imagination relies on banked images that one recalls, brings 'on line' and then operates on to create novel combinations. The banked images he refers to come from both the world outside the mind and images that we are continually working on inside the mind. Experiences create images for the imagination to hold. But the imagination, with its propensity for playing with associations, also creates new renditions of them. So, real world experiences seed rich image banks for the imagination to draw from. The

imagination is eclectic. It does not care where it gets images from and 'real' images are quickly replaced by 'interpreted' images.

Both imagination and creativity are processes that create products. But the product of the imagination is the image itself, while the product of creativity is something that enters and belongs to the world, whether that something is material - a new gadget - or immaterial - a new policy. And - (this is a critical difference) - they are differently experienced because they are different processes of human cognition and interaction with the world. The imagination is primarily an intra-psychological process, occurring in the brain on a temporal scale of micro-seconds, and ending when a resolution between an individual's experience, and the internal image formation that this experience calls forth, emerges.

Creativity is a process that is part of a social domain of action. It operates on a longer time scale, ending when an internal cognitive product - a solution to a problem, an idea or an image - becomes embodied as something that enters the world of social relations - a world that has a history to it. Both are socially and culturally mediated products but the experience is different and the relationship of the product to the world is different. Because of this, we tend to associate creativity with intentions and purpose and we tend to associate imagination with the luxury of individual expression.

Why do I dwell on this? Because in looking at the imagination this way - as the cognitive process of making mental images - we were then able to interrogate how this cognitive process functions, and when. New research in the neurological and cognitive sciences - different work that focused on specific activities from basic perception to jazz improvisation - led to a pretty good framework for understanding *how* it functions. In understanding better the *how*, we then asked *when*. It is important to add that, while the concept and framework of the pragmatic imagination might have been catalyzed by scientific advances, it is actually a blend of science, philosophy, experience, and speculation.

A catalytic discovery for us was the work of two cognitive psychologists at UCSD who were working off of the shoulders of the famous Russian psychologist Vygötsky. Lev Vygötsky built a theory of human cultural development that theorized the interaction between the social *and* biological aspects of our evolution. The work that interested us was on how culture mediates perception - specifically, the most basic function of perception, which is seeing. Everything we see is mediated by the images we hold from past experience - images that are personal and cultural interpretations of the 'real' experience. (This is why two people seeing the same event might not agree on what they saw, or worse, a whole group of people might agree on the something they saw or experienced in a manner that completely contradicts what actually happened.)

Two UCSD cognitive scientists, Pelaprat and Cole, did a series of experiments, three quarters of a century after Vygötsky's seminal work, that actually showed how, in the physical act of seeing, the brain relies on nano-second gaps in vision. When those gaps were removed, the brain 'saw' nothing . . . the image in front of the subjects disappeared to gray. In those gaps, they theorized that we use existing banked mental images to correlate the new image with what we know. In other words, to make sense of what we are seeing. This is where *Pragmatic Imagination* begins because this suggests that the process of creating, retrieving, and making mental images is not just about the most extremely undisciplined activities we might associate with this kind of cognitive activity, but, if it is also part of perception itself, then why not part of everything in between - an entire spectrum of cognitive activity.

Once you understand that the cognitive operations that *are* the imagination can serve in multiple roles from the most basic cognitive activity that we believe is a direct translation of reality - I'm talking about seeing - all the way to dreaming, which is considered the *least* directly related to reality, then the bi-polar dichotomy between reason and imagination is no longer relevant. This sets up the first principle of *Pragmatic Imagination*, which is that the imagination serves diverse cognitive processes as an entire spectrum of activity from perception through three forms of reasoning, speculation, experimentation, and all the way to where the free play of the imagination dominates.

There is a quote by William James that I love. He *gets* it. He says, "There are imaginations, not 'the Imagination,' and they must be studied in detail."



In our interest to ‘study in detail,’ we then went on to look at the role of the imagination in this spectrum, and to specifically ask about the role of the gap. The gap being the difference between the unmediated thing we see, or experience in the world, and what we know; between the new ‘image’ and our banked ‘images.’ On one side of the spectrum - in perception through reasoning - we use the image making capacity of the mind to resolve that difference. The imagination helps us close the gap and make sense of the world. But as one moves along the spectrum, we actually use the imagination to enlarge, or create, new gaps and then to assist in resolving them to different degrees depending upon how the image is meant to intersect with the world. When we speculate on something, we begin to entertain things that are not necessarily viable - we begin to form images of things that might not be possible - of things that are strange to us. And then we use the imagination to make sense of these strange things - or at least to make them familiar enough to assimilate them. So there is a *sense-making* capacity in the imagination but there is also a *sense-breaking* capacity.

These are the first two principles of our framework. The next four go on to talk about how to harness all of this - the whole spectrum for pragmatic purpose. This framework allows us to talk about how the imagination, in all of its cognitive roles, can be put to purpose for agency and impact in today’s world. But it is also important to clarify that we use the word ‘pragmatic’ in its richest sense. We do not mean ‘practical.’ They are often used synonymously to refer to common sense conduct that is concerned with ordinary activities and ordinary work. This may accurately define ‘practical’, but it is insufficient for ‘pragmatic’ as both a way of acting and a way of thinking.

*The Pragmatic Imagination* draws on a deeper and more textured meaning of the word by borrowing from philosophical Pragmatism whose foundational premise was that thinking and acting in the world are integrally associated; they are indivisible and reciprocal, meaning that thinking - learning actually - depends upon empirical action in the world and action depends upon thinking. In *Pragmatic Imagination*, we are building a framework to understand how imagination and action can sustain a similar productive entanglement to support agency in the world. And how this is critically relevant in today’s white water world.

Pragmatic Imagination is a framework of six principles that build on each other in a manner that is intended to be useful for getting at how the imagination can be better understood, prompted into action, and then converted into work for *all* activities, but *especially* to create a new capacity for working on complex problems in ways we have not been able to do - and, to use your words, “to change the world.” In complex problems, or almost any problem, or opportunity, or interaction with the world, it is often those things which one doesn’t see clearly, or cannot foresee, or will not entertain as viable, etcetera, that are most difficult for us, yet potentially most useful. Often in focusing too hard, responsibly, earnestly, on a problem, we miss seeing the problem completely. Imagination is cognitive peripheral vision that helps us ‘see’ all of those things that are lying just out of range of what we know. And helps us discover things unknown.

The framework draws from advances in the cognitive and neuro-sciences that have allowed neuroscientists to watch the brain functioning under different imaginative activities. It draws from first hand accounts of moments of intense awareness of this kind of cognitive activity. And it draws from personal experience as participants in, and mentors of, imaginative activity. It talks about different methods used to provoke and scaffold the imagination and then looks forward to *Design Unbound* as a tool set for instrumentalizing the products of the imagination.

The six principles of the Pragmatic Imagination are encapsulated here:

1. The imagination serves diverse cognitive processes as an entire spectrum of activity.
2. The imagination both resolves and widens the gap between the unfamiliar (the new/novel/strange) and the familiar. This gap increases along the ‘role of imagination in cognitive processes’ spectrum from left to right. Within the range of abductive reasoning, there is a significant shift from using the imagination for sense-making to sense-breaking, where one first widens the gap and then resolves it with the imagination.
3. The Pragmatic Imagination pro-actively imagines the actual in light of meaningful purposeful possibilities and sees the opportunity in everything.
4. The Pragmatic Imagination sees thought and action as indivisible and reciprocal. Therefore, it is part of all cognitive activity that serves thought and action for anticipating, and thought and action for follow-through; and the generative/poietic/sometimes-disruptive side of the spectrum is especially critical in a world that requires radically new visions and actions.
5. The imagination must be instrumentalized to turn ideas into action - the entire spectrum of the imagination especially the generative/poietic/sometimes-disruptive side.
6. Because the imagination is not under conscious control, we need to find and design ways to set it in motion and scaffold it throughout meaningful activity.

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<http://henryjenkins.org/blog/2016/11/mapping-the-pragmatic-imagination-an-interview-with-ann-m-pendleton-jullian-part-two.html>

You can purchase Anne’s book at <http://www.pragmaticimagination.com/>

# Using Pragmatic Imagination to Solve Complex Problems

Norman Jackson

## Introduction

"To imagine something is to think of it as possibly being so"<sup>1:184</sup> This terse formulation sums up a considerable range of attempts to grasp the complex nature of imagination. It captures both the sense in which we can conceive of the world as other than it is.....and also the sense in which the historian or physicist or any of us strives to conceive of the world exactly as it is.....Both senses of this capacity to think of something as possibly being so, point to the imagination as the source of novelty, originality, and generativity."<sup>2:17</sup>

In this article I want to explore the concept of pragmatic imagination developed by Ann Pendleton-Julian and John Seely Brown<sup>3</sup> and how the idea might help us understand how imagination works in the context of inventing our own (novel) solutions to complex problems. It's my belief that the way these authors represent imagination and its role in thinking and acting will help higher education teachers appreciate more clearly the way imagination features in critical thinking and in practice and it might help them to create educational designs that are more likely to cultivate imagination and enable learners to use their own imaginations.

**PRAGMATIC IMAGINATION**  
'a productive [and purposeful] entanglement of imagination, reasoning and action'<sup>3</sup>

## Using imagination to create novel solutions for complex problems

A study in the 1980s at the Microelectronics and Computer Technology Corporation (MCC) looked into how people solve problems<sup>4</sup>. The study focused on design, but the results apply to virtually any other kind of problem solving or decision-making activity.

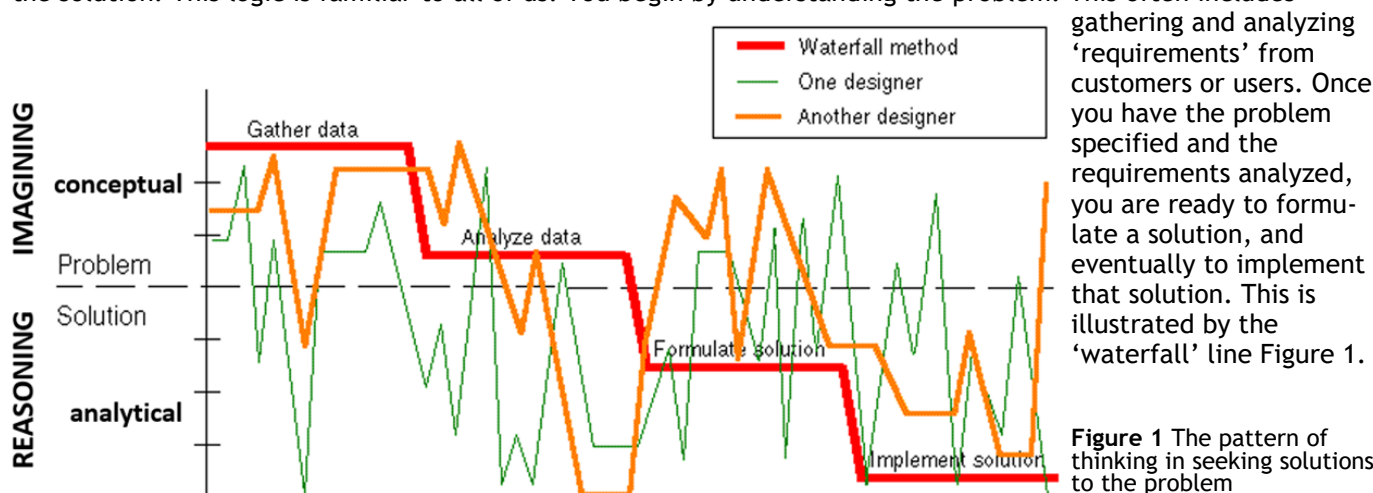
Geoff Conklin<sup>5</sup> describes how a group of designers participated in an experiment in which the goal was to design an elevator control system for an office building. All of the participants in the study were experienced and expert integrated-circuit designers, but they had never worked on elevator systems before. Indeed, their only experience with elevator systems came from riding in elevators. Each participant was asked to think out loud while they worked on the problem. The sessions were videotaped and analyzed in great detail.

The analysis showed, not surprisingly, that these designers worked simultaneously *on understanding the problem and formulating a solution*. They exhibited two ways of trying to understand the problem:

- efforts to understand the requirements for the system (from a one page problem statement they were given at the beginning of the session); and
- mental simulations (e.g. "Let's see, I'm on the second floor and the elevator is on the third floor and I push the 'Up' button. That's going to create this situation....").

On the solution side, their activities were classified into high, medium, and low levels of design, with high-level design being general ideas, and low being details at the implementation level. These levels are analogous to an architect's sketch, working drawings, and a detailed blueprint and materials list for a house.

Traditional thinking, cognitive studies, and the pre-vailing design methods all predicted that the best way to work on a problem like this was to follow an orderly and linear 'top down' process, working from the problem to the solution. This logic is familiar to all of us. You begin by understanding the problem. This often includes





This is the pattern of thinking that everyone attempts to follow when they are faced with a complex problem, and it is widely understood that the more complex the problem, the more important it is to follow this orderly flow. However, the subjects in the elevator experiment did not follow a waterfall. They would start by trying to understand the problem, but they would immediately jump into formulating potential solutions. Then they would jump back up to refining their understanding of the problem. Rather than being orderly and linear, the line plotting the course of their thinking looks more like a seismograph for a major earthquake, as illustrated in Figure 2. We will refer to this jagged-line pattern as opportunity-driven, because in each moment the designers are seeking the best opportunity for progress toward a solution.

These designers are not being irrational. They are not poorly trained or inexperienced. Their thought process was something like: "Let's see, idle elevators should return to the first floor, but then, you only need one elevator on the first floor, so the others could move to an even distribution among the floors. But the elevators need to be vacuumed regularly. I suppose we could add a switch that brought idle elevators down to the first floor. But then what happens in an emergency?" In other words, what is driving the flow of thought is some marvelous internal drive to make the most headway possible, regardless of where the headway happens, by making opportunity-driven leaps in the focus of attention. It is precisely because these expert designers are being creative and because they are learning rapidly that the trace of their thinking pattern is full of unpredictable leaps.

In particular, the experiment showed that, faced with a novel and complex problem, human beings do not simply start by gathering and analyzing data about the problem. Cognition does not naturally form a pure and abstract understanding of 'the problem.' The subjects in the elevator experiment jumped immediately into thinking about what kind of processors to use in the elevator controller, and how to connect them, and how to deal with unexpected situations, such as if one processor failed. These are detailed solution elements.

These experienced designers illustrated that problem understanding can only come from creating possible solutions and considering how they might work. Indeed, the problem often can best be described in terms of solution elements. A requirement in the problem statement calling for 'high reliability' was quickly translated into the idea of using a network of distributed processors - a high-level solution that drove the rest of the design process. Figure 1 illustrates another striking observation: problem understanding continues to evolve until the very end of the experiment. Even late in the experiments the designer subjects returned to problem understanding, the upper part of the graph. Our experience in observing individuals and groups working on design and planning problems is that, indeed, their understanding of the problem continues to evolve - forever! Even well into the implementation of the design or plan, the understanding of the problem, the 'real issue,' is changing and growing.

The natural pattern of problem solving behavior may appear chaotic on the surface, but it is the chaos of an earthquake or the breaking of an ocean wave - it reflects a deeper order in the cognitive process. The non-linear pattern of activity that expert designers go through gives us fresh insight into what is happening when we are working on a complex and novel problem. It reveals that the feeling that we are 'wandering all over' is not a mark of stupidity or lack of training. This non-linear process is not a defect, but rather the mark of an intelligent and creative learning process.

In fact, this non-linear pattern does not come as a surprise to most people. Anyone who has ever worked on a complex project has the intuition that this jagged line process is what is really going on. But the experiment is significant because it gives us a real picture of the process that people follow when they really think about novel problems, and it is not the orderly and linear process we have been taught is proper!

The jagged pattern of opportunity-driven problem solving illuminates how imagination, perception and reasoning are used and integrated in the service of inventing solutions for a complex problem. It reveals the way creativity works in a domain specific context. The more novel the problem, the more the problem solving process involves learning about the problem domain. In this sense the waterfall is a picture of already knowing - you already know about the problem and its domain, you know about the right process and tools to solve it, and you know what a solution will look like. As much as we might wish it were otherwise, most projects in the knowledge economy operate much more in the realm of learning than already knowing. You still have experts, but it's no longer possible for them to guide the project down the linear waterfall process. In the current business environment, problem solving and learning are tightly intertwined, and the flow of this learning process is opportunity-driven.

## **Pragmatic imagination - imagination put to purpose**

The story just retold illustrates how people use their imaginations in the context of a specific purpose, by combining and integrating their perceptions, reasoning, imagination to tackle a domain specific problem, to generate and evaluate possible actions, pursue the course of action and then reflect on analyse and draw out deeper understandings from the results of action. Imagination, is not just a capacity to imagine new possibilities but a capacity to imagine in ways that improve our ability to perceive, reason and make sense of situations and circumstances.

The story of the engineers designing a lift system reveals how, when we explore and inquire in order to try to solve a problem we use both our imagination and our critical ways of thinking in a complex synergistic interplay: what Pendleton-Jullian and Brown call *pragmatic imagination* (summarized in the adjacent box), ‘a productive [and purposeful] entanglement of imagination, reasoning and action’<sup>3</sup>

“Imagination is not uniquely about producing novelty that fuels creativity, nor is it simplistically the undisciplined counter-faculty to reasoning, but an entire spectrum of activity associated with diverse cognitive processes from perception, through reasoning to novelty.

## THE PRAGMATIC IMAGINATION

### THE IMAGINATION PUT TO PURPOSE

The Pragmatic Imagination is a concept that sees the imagination as a spectrum of coherent synthetic image making that runs from dealing with the known to projecting the novel, and from prosaic sense-making to poetic sense-breaking. It values the entire spectrum but suggests that the last portion of the spectrum, the domain of the poetic imagination, is necessary in a world that is rapidly changing and radically contingent. And finally, it proposes catalyzing, scaffolding and instrumentalizing the entire spectrum for pragmatic purposiveness.

We suggest that it is a spectrum as a continuum, as opposed to three cognitive-imaginative steps, because within ‘reasoning’, we can further distinguish different processes which the imagination serves differently: **deductive reasoning** in which a conclusion follows directly from the premises presented: **inductive reasoning** in which the conclusion, while supported by the premises does not directly follow them - there are missing pieces; and **abductive reasoning** that is often understood as a ‘best guess’ hypothetical reasoning - a form of logical inference in which an observation leads to a hypothesis which might explain the observation. The hypothesis can be tested. In abduction one is seeking the simplest and most likely explanation without enough facts for a foothold on certainty. ”

From deduction to abduction, each of these forms of reasoning relies on increasingly less facts, and increasingly more speculation, which in turn draws on the imagination.” <sup>3:24-5</sup>

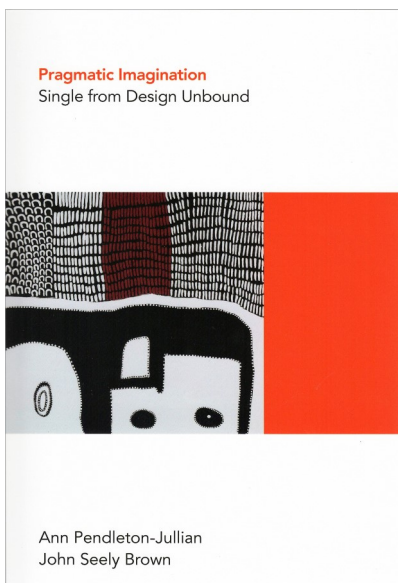
Pendleton-Jullian and Brown represent thinking as a continuum including perception, reasoning and imagination (Figure 2) with imagination having the potential to be connected to both perception and reasoning.

“In our framework for the pragmatic imagination, the role of the imagination has expanded from a simple imagination versus reason dichotomy to an entire spectrum of activity from perception, through reasoning, speculation, experimentation to the free play imagination we associate with artistic creativity, fantasy, radical scientific discoveries, and invention and novelty of all sorts. We can easily understand how perception and reasoning, and even speculation, have pragmatic purpose and therefore the imagination associated with these would be, by nature, a pragmatic use of imagination”<sup>3:73</sup>

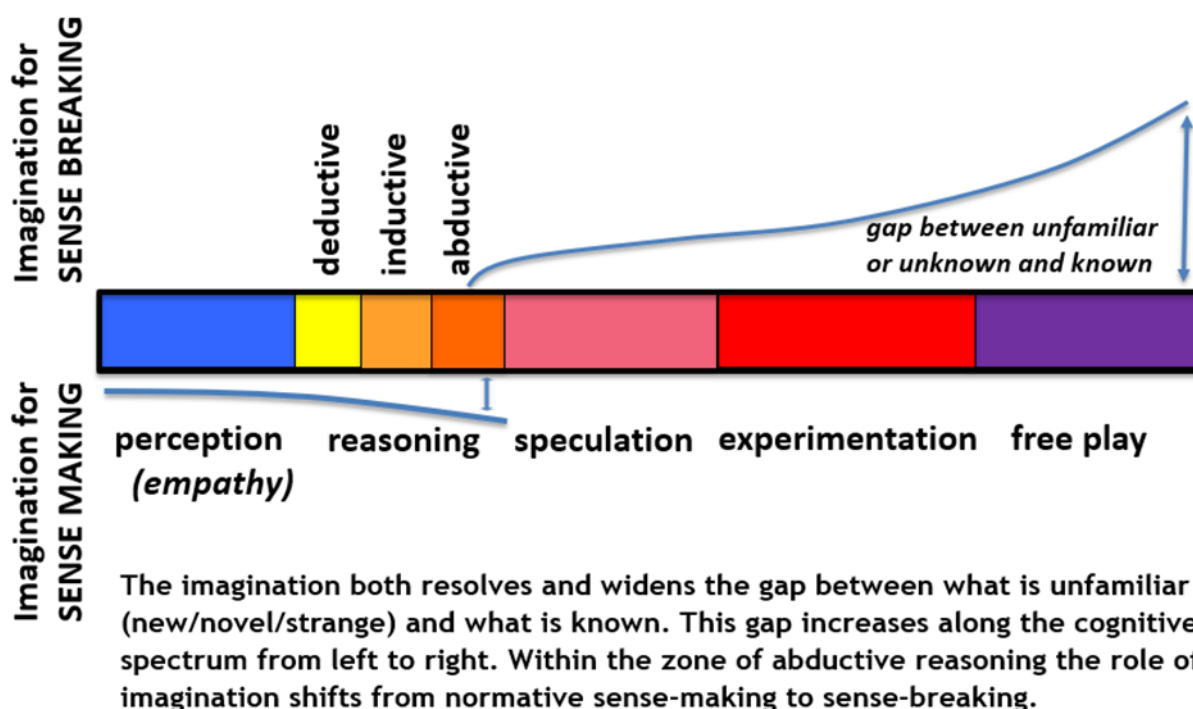
In visualizing the idea of pragmatic imagination, Pendleton-Jullian and Brown (ibid) draw on Pelaprat and Cole’s theory of imagination “a process that resolves gaps generated by the constraint of past experience, cultural history, and phylogeny on the individual so that he or she may produce an image of the world into which they can act and think in the present” <sup>3:62 citing 6</sup>

imagination is constitutive of human thought, and should neither be understood as a specialized mental faculty nor as the creation of unreal fantasies. The contents of the imagination, though taken from the world, are not entirely “of” the world. Similarly, the contents of the imagination, though resolved within the individual, are not entirely “of” the individual. Normal mental processes are irreducible to either culture, biology, or individual experience. There are fundamental “gaps” that must be resolved for individuals to think or act in relation to the world. Resolving these gaps through image making constitutes the self and the world in the same process. It is inherent to the structure of human cognition and action<sup>6</sup>

The imagination both resolves and widens the gap between what is unfamiliar (new/novel/strange) and what is known. This gap increases along the cognitive spectrum from left to right in Figure 2. Within the zone of abductive reasoning, there is a shift in the role of imagination from normative sense-making to sense-breaking, where we widen the gap and then resolve it using imagination.<sup>3</sup>



**Figure 2** Pragmatic Imagination. Ann Pendleton-Jullian and John Seely Brown's representation of the cognitive spectrum and the role played by imagination in the continuum<sup>3:53</sup>



## Connecting Pragmatic Imagination to the Development of Wisdom

They say a picture is worth 1000 words, but some pictures contain a whole book of meanings and possibilities. The image below, by illustrator Tom Chalkley, is one such image for me.

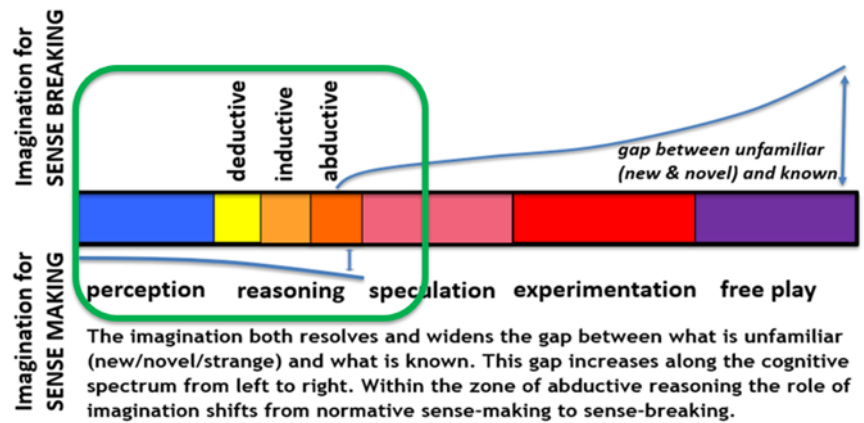
**Figure 3** Illustration of how people create wisdom from information and knowledge. Illustration drawn by Tom Chalkley originally published in the December 1982 issue of THE FUTURIST

The simple and humorous story contained in this illustration conveys the idea that people interact with their world and through mental processing they seek to make better sense of it. They perceive (observe) things in their environment and give them mental meanings (interpretations) in their inner world. Not content with just giving a meaning to perceptual information, they begin to connect up their observations and interpretations to create more substantial meanings and move towards a synthesis that explains in a conceptual or hypothetical way (eg a story) how all the pieces fit together. Individual observations and interpretations (disparate pieces of information) are connected into a whole system of inter-related phenomena: a model that explains to themselves and to others how their whole experience of the world makes sense. I argue<sup>7</sup> that this is an ecological way of thinking in the sense that the mental representations seek to understand the complex relationships and interactions involving all the living and non-living entities contained in the person's ecology. Such an explanation contains the deep understandings that have been developed and these can be communicated in a cultural sense in the form of a story, an image, a map or any other cultural artefact that can carry these synthesised meanings.



This pattern of creating a holistic representation of an environment is not dissimilar to that of a geologist making a geological map.<sup>8</sup> To make a geological map the geologist must engage physically, intellectually and emotionally with his 'field' environment. Using the methodologies he has learnt in order to practice as a geologist, he carefully observes (perceives) his environment and gathers information about the rocks he is studying. Using inductive reasoning he identifies the materials and structures he is observing. But, driven by his imagination, even though there are many pieces of his jigsaw puzzle missing, he can and does enter the realm of abductive reasoning and speculation, as he begins to connect the disparate pieces of information he has gathered to create deeper understandings and meanings. He draws upon his specialist geological knowledge to create mental models of the environment in which the rocks he has identified formed and creates a working hypothesis which he can then tested to explain the whole environment. This process of testing and refining his mental model of the whole continues throughout his mapping project until he arrives at his final synthesis. In this way we can see how.

**Figure 4** Pragmatic Imagination. Ann Pendleton-Jullian and John Seely Brown's representation of the cognitive spectrum and the role played by imagination in the continuum<sup>2:53</sup> The green box represents the main cognitive space of the field geologist<sup>8</sup>



In this way he begins to engage in opportunity-driven patterns of learning and problem solving. This is the way creativity emerges from our ecologies of practice when tackling novel and challenging problems in a particular context. The elements of a geologist's cognition and bodily actions work together in a merry dance through field, laboratory and office (writing, processing and cartography) environments. The knowledge and understanding that is developed is codified and explicated in the domain specific artefacts he makes - his geological map and reports.

My interpretation of the typical cognitive spectrum for the geologist (green outline in Figure 4), opens up the idea that different disciplinary/practitioner fields might have a different continuum. For example, a chemist might use experimentation as a vehicle for his imaginations while an artist will use the domain of free play and experimentation as the playground for their imagination and inspiration.

The general conclusion that might be drawn from this narrative is that imagination is cultivated as individuals develop themselves through the cognitive and practical apprenticeships<sup>8,9</sup> they are serving when they pursue an undergraduate or postgraduate degree and engage in the signature learning experiences of the domain which prepares learners for practice in the field.

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## Biographical Note



Tom Chalkley has been teaching Cartooning at Johns Hopkins University's Center for Visual Arts since 1990. He is a freelance cartoonist, illustrator, and writer. His work has been featured in *The New Yorker*, *The Chicago Reader*, *The Baltimore City Paper*, and a wide variety of other publications. He specializes in caricature, cartoon maps, and educational illustration.



# Analysis of the Scientific Imagination Process

Jenny Willis

## Background to the research

This article describes how 5 award-winning secondary school teachers of science in Taiwan develop the scientific imagination of their students. They were studied by researchers from the Institute of Education at the National Sun Yat-Sen University, Taiwan, in order to explore the mechanisms and factors which influence the process of scientific imagination in secondary school students.



The study built on Vygotsky's(1) theory that imagination is fundamental to human thought, and that our history of civilisation is the result of the operation and exercise of imagination. Examples would include the invention of paper during the Eastern Han dynasty (AD105), and numerous prototype ideas which modern-day science has realised e.g. in the classic novel, *Journey to the West*, set in the Ming Dynasty, the Monkey King reproduces himself using strands of his hair, foreshadowing today's ability to clone, and Dolly the sheep (2).

Imagination is an innate ability which results from cognitive and emotional processes. Theoretical models are diverse: Osborne (3) distinguished between meaningful and non-meaningful imagination, whereas Pelaprat and Cole (4) conceptualise it as a process of closing gaps. Here, we approach the notion of imagination as a problem-solving tool. Theorists have also sought to identify the characteristics of imaginative people: keen observation skills are required; openness and free association are conducive, significant factors for organisation of the learning environment. The Taiwan researchers' focus was on how the encouragement of imagination can lead to imaginative ideas that can then result in the production of concrete objects.

## Methodology



The researchers recruited 5 award-winning science teachers from different secondary schools in Kaohsiung, a town in southern Taiwan. They included male and female, and had an average 24.6 years' experience of teaching, including prior success in the International Exhibition for Young Inventors (IEYI). Nine 4<sup>th</sup> to 6<sup>th</sup> grade students were allotted to a teacher who had previously taught them and who guided them through the process of devising and making an entry for the IEYI over 9 months in 2010.

The researchers observed and recorded lessons for a total of 13 hours, and conducted semi-structured interviews with both teachers and students. These were recorded and validity was sought by triangulating

data at each stage of the study. This followed the model proposed by Denzin (5) for optimising validity in qualitative research. The sets of questions used for the initial interviews are shown in table 1.

Table 1: The preliminary teacher and student interview questions

Table 1  
Outlines of the first teacher interview and the student interviews.

Outlines	Participants	
	Teacher interview	Student interview
1	Describe your personal characteristics and teaching philosophies.	Describe your personal characteristics and reasons for participating in the IEYI competition.
2	Do you have past experiences relating to inventing? Where did your ideas come from?	Where do the ideas come from? What are your inspirations?
3	When did you start to instruct students for the IEYI? Why did you take on this task?	What kinds of difficulties did you encounter during the process? How did you overcome these difficulties?
4	What methods do you use to prepare students for participation in the IEYI? What are students' responses?	Who did you receive help from during the process? What kind of help? For example, teachers, parents, peers, or the utilisation of other resources.
5	How are ideas for the IEYI presented when you or your students think of them? Do you visualise the final products?	Are there any differences between the final products and the original ideas? Why?

## Findings

The researchers identified specific characteristics for each stage of the scientific imagination process. The three stages were defined respectively as Initiation, Dynamic Adjustment and Virtual Implementation. Each stage required different core components in a dynamic, cyclical process. They comprised four elements: 1. brainstorming, 2. association, 3. transformation and elaboration, and 4. conceptualisation, organisation and formation. This emerged from their study of 60 different projects during the research period. To illustrate the process, the researchers presented the Illuminated shoes project, which won a golden award in the 2010 competition.

### *The Illuminated Shoes project*

#### *Stage1, Brainstorming*

The students began by identifying problems then applying their natural imagination to devise solutions. The issues they proposed were grounded in their everyday lives, e.g. how to make essential tools such as pens easier to carry. The teachers encouraged idea generation by prompting questions and use of visual stimuli. Most of the initial ideas were irrelevant to the problem to be solved. Figure 1 represents these in the first layer of cloud as unshaded shapes. The shaded elements were valid to the identified problem. The researchers found consistency with Csikszentmihalyi (6) in the need for curiosity and adventurousness at this stage of the process: the students wanted to find solutions and had open minds based on both past experience and newly-acquired knowledge (Polycastro and Gardner, 7).

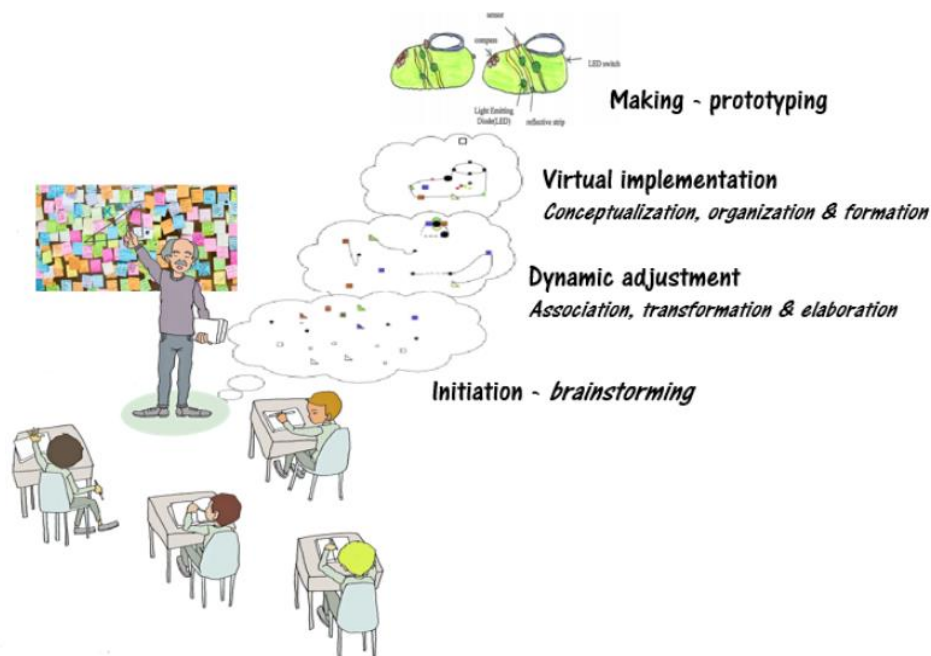


Figure 1: The process of scientific imagination

The Illuminated Shoes project was triggered by students' description of a common problem:

"I had experiences of going back to my home and shopping in the countryside. There are no streetlamps at night, and I have no hand free to use a flashlight because I carry many things in my hands"

"I went camping with my family, and we went to a big park to see lightning bugs. We had to walk down many stairs to the park, but there was no streetlamp on the road. We didn't have a flashlight and really were afraid of falling down"

From this personal experience, they worked on solutions. Figure 1 again shows which of these were valid and those rejected in this, the initiation stage.

#### *Stage 2, Dynamic adjustment*

The second layer of the cloud illustrates how ideas were then linked together: the dotted line represents weaker links than the solid line. Teachers guided the students to identify those which were, for instance, novel, prompting them to deeper reflection. Financial and knowledge resources were also dependent on parental input, forcing the students to consider what they could realistically produce. Hence the process moved from abstract and impractical thinking to repeated modification of their ideas as they analysed contradictions and synergies between their ideas. The researchers termed this 'transformation and elaboration'. It was at this stage that the group decided to create a pair of illuminated shoes.

### Stage 3, Virtual implementation

At the top layer of the cloud (figure 1) the focus is on formalising the idea by making prototypes. For the Illuminated Shoe project, this meant deciding on the appearance and material of the product, and how each component would be linked. Figure 2 shows the final design following this process of refining ideas and honing problem-solving skills in order to achieve a high quality product.

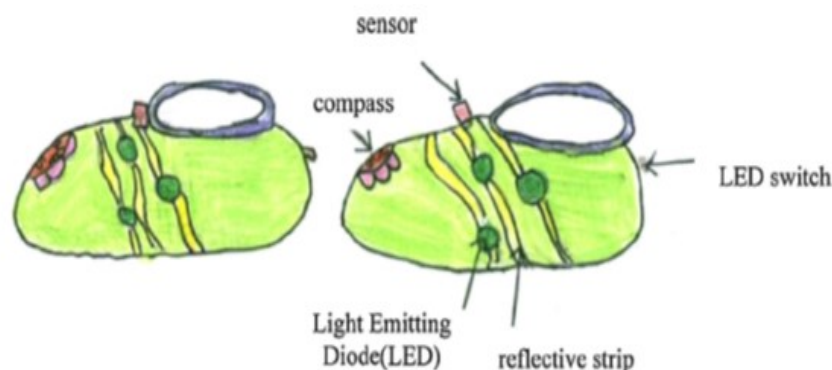


Fig. 2. Prototype of the Illuminated Shoes. The project was created by student group G1, guided by teacher C, and awarded a gold medal at the seventh IEYI in 2010.

## Conclusion

The researchers concluded that origin of scientific imagination lies in the desire to deal with ‘inconveniences’ found in daily life, and that problem solving requires the operation of imagination. This progresses in small steps rather than revolutionary leaps. They classified these into the 3 stages discussed above.

Individuals are affected by both internal and external factors, and their imaginations vary. This is consistent with the findings of previous researchers, where significant factors are the ability to form new associations, observe keenly, be curious, have a desire to learn, be open-minded, adventurous, have wide-ranging prior experiences and interests. The researchers end:

To sum up, the results of this study showed that the major contributors to scientific imagination are the family environment, teacher guidance, peer interactions and multiple life experiences (e.g. reading novels and science fiction, going to the movies...)

They conclude that further research is called for in order to explore these factors in greater detail.

## Acknowledgement

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# Using Rap to Engage the Imaginations of Young People

## Norman Jackson interviews 'Proph' a Rapper from Croydon

### Background

Teachers and educators are not the only people who can influence and stimulate the imaginations of young people. Bhishma is a rapper from Thornton Heath near Croydon SE London who is aiming to work with young people inside and outside of school to encourage them to use their imaginations to create poetry in the form of rap songs. In doing this he is helping them to tap into their inner motivations to express themselves and experience their own creativity, and in the process help them recognize that they can use their creativity to make a positive difference to their own life.

His Rap 'Therapy' project runs in parallel to his own work as a singer/composer of rap songs which have a clear message to young people about the dangers of getting involved with gangs, knife crime and drug dealing, which is endemic where he lives. "It's all around us, all the time," he says, "Growing up, we had people that would bring guns into school; people that have knives in school. Even in college, we're talking 16/17-year-olds - there was a week where three people were stabbed right outside. Knife crime was a big thing. Now it's getting worse though."

Bhishma, who goes by the name PROPH (prophet) when he raps, took his first steps into music at the age of 12 when he began performing to congregations at his church before moving on to local gigs.

"There was a group of us, there was like one, two, three of us, and we just started rapping together. It literally started off as fun, and then that's when we realized, "Let's try and do some shows."

At 26 Bhishma describes himself as "one of the older guys" who can "hopefully offer better guidance" to teenagers in **Croydon**. The lyrics in the six songs on his first EP, Invisible Guidelines, talk of the "unspoken rules" he feels youths in the area feel pressured to follow - like carrying a knife, or even a gun and taking drugs. He hopes the lyrics, which he described as "positive but not sugar-coated", will touch both local people and those living in parts of London which are traditionally more affluent. "I've almost fallen victim to knife crime myself, I've been threatened myself, I've seen people I know get hurt and killed," he explained.



Bhishma's music embodies conscious rap, a subgenre of hip hop that was developed in the 1980s as a form of activism. His song, Blue Tears, is an example of this touching on the severity of the knife crime and drawing on his own personal loss of a friend who was stabbed.

You can hear it on You Tube

[https://www.youtube.com/watch?time\\_continue=15&v=B\\_cjnL-KJVQ](https://www.youtube.com/watch?time_continue=15&v=B_cjnL-KJVQ)

### Interview

Bhishma visited me to talk about his new project called Rap Therapy. I asked him if I could record our conversation with a view to writing an article and he was happy for me to. In the first part of the interview he talks about rapping and how it connects to imagination.

#### *How did you start rapping?*

**Bhishma:** When I was in school we weren't allowed to rap in the playgrounds, however, we'd rap in the playgrounds anyway. I was about 12 years old and as I was rapping in the playground a teacher came past to stop the whole thing, but instead of just stopping it he would listen and he heard exactly what I was saying in my raps which was positive. He spoke to me afterwards and asked me to perform in one of the assemblies in front of the whole school. He said that I start to perform in front of the school from that point. After that I started to do performances in places like the Nottinghill Carnival, Croydon bus park, and in churches and schools just rapping about what I know. So it was a teacher that encouraged me to enhance my rapping skills, although my parents always pushed me to go after it. She actually put me on a platform in front of the school and people called me "the rapper kid."



### *How did Rap Therapy come about?*

**Bhishma:** I have been rapping and performing since 13 and recording for the last few years. Last December I released an EP and it got a lot of media attention. Through that EP I was talking about stuff that I felt the youth need to hear. Through that, I just thought to myself, how can I actually help them? Music obviously helps them, but they can just listen to my song, turn it off, and listen to something else. It's so simple for them to do that, so I thought to myself, "How can I actually go and help them?" The answer came to me to actually go into schools and help young people in their schools, those that are struggling, to teach them to rap so they can express themselves creatively.

### *Did something happen to trigger this?*

**Bhishma:** There's a few things. The deeper meaning of rap-therapy is to avoid tragedy, and when I talk about prisons and I talk about mental health, I was talking to a mental health worker, who said that a lot of the mental health issues tend to happen when they're in the school. They have no outlet. They have nothing to actually create and express how they feel.

When I looked at it from my life, I've never been in a mental health institute, but I have a really close friend, who has ended up in a mental health institute because he hadn't had that outlet to write and express himself when he was younger. Even in prison, I have a lot of former friends, or former people that I know, wouldn't say they're my friends, that ended up in prison simply because they had no direction in what they were doing.

I always think that if they were rapping, or if they were aiming for something, then they have a purpose and are distracted by that as opposed to being with a certain group of friends and committing crimes. Again, the hand that you're dealt is the hand you're dealt in life, but at the same time, I don't feel like you have to stick with that hand. I think you can really change that because you can be born in a rubbish area, but end up in the nicest area just from how you persevere and how you really try to go for what you're going. That's what I really believe, Yes.

### *Can you put your finger on what it is about rap that enables you to express yourself in a meaningful way?*

**Bhishma:** I know exactly what it is. It's you being able to say what you want to say without being penalized about what you're saying. The words alone allow you to express yourself. What it is, is actually being able to write it down. It's the whole process, the creative process. Getting a piece of paper, writing down everything you're feeling or thinking and just being able to fully focus on that present moment on how you feel at that time. That's just such an amazing thing that I should be able to write solely what you believe and feel at that time, in that present moment of time and then create a body of work.

### *Is it something that for you find effortless or do you have to grind it out? How does it work in terms of the creative process?*

**Bhishma:** It all depends. For me, I find it effortless I think because I've been doing it for quite a long time. If I have a feeling or thought about something it's easy to write on that something whereas when I started it was much harder. You want everything to be perfect. When you want everything to be perfect you're not really writing 100% on how you feel because you're thinking on how it's meant to sound. How you're supposed to play it out there. It's better for it not to be perfect but to be closer to how you feel.

### *When you write the song. Do you also compose the music or is the music already there? How does that work?*

**Bhishma:** .....I get someone to send me over an instrumental which they've created. I just listen to the instrumental, have a few concepts which I write down which I want to talk about. Then from there, I pick the best concept which I feel matches the music. From that, I just end up writing a song.

I have my own studio now which a few producers said, "This is what you need to get." Then I just record my song there and then. That first recording might not be the final recording. It might just be a recording where I'm using it like a skeleton to see what I'm going to do. Then from there, I might send it over to the producer. The producer says, "Yes. This will work or this doesn't work." Then I record it properly and send it over to him. He mixes the music. He masters the music and sends it back to me.



#### **Rappers Cast Light on Creativity**

Liu and Allen Braun, neuroscientists at the US National Institute on Deafness and Other Communication Disorders in Bethesda, Maryland, and their colleagues had 12 rappers freestyle in a functional magnetic resonance imaging (fMRI) machine. The artists also recited a set of memorized lyrics chosen by the researchers. By comparing the brain scans from rappers taken during freestyling to those taken during the rote recitation, they were able to see which areas of the brain are used during improvisation. While improvising the rappers showed lower activity in part of their frontal lobes called the dorsolateral prefrontal cortex and increased activity in another area, called the medial prefrontal cortex. The areas that were found to be 'deactivated' are associated with regulating other brain functions. "We think what we see is a relaxation of 'executive functions' to allow more natural de-focused attention and uncensored processes to occur that might be the hallmark of creativity," says Braun.

#### **Source**

Liu, S., et al. *Sci. Rep.* <http://dx.doi.org/10.1038/srep00834> (2012)

One of the hardest things is finding good producers. I've been around a lot of producers but it's finding the producers that I want to work with. I've found a few recently who are just phenomenal, I can't produce music the way that they can produce music. I feel like if you're good at something you need to master that before you go on to doing something else otherwise you haven't fully utilized what you have to become the best.



*You were telling me that you've teamed up with some filmmakers because you think that creating a visual story enhances the story in your rap. Tell me a little bit about how that came about.*

**Bhishma:** I contacted a film school called MetFilm School. I had loads of people email me back saying, "Yes. We want to work for you. We want to work for you." I went through the showreels and there was this one director, his name is Richard Taylor, and his showreel was just phenom-

enal. From there I just said to him, "Hey, do you want to do some work?" He said, "Yes. Why not?" We're from two different worlds he was able to tap into rap audience and I was able to take what he has in his mind or what he's seen and put it together. It's like two different worlds coming together which is just amazing because he sees my vision and I see his vision. I know where he wants to be. He knows where I want to be

*So your creative work involves a collaboration with at least three other people including a musician to compose the soundtrack, a producer who's going to mix, edit and your videographer who is going to create a movie.*

**Bhishma:** Yes. It involves plenty of people definitely because even if we look at it from beginning to the end sometimes it might not just be one producer making the actual beats. It might be two producers and then when they send it over to me the person that mixes the music may mix the music. I send it to the producer. They say, "Maybe you could change this or that." Then it gets sent back to them and then when the video shoot comes it's not just Richard, he's the director that comes. He'll come with, maybe, cameraman, a lighting person, and a few assistants. There's a really small team but is a solid team. I don't think you need a thousand people in the team to make it a success.

*What you say is really interesting because we've had this conversation about imagination. What you're telling me is the creative product you make combines imaginations of several people, all feeding off each other.*

**Bhishma:** Yes, 100%. I think that imagination is crazy. I think you can be as imaginative as possible....I feel like everyone has this creative world that they're already in. I feel like I'm such an imaginative person. In my music you can tell that I'm not just telling you about my area. I'm taking you through a very personal tour of my area. You're actually there with me. You can see and feel everything from where I'm seeing.

I think imagination is so fantastic but I think it also comes down to being like a child in the sense that children are naturally so imaginative. I don't know if I'm a child that never grew up but at the same time, I feel like you always have to have that imagination factor in order to be a fantastic artist or director or producer. You have to have imagination.

*What does an imagination actually mean to you? What is it?*

**Bhishma:** I think imagination comes from things that you feed your mind with. As crazy as this sounds, I watch a lot of cartoons. I love Japanese anime. Imagination comes from there. Even before I was watching cartoons or watching anime, imagination just comes from what's locked inside your brain. I feel like there's a part of your brain that has just this whole imagination factor. I think you can get imagination from walking in the park, just breathing. Putting your phone away and walking around relaxing. Imagination comes from anything because you can see a man running and some people will see just a man running but other people will see something completely different. People see movie scenes off of that. People see anything, a dragon chasing him. There's so much stuff. I think imagination again comes from not growing up and from letting go... not stopping it when it comes.



I think my mind is still like a child's mind in the sense of imagination. Not the way I think or the way I talk but my imagination itself. That's why I get along with children so well because we can have a conversation for hours about something that doesn't really exist. We could be talking about dragons. They don't exist in real life but we can have a conversation about dragons. That's just using our imagination. Imagination feeds off of imagination as well because imagination is always developing. You know how a plant grows, imagination is similar to that in the sense that your imagination is always growing. Someone comes along who also has an imaginative brain or imaginative mind, their imagination will feed into your imagination. Then you just create something and that's just wow.

**Let's connect this to your rap therapy project. Do you see what you're doing as a way of encouraging young people to use their imagination?**

**Bhishma:** Yes, 100%. I think so 100%. You can't be a part of rap therapy if you're not willing to create, and in order to create, you must have an imagination. Everybody has an imagination. It's just about finding a way to tap into that imagination. Not everybody has worked out how they can express their imagination. That's what rap therapy tries to do. Through rap I'm showing them how they can use their imagination. I'm challenging them to be as creative and as imaginative as they can be, more than they ever thought could be. That's how rap therapy works in terms of knocking on that imagination door and that creative door. Opening it up and then just letting their imagination bloom.

**So rap therapy is just a medium, a tool, a way to harness your imagination?**

**Bhishma:** Exactly. That's exactly what it is. It's just a tool to enhance a creative mind or make a creative mind more creative or someone that thought they were never creative or didn't know how to express themselves to be that creative, expressive person.

#### Other Sources of information and images

Adetoro j (2018) How one Croydon rapper is trying to deter kids from knife crime

January 25, 2018/ ARTS FEATURES, CROYDON, FEATURES, PEOPLE

<http://www.eastlondonlines.co.uk/2018/01/one-croydon-rapper-trying-deter-kids-knife-crime/>

Liu, S., et al. (2012) Sci. Rep. <http://dx.doi.org/10.1038/srep00834>



Editor: Bhishma is trying to raise £2500 towards the costs of Rap Therapy workshops in schools. If you would like to help him you can give a small donation via his Go Fund page and become part of his educational social enterprise.

<https://www.gofundme.com/raising-funds-for-rap-therapy>

**Raising funds for Rap Therapy**

£2,500 goal

Campaign created 1 hour ago

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Created 14 May 2018

BA Bhishma Asare

Creative

Thornton Heath, Greater London, United Kingdom

**Donations**

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Rap Therapy is a social enterprise that uses rap as a tool to teach and train young people to positively express. We provide a series of innovative workshops. Although it is early days for the venture, we have received tremendous support and currently have workshops in several schools in London.

Bhishma Asare, rap name 'Proph' (Instagram: @proph\_100) who has a foundation of creating music that promotes a positive social change founded Rap Therapy in early 2017. His motivation was to give young people a creative outlet that improves communication and guides them on a positive path. At the forefront of Rap Therapy's mission is our social responsibility, which is to create a community that prevents potential tragedies, through creativity, which acts as a therapeutic tool and creative platform. This is especially necessary for our youth, who are at risk of adverse cultures such as the gun and knife epidemic, which has been rapidly increasing in London.

At the end of this academic year we would have engaged with over 130 students through our school workshops. However we do not want it to end there, we would like to continue to support our young people beyond the classrooms. To do so one initiative we will be running is a bi-annual competition for students that have completed a Rap Therapy workshop. The competition will allow students to continue to practice what they have learnt at the workshop and positively express through rap. Each student will have the opportunity to enter with the approval of the responsible school and parents. There will be competitions prizes to be won.

We would like you to be a part of the Rap Therapy journey. We are crowd funding £2,500 in order to cover some early costs and facilitate the competition and provide meaningful prizes to the winners and runner-ups. All support financially as well as advice and introductions are welcomed and appreciated. To show our gratitude we would like to offer sponsors the following:



# The Edges of the Imagination: Teaching towards Reconciliation

Sean Blenkinsop



*Sean is Professor in the Faculty of Education at Simon Fraser University and Co-Director, Imaginative Education Research Group (IERG). His current work focuses on the environment, existentialism, wild pedagogies, and the imagination in education*

## Introduction

In this article I want to focus on questions and edges rather than answers. Strangely, it is in those boundary areas, where one comes up against the limits of a learner's imagination, that the interesting work of de-colonization might begin. In this special issue focused on the imagination I am going to suggest that the imagination is constrained and limited by our cultures, by the range of schemas from which we can choose, and by the bits and pieces to which we are exposed that provide the constituent elements for our imagination. The question becomes, what does the imaginative educator do when the blank spots in a student's awareness are the result of an intentional process to conceal, and the schemas they have been building to help them understand and explain the world in which they live rest on obfuscation and lies? Such is the case of the relationship between the majority non-indigenous society in Canada and the peoples of the First Nations as pointed out by the Truth and Reconciliation Commission.

There are times in one's teaching, at least in mine, where the work is not about shifting and developing understanding, pushing and deepening the sophistication of thought and the complexity of truths, but about changing the very shape and range of the students' perceptions and imagination.

I will begin by outlining a teaching situation where I came face-to-face with this challenge. This will be followed by a short re-interpretation of Kieran Egan's *Philosophic Understanding* in light of my experiences where I propose that the imaginative educator must introduce new elements of Mythic, Romantic, and Philosophic kinds of understanding in order to support the creation of new schemas that better align with the learner's search for a new more decolonized identity. In conclusion I shall return to some thoughts, or rather questions, about current challenge presented by reconciliation in Canada.

## Context: Semester in Dialogue: Reconciliation, Solidarity, and Building Alliances

The Semester in Dialogue (SID) programme<sup>1</sup> at Simon Fraser University is an innovative, full-time programme involving up to 20 senior undergraduate students drawn from across the university. It is designed to immerse students in a particular theme, and explore that theme in depth through a combination of dialogue, experiential learning and community engagement. The themes themselves are chosen by a team of instructors, in this case there were four, and the content is drawn from a mix of readings, dialogues with invited "thought-leaders" (including Indigenous activists, academics, Elders, and a few recommended allies), experiential activities, field trips, individual and group projects, and ongoing community interactions. For this particular version the frame for the programme was: "Governments, organizations and individuals in Canada are mobilizing around the Truth and Reconciliation Commission's 94 Calls to Action<sup>2</sup> to change Canada's relationship with Indigenous peoples. But what does "reconciliation" actually entail? And what does it mean to live on Indigenous lands?" (SID website). The invitation to participate was extended to both Indigenous and non-Indigenous students with the vast majority being a diverse group of the latter.

The programme itself tried to use holistic pedagogies that sought to continually reach out and embrace the complexities and challenges of this work. The varied content helped course participants to identify how the personal and the political, the local and the global intersect with their own identities at individual and collective levels and in their relationships with Indigenous peoples. Values of responsibility, respect, and reciprocity were used to guide our exploration, and the curriculum was based on principles of decolonizing and transformative learning. As the reader might guess the course was profound, complex, difficult, and rich in so many ways that it is almost impossible to put it into words.



Truth and Reconciliation  
Commission of Canada:  
Calls to Action





I will now focus on what appeared, unsurprisingly perhaps, to be the central reality of the course for me as an educator. How should I simultaneously challenge and support students who are, on a daily basis, encountering new facts and narratives that refute the comfortable truths of the 'Canadian story' in which they have been immersed since childhood and which has made problematic what they now think they know? Whom can they trust and, maybe most immediately, who are they as settlers and as people?

## New perspectives: Thinking about Imaginative Education in light of Colonization

*They come to realize that they are 'born with a past'<sup>3:205</sup> and that that past not only constitutes the present self but begins to shape the future<sup>4:124</sup>*

For most of us this move from existing only in the present to understanding ourselves as having a past and a future with all the attendant responsibilities is a confusing and exciting time of discovery. For Egan<sup>4</sup> this reflects the learner moving from a Romantic to a Philosophic "kind of understanding"; it involves a theorizing that allows learners to put the bits and pieces, the facts and experiences of their young lives into a different and broader framework. It involves a turning towards the larger world in a more systematic and grounded way. Egan sees this as a time when older adolescents begin to create more holistic schemes for understanding and making sense of things while at the

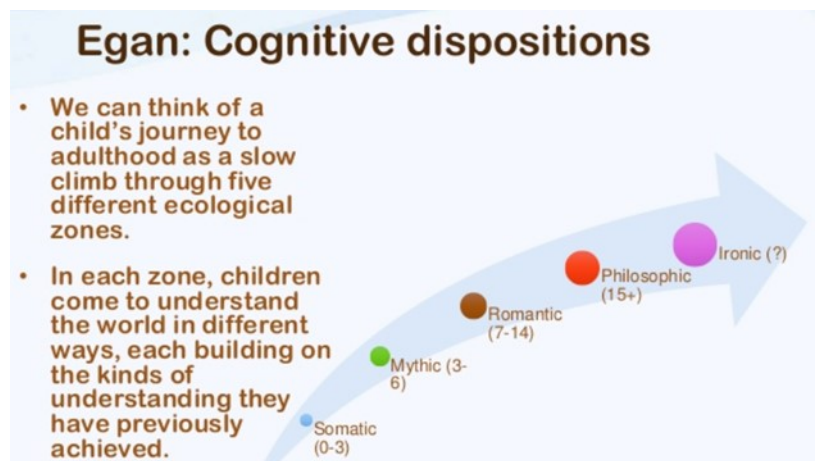
same time, have responsibility settle more clearly on their shoulders with regard to both their own lives and the realities of the world around them. In order to do this the individual must draw on their resources; what they have learned, what they have experienced, the myriad bits and pieces of their lives, and the general schemes that they are surrounded by, in both their broader and immediate cultures. For Egan, as for many other thinkers, this is a process of trying to grand-narrativize, to find security and protection in one or a few stories that allow us to make sense of our world, to situate ourselves. It also confirms and consolidates our identity.

*If intellectual security and even one's sense of identity is tied in with the general schemes one uses to make sense of the world and of experience, then one has a vital stake in ensuring the adequacy, validity, and truth of one's schemes.<sup>4:129</sup>*

But what happens when the general schemes being settled on and the beliefs they were born with are both problematic, laced with racism and privilege, resting on violence done and lands stolen? And what if those threads continue to determine who they can and can't be in spite of their coming to know? And how might the imaginative educator make sense of this educational project that requires adding to the bits and pieces at both Mythic and Romantic levels of understanding in order to help change the imagination in such a way that the scheme-building of the philosophic has even a vague chance of responding? How does one educate imaginatively in light of normed cultural ways of seeing and being that are generated from the same foundations as that which has done all this damage?

To these questions I don't have compelling answers, but what I can say is that we must, as educators, walk the same path as our students. We must seek out the facts of residential schooling, the Indian act, understand the process of colonization, and the realities of current policies. We need also to grasp the significance of Indigenous Peoples' relation with land and be familiar the magnificent resurgence in their arts. We must listen with open minds and hearts to the lived truths of Elders and Indigenous activists, artists, survivors, and thinkers recognizing that these are the stories of real people who have lived on this land for millennia. We must remember that the process of colonization has involved an immense amount of destruction and mental obfuscation blinding us to the evidence before our eyes, positioning lies as truth, and making it very difficult to encounter stories and frameworks that run contrary to the "party line."

The challenge of revisiting and revising our colonial version of history and of introducing new ways of understanding our colonial past is a daunting task. This is partially because it is not just about replacing current theoretical frameworks for better or more robust ones. From my experience this process of supporting undergraduate students requires not only conceptualizing the work at Philosophic and Ironic ways of understandings but of also recognizing that there are gaps and falsehoods in the content that gave form to their Mythic and Romantic understandings as well. Thus, the educational project is one of "backfilling" the Mythic and Romantic in order to expand the materials from which the students can then build Philosophic frameworks. To put this another way, to recognize and incorporate a Philosophic framework that understands and positions colonization as an active shaper of Canadian society requires not only the intellectual framework but also the stories of First Nations communities and the facts of residential schooling, the 60s scoop, the Indian Act, etc. upon which to build.



For the imaginative educator there is no simple way of making this happen and there will be a continual interplay and conflict between the frameworks students are generating and the new information, facts, discovered lies, and experiences as they arise. No de-colonizing process is ever complete. In this process of deconstructing and reconstructing multiple ways of understanding at the same time learners are forced to encounter and deal with a challenge to their fundamental belief systems, a profound shaking of their identity and the imaginative educator is going to have to support them as they “lean into” this work. Hard work indeed yet ultimately, I am quite convinced that this is necessary if we are really going to make progress towards reconciliation.

### Sources

1 Semester in Dialogue website: <https://www.sfu.ca/dialogue/semester.html> (retrieved Nov. 8th, 2017)

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### Editor's note

In the 19th century, the Canadian government believed it was responsible for educating and caring for aboriginal people in Canada. It thought their best chance for success was to learn English and adopt Christianity and Canadian customs. Ideally, they would pass their adopted lifestyle on to their children, and native traditions would diminish, or be completely abolished in a few generations.

The Canadian government developed a policy called “aggressive assimilation” to be taught at church-run, government-funded industrial schools, later called residential schools. The government felt children were easier to mold than adults, and the concept of a boarding school was the best way to prepare them for life in mainstream society.

Residential schools were federally run, under the Department of Indian Affairs. Attendance was mandatory for children in the many communities that didn't have day schools. Agents were employed by the government to ensure all native children attended school.

Initially, about 1,100 students attended 69 schools across the country. In 1931, at the peak of the residential school system, there were about 80 schools operating in Canada. There were a total of about 130 schools in every territory and province except Newfoundland, Prince Edward Island and New Brunswick from the earliest in the 19th century to the last, which closed in 1996.

In all, about 150,000 First Nation, Inuit and Métis children were removed from their communities and forced to attend the schools.

Throughout the years, students lived in substandard conditions and endured physical and emotional abuse. There have also been convictions of sexual abuse. Students at residential schools rarely had opportunities to see examples of normal family life. Most were in school 10 months a year, away from their parents; some stayed all year round. All correspondence from the children was written in English, which many parents couldn't read. Brothers and sisters at the same school rarely saw each other, as all activities were segregated by gender.

When students returned to the reserve, they often found they didn't belong. They didn't have the skills to help their parents, and became ashamed of their native heritage. The skills taught at the schools were generally substandard; many found it hard to function in an urban setting. The aims of assimilation meant devastation for those who were subjected to years of abuse.

In 1990, Phil Fontaine, then-leader of the Association of Manitoba Chiefs, called for the churches involved to acknowledge the physical, emotional, and sexual abuse endured by students at the schools. A year later, the government convened a Royal Commission on Aboriginal Peoples. Many people told the commission about their residential school experiences, and the commission's 1996 report recommended a separate public inquiry into residential schools. That recommendation was never followed.

Over the years, the government worked with the Anglican, Catholic, United and Presbyterian churches, which ran residential schools, to design a plan to compensate the former students.

In 2007, two years after it was first announced, the federal government formalized a \$1.9-billion compensation package for those who were forced to attend residential schools.

Adapted from <http://www.cbc.ca/news/canada/a-history-of-residential-schools-in-canada-1.702280>

# What Alfred J. Prufrock Taught me about the Role of Imagination in Learning

Theodore Michael Christou

Theodore Michael Christou is an Associate Professor at Queen's University in the Faculty of Education, where he also serves as the Associate Dean of Graduate Studies and Research. Theodore is cross-appointed to the Department of History in the Faculty of Arts and Science. Theodore's research interests are in curriculum studies, the history of education, the teaching of history, and teacher education. He has authored and edited seven books more than thirty refereed articles.



*No! I am not Prince Hamlet, nor was meant to be;  
Am an attendant lord, one that will do  
To swell a progress, start a scene or two,  
Advise the prince; no doubt, an easy tool,  
Deferential, glad to be of use,  
Politic, cautious, and meticulous;  
Full of high sentence, but a bit obtuse;  
At times, indeed, almost ridiculous—  
Almost, at times, the Fool.*

*I grow old ... I grow old ...  
I shall wear the bottoms of my trousers rolled.<sup>1</sup>*

Is it possible to foster imagination in post-secondary students without endeavouring to be imaginative as an instructor? I find it rather incredulous to think that someone cut in the mould of T. S. Eliot's Alfred J. Prufrock would care about teaching imaginatively and, even, about how imagination can be taught.<sup>2</sup> I also believe that, as the call for contributions for this issue notes, Imaginative Education is ubiquitous. Indeed, it is rare to find an educationist who would deny that imagination is a good thing (although many might value other goods above this one).

And how might we think about the imaginative post-secondary educator with some nuance? I argue that this is someone who does not know for sure what they are doing. They are lost, to some degree or another. They do not have their lecture presentations for an entire year in order - some may, but they are certain that this order, and any content therein, are subject to great revision.<sup>3</sup> Or to trash bins once they become stale or boring to the instructor. You cannot know where you are going and precisely walk to that destination in any exact way imaginatively. Because at some point, and perhaps every day, you, an imaginative human being will ask yourself what might happen if you took a different path. Or hopped on one foot. Or both at the same time.

As a first-year academic, I began work in the Faculty of Education at the University of New Brunswick on the tenure track. It was welcoming, but I was one month out of my doctoral programme and also bewildered by the possibility that I was working as an academic. A son and brother of immigrants, one cannot see that far with any certainty. I took much of the summer to arrange my books, explore the city of Fredericton, and figure out the nagging question of whether this was the worst decision that I had ever made for me and my family.

I was assigned to teach two sections of a course entitled "Learning to Learn about Teaching Social Studies and Science." I surmised that this course was actually about six different things: 1) Learning about Social Studies; 2. Learning about Science; 3. Teaching Social Studies; 4 Teaching Science; 5. Learning to Learn; and 6. Learning to Learn about Teaching. I had 18 hours to do all of this. I will admit to being unqualified to teach at least two of those things (the ones involving Science and Science Education). The students would be teacher candidates at the Primary (Kindergarten to Grade 3) and Junior (Grades 4-6) levels. These students were required to take courses in every curriculum area, including mine. There were approximately 40 teacher candidates in each section, and in 11 months the graduates would be certified to teach in the province.



Once the course began, I stumbled quite a bit, and I will admit that I was making some of it up as I went along. One evening, before class, my wife took me to a restaurant for dinner. I was wondering if I actually fully understood the difference between inductive and deductive reasoning. Dinner arrived with two of those small plastic containers of butter one receives at various establishments. Not sure how to approach the lesson the next day, I fumbled with the butter. The first had a small imprint of the digit 5 moulded into the plastic container. I wondered if the other one did as well. Turning the second over, I noted that it was also moulded with the digit 5.



I asked my wife, “Do all packets of butter have a five on the bottom?” She advised me to ask for more butter and see. I received four more butter packets a few minutes later and began turning them over. 5. 5. Of course. Then, 10. Finally, a 12. Anomalies! And a premise to begin talking about inductive versus deductive inquiry.

The following morning, I began by slamming all 6 packets of butter onto the desk at the front of the class and told them this story. By the time that I had finished telling the story, two students had left the class. Clearly, my lesson had flunked. But several minutes later, they returned and added four handfuls and four pockets full of butter to the pile. They had rushed to the cafeteria and absconded with the butter to figure out what I was alluding to. In short order, the class was humming with activity. They made a chart on the board, noting eight different digits and that there were two different butter companies involved in the business of distributing their wares in tiny plastic containers with digits moulded into the bottom and their names printed on aluminum or plastic removable tops.

Did the digits signify quality? Probably not. What then? The learning space conformed very quickly to a hub of wondering and questioning. Before the end of class, the students had taken out their cellphones and called both companies. With so many calling, a few got through. The answer to the digit puzzle: The butter companies could not tell us because this moulding happens at plants that they sub-contract for the work. Neither would tell us who those companies were. This opened up another mystery for another class.

The teacher candidates were playing with an entirely random question that emerged in the course of an everyday life: an incidental discovery you might think, but one that held potential for collaborative inquiry and social learning. Neither I or they knew in which direction they were headed. There was a random question posed out of my own lost wandering, and for one day, at least, they wandered around with me. My biggest quandary was whether I ought to stop them from raiding the Faculty of Education cafeteria repeatedly to get more data. I am still wary to offer a definition of either deductive or inductive inquiry. But I can describe what they look like in a post-secondary classroom. Somewhere, along the way of wandering, both nuggets slipped out of my pocket.

To what extent did we address the six aims that I had identified in the course? In other words, did this open-ended and unplanned approach work? In my assessment, the inquiry into the packaging of butter dissolved the distinctions that I had drawn on the basis of the course description. Students were *doing* Social Studies and Science, and this involved engaging scientifically, socially and emotionally with the world around them and holding previously unexamined dimensions of it to scrutiny. They worked collaboratively. They were not required to rely on textbooks, and they did not commit facts or figures to memory because an examination or a quiz was pending. Their motivations came from within themselves and the group: interest, curiosity and imagination drove their actions. They engaged with my wonder and they wondered by themselves, even though I had no lesson plan or a definitive path to pursue in class they found purpose and direction for themselves, continually shaped by what they discovered along the way.

We teach ourselves through our own experiences and this experience taught me that wonder is a lynchpin to inquiry. That Social Studies and Science are both means of making sense, not dissimilar fields. That teaching and learning are human endeavours that are invigorated when we engage with questions that are both curious and unexpected. “Indeed, there will be time to wonder,” Prufrock pronounces:

*Do I dare? and Do I dare? ...*

*Do I dare*

*Disturb the universe?*

*In a minute there is time*

*For decisions and revisions which a minute will reverse.*<sup>5</sup>

I learned to dare. To turn over a packet of butter, and to wonder what was on the other side. Inquiry that disturbs the universe is the only kind of teaching and learning worth engaging.

#### Sources and Notes

Image credit: Chris Ridell [chrisridellblog.tumblr.com](http://chrisridellblog.tumblr.com)

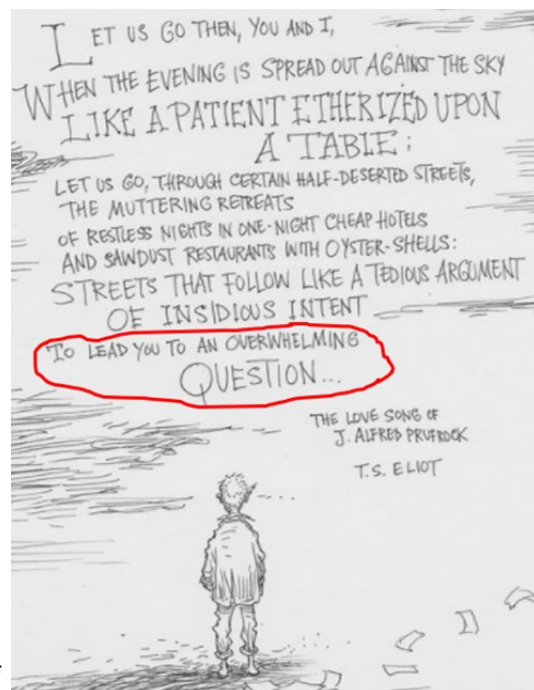
T. S. Eliot, “The Love Song of Alfred J. Prufrock,” in *The Waste Land, Prufrock, and Other Poems* (Minneapolis, New York: Doyer, 1998), pp. 1-4.

<sup>2</sup> I distinguish the poet, Eliot, whose language is evocative, memorable, and exquisite, from the protagonist of the poem, Prufrock, who is none of these things.

<sup>3</sup> This conjures the image - perhaps stereotypical - of the elderly schoolteacher who, every December, goes to a back shelf to retrieve a dusty box labelled “Christmas,” which has been useful to her for the past two dozen years and need only to be copied for use.

<sup>4</sup> I am still weary to offer a definition of either deductive or inductive inquiry. But I can describe what they look like in a post-secondary classroom. Somewhere, along the way of wandering, both nuggets slipped out of my pocket.

<sup>5</sup> Eliot, “The Love Song of Alfred J. Prufrock,” p. 2





# Learning Science through Art, Imagination, and Reflection

Jailson Lima



*Jailson teaches Chemistry in both the Science and Liberal Arts programs at Vanier College in Montreal, Canada. His interests include exploring the roles of imagination and creativity in learning at the intersection of the natural sciences and the visual arts. He also collaborates with the Department of Creative Arts Therapies of Concordia University in the Art Hives' Science Shop, which uses community art studios in Montreal to stimulate the imagination, informally build art and inquiry skills, and foster a sense of solidarity among people from different socio-economic backgrounds, ages, cultures, and abilities. He is the recipient of the 2016 Vanier College Teaching Excellence Award and the 2017 Honourable Mention from the Association Québécoise de Pédagogie Collégiale.*

## Memories of learning at school

Despite my being an exemplary student, frustration and dissatisfaction were pervasive during my school years. From my K-12 studies in Brazil during the 1970s, I can remember many courses that had no meaningful connection with the real world. As an illustration of the lack of integration with students' life experiences, I have vivid memories of studying the types of clouds in Grade 4 by memorizing a table. Although the classroom had a huge window that looked out on amazing tropical blue skies, the teacher never asked us even once to notice the clouds that passed by.

Later in high school, the content of the science courses that I took was based on rote memorization from a dogmatic point of view and mechanically solving well-defined problems for which finding the one correct answer was the norm. By relying on a “plug-and-chug” approach that emphasized the symbolic formulas and chemical equations, the sense of wonder that is possible to foster with authentic learning experiences was severely compromised. I often mistook the ideas for the symbols used to represent them: being able to read the symbols had no direct correlation with reaching the concepts they represented. Instead of integrating students' previous knowledge and real-life situations, conformity and standardization were the most important cultural values in that environment. This prevented us students from developing a more authentic view of how scientific knowledge evolves and it prevented us from understanding its intrinsic limitations.

Teachers employed a behaviourist model to achieve learning as part of a strategy based on a stimulus-response-reinforcement sequence that shaped the curriculum content and used good marks as rewards<sup>1</sup>. Rather than exploring intellectual tools that would have enabled the learners to engage with new forms of knowledge<sup>2</sup> teachers simply expected us to conform to the nature of the disciplines by just being exposed to them. Science was portrayed as a field of knowledge in which objective reality was supreme. Everything was presented as definite, absolute truths that were as plain as black and white. This approach to learning led to knowledge fragmentation in which subsequent chunks were constantly replaced with new sets of “absolute truths.” It was difficult, if not impossible, to integrate knowledge from other disciplines. The system failed to capture the richness that the practice of science entails by not recognizing the crucial role of engaging emotion and intellect into the learning process<sup>3</sup>.

It was hard for me to understand how school science could be so mind-numbing while dealing with such fascinating topics. My teachers managed to kill the joy of learning with boring, unimaginative, and uncreative teaching strategies and with predictable and pointless assessments that students perceived as mandatory—tedious work designed only to keep us busy and away from our primary interests: superhero comic books, sci-fi movies, and TV series that we watched over and over again with pleasure and anticipation. Despite our interest in science outside of school, we drudged through our courses as bureaucratic obligations that held no association with the pleasure of discovering new and exciting things.

Because of my unfulfilling experiences as a science student, finding innovative instructional strategies and assessments that engage learners in a way that makes learning relevant and memorable, became a topic of great interest to me, when I started my undergraduate studies in chemistry and decided to pursue a teaching career.



It was hard for me to understand how school science could be so mind-numbing while dealing with such fascinating topics. My teachers managed to kill the joy of learning



## From traditional to imaginative: Connecting art and science

Relevant learning experiences that engage students academically and emotionally are transformative processes whose premises involve a high degree of coherence and alignment across several dimensions: students' pre-knowledge and interests, instruction, curriculum, and assessment<sup>5-8</sup>. In the last decades, an alternative approach that elicits the use of mental models in science<sup>9,10</sup> to explain experimental behaviour has been shown to be feasible at any level of instruction<sup>4,11-14</sup>.

In an era dominated by standardization, innovative projects have been designed to restructure the curriculum and explore the roles of creativity and imagination in learning. Since

2010, Vanier College has been exploring the use of creativity to enhance the learning experience at the intersection of college science courses. The project requires students to creatively portray scientific concepts related to the big ideas<sup>15-17</sup> in chemistry, physics, and biology through visual arts. Expressing their ideas visually challenges learners to construct meaning outside the traditional learning strategies that emphasize logical-mathematical skills and verbal-linguistic abilities. By incorporating art, they use their imaginations, look at concepts from multi-disciplinary perspectives, share their interests, and create something that is personally meaningful, while developing a deeper understanding of the conceptual framework of the disciplines<sup>18</sup>.

This student-centred approach requires their active participation to promote their own intellectual maturity. The assessments require reflection over an extended period and provide opportunities for critical feedback and revision throughout a process in which students refine and reconstruct their ideas on how to represent scientific models via various forms of visual strategies<sup>19-21</sup>. The project's execution takes place mostly outside the classroom but with feedback from teachers from various disciplines—chemistry, physics, and art—through asynchronous dialogues via online journals. This long-term, iterative, creative project requires students' active involvement. They have to engage their imaginations and be willing to experiment through trial-and-error. They have to use their ability to integrate concepts shared across disciplines and employ higher-level cognitive domains. They are expected to assume an active role in their own learning by constructing meaning through a process that challenges the common misconception that scientific knowledge is fixed and absolute. They have to make (invent) their artefact that represents and communicates scientific ideas using a variety of media. At the end of the semester, they present their final product—both the artwork itself and an extensive written rationale that links the visual representations to the course content—to their teachers and peers, giving them an opportunity to absorb, in a multidisciplinary fashion, the richness of the personal outlooks of the whole group.

### "CREATIVE EXPRESSIONS IN SCIENCE" VERNISSAGE

<https://www.youtube.com/watch?v=Zlj5RY9eEZQ>



## Making learning personally meaningful

One pervasive problem in science education is that students rarely see themselves in their work; it is impersonal—one problem, one solution. As experienced in my own schooling, the lack of intellectual tools to promote student engagement with the course material can be frustrating and hinder the learning process. The unforgettable experience of the *Art & Science Project* provides students with an opportunity to see themselves in science, while concurrently developing a profound understanding of the materials and ideas.

Believing that images can engage humans in ways that words and numbers cannot<sup>22-28</sup> opens the door to cultivate creativity and explore play in learning<sup>29-31</sup>. Despite the remarkable changes experienced by societies across the planet in the last decades, many facets of adolescents' cultural interests remain intact. Pop culture plays a central role in driving young adults' psyches and imaginations: finding ways to incorporate superhero comic books, pop artists, sci-fi movies and TV series in education has the potential to promote science literacy to all levels of instruction from K-12 to graduate studies. Figures 1 through 3 (overleaf) show the artworks created by college science students, and the corresponding rationales can be found on the website ([artandchemistry.ca](http://artandchemistry.ca)).

Figure 1 (top): “The Michael Jackson spectrum”  
 Figure 2 (middle): “IroniC”  
 Figure 3 (bottom): “Breaking Bond”



## Conclusion

Traditional forms of assessment that emphasize control, discipline, and selection date back to ancient China and the dawn of European universities in the Middle Ages<sup>32</sup>. This pedagogy conceptualized teaching as a mere transmission of authoritative knowledge and has been the hall-mark of education. To compare teaching with Henry Ford’s assembly lines, Kvale<sup>32</sup>, uses the term “Taylorisation of learning” in reference to Frederick Taylor, a 19th century American engineer whose book *The Principles of Scientific Management* established the foundations for improving industrial efficiency.

Within the framework of this long-lived mindset of teaching as knowledge transmission, good assessments objectively measure the amount of student’s knowledge relative to the rest of the class<sup>7</sup>. The emergence of provincial and national standardized tests offers a perceived efficient and time-controlled process that fulfils the requirements of accountability throughout the whole spectrum of education participants—government, schools, and students<sup>8</sup>. The shortcomings of this prevalent approach that views grade average as the learning goal are well documented: cramming, rote learning, teaching for the test<sup>33</sup>, and the emphasis on factual memory rather than more complex cognitive tasks<sup>34</sup>. Students tend to see these traditional forms of assessments as negative, stressful, high-stake final tasks that rarely enhance learning. The situation is particularly delicate in science courses which mostly employ instructional strategies that are based on lecture, drill, and practice to help students memorize collections of facts and procedures of increasing complexity.

Authentic learning experiences place deep learning and understanding as the main goals to help students develop science literacy<sup>35</sup>. To accomplish this, there are basic requirements such as allocating sufficient time to process information, a strong teacher engagement to pass his or her passion for learning on to students, a genuine interest in students’ current knowledge<sup>36</sup>, as well as creating opportunities for them to give their input through imaginative and creative activities. It is not an easy task to move from a pedagogy loaded with unquestionable truths, based on standard orthodox, only “one right way” approaches to the material to a more flexible view that encourages students to question the value and limitations of what is being taught. Teachers need to continually strike a delicate balance between expectations, goals, and responsibilities and be comfortable to deal with material that lies outside their field of expertise and accept constructive criticism. Since mistakes, misjudgements, and miscalculations are inherent to the learning process, teachers need to tolerate them. However, this approach goes against the pervasive view of penalizing errors, a characteristic that is still engraved in the DNA of our educational system, especially in the natural sciences. Students hesitate to explore freely because they fear making mistakes. A healthy classroom culture is reinforced by the interactions that take place in it. Students need to feel safe and to understand that creative assignments are more about the journey than the destination.

In retrospect, being immersed in creativity and imagination throughout my teaching career is a result of my years of frustration as a science student. Not being able to experience the school of my dreams as a student started me on a journey to try to imagine such a thing and reinvent my practice from scratch. Enhancing the quality of instruction by providing more interactive, engaging, and rewarding lessons is pivotal to achieving a meaningful and successful learning experience. The time has come to embrace imagination and creativity at all levels of instruction.

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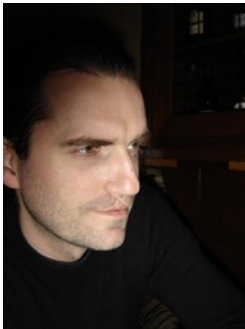
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# Imagination ... Teacher Education ... Generosity

Tim Waddington



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## How our past influences our pedagogy

Moving into a new Faculty of Education as a freshly minted professor can be a daunting experience. Perhaps it's not jumping from an airplane or even asking your first true love to the senior prom kind of daunting, but nevertheless that sort of endeavour requiring just a touch of bottle, filled (in this case) with a calm self-reliance achieved through years of academic preparation and the gauntlet of applications one must inevitably endure. Moving into the Faculty of Education at the University of British Columbia was no exception. The University is large and diverse, with a student population exceeding any publicly funded American university, and the Faculty of Education is no less complex. Enrolling 760 Teacher Candidates in the 2017-18 school year (these are students in their practicum, or 'fifth', year), the Faculty of Education at UBC is ranked first out of 63 Canadian universities and as the ninth leading Faculty of Education in the world (QS World University Rankings<sup>1</sup>). Headly stuff indeed.

Hired into the Teacher Education Office in the guise of Lecturer of Curriculum and Faculty Associate for Social Studies education, one naturally feels a certain pressure to follow the traditional patterns of the programme, surely to bring oneself and one's unique gifts, but nevertheless grab an oar without excessively rocking the boat. The boat, as such, is hardly a wreck. Rather, it operates as a sleek-hulled vessel.

What to do then upon realising that the emphases of the programme, while in no sense incorrect or even wrong-minded, bear only partial relation to what I have come to understand, appreciate and, frankly, *love* about Imaginative Education's contribution to effective curriculum and instruction? More specifically stated, how would I go about the business of supporting the Faculty's focus upon a rather left-brained conception of critical thinking and inquiry when I, in the heart of my pedagogical heart, confidently know that students' intellectual and affective domains operate inseparably in the realm of imaginatively engaging teaching and learning?

Shamelessly giving away the ending, the answer is 'quietly' and with a good deal of self-imposed irony. Ironic Understanding, conceptualized in Egan's *The Educated Mind*,<sup>2</sup> posits that any view we may adopt will be partial and inadequate in representing the whole. We may therefore speak of individual persons, events and ideas in multiple modalities, casting and re-casting them in often contradictory and paradoxical shades of interpretation and meaning, and we may, as a consequence, fluidly adopt varying views and interpretations based upon contextual, literary, utilitarian and even aesthetic purposes. "Irony strips away beliefs that the earlier forms disclose about truth and reality," concludes Egan, "and it enables their deployment with greater flexibility than was possible within the constraints of earlier kinds of understanding"<sup>2:161</sup>.

Maintaining an ironic posture - in this instance speaking to the multivariate methods and ends of social studies education in multiple, incommensurable, and sometimes ambiguous ways - I set about treading a path meant to permit students encounter with the genuine strengths of inquiry and 'critical' thinking so valued by the university while also emphasizing the engagement, intellectual and affective bridging, and abundant sense of wonder so central to Imaginative Education (IE).



## Reflections on Imaginative Teacher Education

In the interests of time and space, not to mention the necessity of avoiding spurious self-congratulation, I'll identify four things I've learned so far about connecting new teachers to Imaginative Education (IE).

The first is that student teachers genuinely love the possibilities for student engagement provided through Imaginative Education and the cognitive tools. Social Studies, rightly or wrongly, is too often associated with the boring and mundane, little more than a collection of dead facts about even deader people impressed upon the short lives of children for uncertain purposes. Student teachers come aglow considering how the Black Death and corresponding Peasants' Revolt can be made irresistible to learners through activities emphasizing 'Extremes and Limits', or that commonly read novels can be rejuvenated through a consideration of 'Transcendent (Heroic) Human Qualities' such as friendship, courage and loyalty. "Imagine you are a (surprisingly literate) farmer in small village in West Yorkshire during the middle ages," we might begin, "and strange rumors are circulating about a deadly and terrifying disease spreading North from Sussex, when suddenly ... *\*thunk\** ... ooh, there goes Robert the fletcher!..." Through the cognitive tools of IE, possibility rather than coverage becomes the catchword for understanding curriculum, and students are the beneficiaries. "Using these techniques for engaging imaginations can make students' learning more efficient and effective," offer Egan and Judson, "and can make teaching and learning more interesting, engaging and pleasurable for all"<sup>3:5</sup>.



Secondly, student teachers don't always recognize what you're modelling in terms of IE until you pause the class to deconstruct your own instruction. This may be accounted for - something I've long suspected, anyway - by the idea that to do IE really well, one must first have taught poorly for an extended period of time such that one may begin to understand its revolutionary difference-making capacities. IE provides a lexicon for both a unique conception of human development as well as a series of practical tools causing pedagogy to erupt with life.

Through the cognitive tools of IE, possibility rather than coverage becomes the catchword for understanding curriculum, and students are the beneficiaries



Lacking much to compare it against except their own shadowy memories as students and their fledgling experiences in the role of educators, it helps teacher candidates to have you press pause, slow down, and explain to them why they feel so engrossed in your seminar. Breaking up one's lecture with a slight pause and recognizable gesture to call out, "Rhyme, rhythm and pattern!" or "Binary opposite!" can impress upon students the seamless deployment of cognitive tools within IE instruction.

The third lesson follows from the second, namely that student teachers need to start small, road testing individual cognitive tools in the hopes of eventually becoming fluid users of IE. This is, one suspects, only natural. Teacher preparation programmes are intense and occasionally overwhelming situations. Teacher candidates are bombarded with learning theories, developmental theories, and libraries of curriculum content, not to mention the buzzwords and pet projects of literally dozens of presenters and guest lecturers in a very short window of time. What's worse, in such intensive and time-condensed programs of professional development, they are afforded precious few moments to sit, reflect and coalesce their own thinking. At the beginnings of their careers, new teachers are - probably rightly - obsessed with the 'What' of teaching, long before they even get to the 'How' or (dare we wish it?) the 'Why'. Imaginative Education, it seems, connects the 'How' to the 'What' in innovative and emotionally engrossing ways. Considered in this light, starting small by asking "What mental images would really assist our understanding here?" or "How does this finding help us refine our understanding of the concept?" is hardly nothing but rather may orient the future growth of teacher candidates towards positive outcomes we cannot yet predict.

Finally - at least in this space - I should probably admit that Imaginative Education, its "Kinds of Understanding" and "Cognitive Tools", are best not necessarily held in opposition to 'critical' thinking or inquiry-based education. In truth, my short time at UBC has been one of finding useful connections between IE and the work of my many brilliant colleagues, while in small ways encouraging those same others to occasionally think through their own interests using the IE lens. In truth, my own sense of ironic limitation should have told me as much would be the result. While I still may not be convinced that 'critical' thinking is profoundly distinct from plain old 'good' thinking, I am appreciating more and more how the cognitive tools of IE can generate stimulating spaces for inquiry, for distributed and self-regulated learning, and yes, for critical learning challenges to become increasingly engaging, memorable and, ultimately, satisfying in the lives of students. Perhaps it was Elliot Eisner's forward to Egan's *Children's Minds, Talking Rabbits and Clockwork Oranges*<sup>4</sup> that states this best, where he describes Imaginative Education as providing a "generous" conception of students, of curriculum, and of educational goals in a more global sense (x). Imaginative Education doesn't reduce pedagogy to a method but rather situates method into a theory of mind, epistemology and human development. It is, finally, as *generous* a concept of education as I have yet encountered.

## Generosity is an Educative Value

Teaching as storytelling is the central cognitive tool of Imaginative Education, *sine qua non*. And like all good stories, my own included, we will find an emotionally satisfying ending by resolving any binaries and seeking to sooth the conflicts established in the beginning. For me, *generosity* is that resolution and will remain at the heart of the deal for at least the next little while. With a generous view of students, of the possibilities available within curriculum and instruction, and even the preconceptions with which I arrived at my new home at UBC, I have begun that intrepid path towards new professional understandings with a sense of hope and promise. It is, upon reflection, that same generosity which has been shown towards me by my more learned colleagues in the Faculty, amongst whom I am quietly at work, attempting to radiate a fresh sensibility regarding the power and potential of imagination and student engagement as an appropriate focus for teacher preparation.



Imaginative Education....as *generous* a concept of education as I have yet encountered. Elliot Eisner

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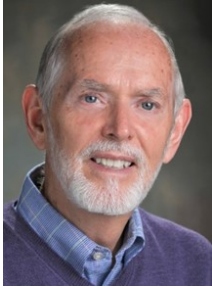
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## Foot Soldiers in the War on Cliché

Kieran Egan



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Anyone involved in higher education recognizes the deep pleasure of reading a student’s work that shows engagement with the subject, novel ideas and flexibility of mind in expressing those ideas, and a playful ironic approach. Nearly everyone in higher education regrets that this experience occurs so rarely. Too frequently we read conventional ideas, expressed conventionally and rather dully, literal responses to the challenge that stimulated the writing, delivering cliché upon tired cliché. And, often enough, even these minimal standards are not achieved. We are not asking for the Muse of Fire, but a spark of imagination can have us weeping with gratitude. A fundamental question for all of us working with students in higher education is, *what can we do to increase desirable flexibility, imagination, and creativity in higher education for students and academics/faculty?*

First, it might be useful to recognize that expressing imagination, creativity, flexibility and novelty are not at all, nor in any degree, incompatible with learning effectively, accurately, and being correct. It is often assumed that imagination is an enemy of effective learning, that it represents a distracting, mind-wandering, free-floating, and undisciplined capacity. This assumption is a result of a long battle, which the ancients called the war between philosophy and poetry, and more modern combatants have described as a conflict between imagination and rationality. The assumption of many articles in this volume is best expressed by William Wordsworth as: “Imagination is . . . reason in her most exalted mood” (*The Prelude*, Bk. 14, line 192.)

Imagination, which in truth  
Is but another name for  
absolute power  
And clearest insight,  
amplitude of mind,  
And reason, in her most  
exalted mood.

William Wordsworth

That is, the binary opposition between imagination and reason seems a regrettable and confused cultural artifact, which we are better off transcending in Wordsworth’s footsteps. Reason and effective learning, that is to say, far from being distracted by imagination, require engagement of the imagination to work well. The imagination is one of the great workhorses of effective learning and the inspiration for human creativity. Equally worth mentioning, of course, is that imagination doesn’t function without knowledge and reason to give it something to work on. Knowledge with a purpose is what gets imaginations up in the morning to try to turn vision into something meaningful. Ignorance and imagination are the real binary opposites.

-IT'S WHO YOU KNOW  
-LOOKS CAN BE DECEIVING  
-DON'T COUNT YOUR CHICKENS  
BEFORE THEY'VE HATCHED  
-EVERYTHING HAPPENS  
FOR A REASON  
-ACTIONS SPEAK LOUDER  
THAN WORDS  
-BEGGERS CAN'T BE CHOOSERS  
-WHEN IT RAINS IT POURS  
-TIME HEALS ALL WOUNDS  
-LOVE IS BLIND

The phrase ‘the war against cliché’ is taken from Martin Amis’s book of critical essays of that title, in which he celebrates James Joyce as one of the great heroes of this conflict. Joyce battles not only against the clichés of the pen, but also the clichés of the mind, and the clichés of the heart, from which, of course, those of the pen emerge. It is the mind-manacles and the sterile heart that lead inexorably to cliché-ridden writing. So we should expect writing exercises that focus on correct forms of expression while ignoring the source of crabbed and incompetent writing in cliché-ridden minds and hearts, as unlikely to deliver the goods of effective writing. The struggle is to raise ourselves above the banality of second- and third-hand ideas, thoughts, expressions, and feelings; what the critic Frank Kermode calls ‘used thinking’, with the implication that it has been used too many times to be any longer stimulating. If we are to become foot soldiers in the war against cliché maybe we may need first to escape from cliché’s prison camps of mind and heart—which is why Imaginative Education constantly

emphasizes the feeling component in any topic we wish to teach successfully.



Easy to write, of course, but when one goes into class to teach a topic that one has taught nineteen times before, making it new and fresh is a bit of a challenge. The help offered by Imaginative Education is tied up in those ‘cognitive tools’ that are referred to throughout this issue of *Creative Academic Magazine*. The whole set of tools identified and described on the IE websites ([www.ierg.ca](http://www.ierg.ca) and [www.educationthatinspires.ca](http://www.educationthatinspires.ca)) and in other articles here can help us think differently and relatively painlessly about any topic. And we can do so in ways that make it easier for us to enable students to see the topic as fresh and engaging—because re-thinking it via those tools enables the teacher to see it afresh as well.

What vivid images are part of the topic, what heroic qualities can I identify, how can students’ agency be engaged in it? Answering any of these questions, and deploying the appropriate ‘cognitive tools,’ can suggest ways to escape the conventional, and consequently tired, ways we might have come to think of it. And those cognitive tools are really quite readily to hand in most cases, just a short stretch of the mind and heart that can enliven for us and for our students any topic we might be teaching. You can find thirty or forty ‘cognitive tools,’ any one of which can provide a new dimension or perspective on your current teaching topic, and combining any two, or three, or more can enrich your own perspective and bring it more engagingly to students. (See “Tips For Imaginative Educators [www.educationthatinspires.ca](http://www.educationthatinspires.ca) or [www.ierg.ca](http://www.ierg.ca) “Teacher Tips”)

And, remember, if the foot soldiers falter, you can always call in the tank of irony. Irony is the great dissolver of cliché. Irony is the distance between what is said and what is meant. It allows us to point out ways in which literal and the clichéd language let meaning dribble away and weary both teacher and student.

I find that habitual use of irony in my classes saves me from going nuts or being bored and boring and spices up the students’ experiences. Initially, of course, it may cause puzzlement to some, and you can tell immediately the students whose eyes light up with the recognition that the game’s afoot—as Sherlock Holmes put it. And the game for them is to work out what is meant and how the meaning is different from what is said. After years of dreary schooling, some unfortunate students will be unfamiliar with irony, and will conclude either that you are mad or that they are missing something. In a short time, though, and with the help of their more alert fellow-students, even the most cliché-laden and literal students will begin to recognize that irony is generating a dimension of meaning they had been missing out on.

If, indeed, imagination is reason in its most exalted mood, irony is the mood of the imagination. I was going to quote the claim that irony’s guns point in all directions, but realize that I have over-indulged what was initially intended only as a brief metaphor about foot soldiers, which has led to the easy use of war, battles, tanks, etc. The metaphor of warlike language is, of course, inappropriate, but the deadening effects of clichés of language, mind, and heart are enemies of education, and the metaphoric shift is fairly easy to make, and I hope you’ll forgive its perhaps excessive use here.

## Tips For Imaginative Educators



### The Tools of Imagination Series

This series of “Teacher Tips” is designed to introduce you to the practice of **Imaginative Education**. It is for all educators. No matter the age of your students or your subject matter, the imagination plays a central role in all human learning and intellectual development. Each of the tips below introduces a cognitive tool—or learning tool. These tools will allow you to routinely engage your students and maximize their learning. When you ignite imagination and engage emotion, knowledge becomes meaningful. Scroll down to the bottom for the LATEST post!

**Orange** • The Toolkit of Oral Language. These tools are particularly powerful with our youngest students but should be used by ALL educators to bring out the emotional force of topics. Learn more [here](#).

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**Purple** • The Toolkit of Theoretical Language. These tools reflect tools of theoretical thinking. They will engage the imaginations and emotions of students in contexts of Higher Education primarily. Learn more [here](#).

- #1 Find The Story In The Topic
- #2 Find A Source of Dramatic Tension
- #3 Evolve Mental Images With Words
- #4 Metaphor Matters
- #5 Laugh As You Learn
- #6 Engage The Body
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- #8 Seek Mental Qualities
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- #12 Stimulate Wonder
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- #14 Examine Schemes & Limits
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- #16 Take Them Out Of This World
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# **Ironic Consciousness as an Aim of Education**

**Petra Mikulan**

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## **Introduction**

The development of irony is not much considered as an aim of education, either now or in the past. In what follows, I would like to consider the development of irony as an appropriate educational aim. Irony carries a lot of baggage in the realm of academia. As a pursuit or consciousness reserved only for the keenest minds of the Western academic tradition (most of them white men) it has come to symbolize elitism and exclusion. But, it has also been employed as a way to challenge and subvert the Western grand-narrative tradition that seeks timeless, consistent, and systemic transcendental truth. Like a dash in punctuation, irony is intriguing for it represents the riskiness of believing in absolutes; taken as a metaphor, a dash in punctuation can represent the notion that our knowledge is nothing but an agreed convention in a specific time and place with a specific purpose. Irony however, Kierkegaard claimed, “has no purpose, its purpose is immanent in itself, a metaphysical purpose”<sup>1:273</sup>. Its sole purpose seems to be in its ethical force, because it is by “means of irony” that one can become liberated from the constraints imposed “by the continuity of life, whence it may be said of the ironist that he ‘cuts loose’”<sup>1:273</sup>. This liberating force immanent to irony has profound implications for education, and it was Kieran Egan<sup>2</sup>, who first brought attention to ironic consciousness as an educational aim.

## **Irony as an educational concept**

Like Kierkegaard, Egan shares a notion that ironic thinkers (such as Socrates, Schlegel, Nietzsche and Rorty among others) have in history voiced “that the search for secure truth is illusory”<sup>2:146</sup>. Even the basic dictionary definition of irony supposes a fundamental ambivalence which may resist the promise of the philosophical absolute. As a form of “dissimulation” or “pretence” which feigns “ignorance [...] as a means of confuting an adversary,” it argues from within the structure or concept it interrogates, without ever fully revealing its own position or “truth”<sup>3</sup>.

In Egan’s recapitulation scheme for Imaginative Education, the theory of irony is developed as a new educational concept that ties different “kinds of understandings” with specific historic developments in language use: “oral language develops from Mimetic activities, literacy develops from oral language, theoretic abstractions develop from literacy and refined reflexives develops from theoretic abstractions”<sup>2:175</sup>. He posits that “[t]he central constituent of irony is a high degree of reflexiveness on our own thinking and a refined sensitivity to the limited and crude nature of the conceptual resources we can deploy in trying to make sense of the world”<sup>1:155</sup>. Language poses limits to our sense making and one who develops an ironic understanding, according to Egan, is always aware of these limits<sup>4:81</sup> (Egan, 2008, p. 81). As such, ironic consciousness fosters a flexible, buoyant and fluid kind of understanding of the theories and concepts students are introduced to, particularly at the higher levels of education. No longer perceiving theoretical concepts and problems as black or white, students with ironic consciousness are able to approach any issue with a sense of humour, playfulness and doubt, all along appreciating the ethical charge immanent to any life event.

## **Why irony?**

In his *The Future of Education* Egan<sup>4</sup> stresses the importance of irony being able to “release us” from focusing on the inadequacies of earlier kinds of understanding while enabling us to appreciate the contributions of each one of the earlier stages in our sense making: Ironic understanding recognizes the foundational importance of the body and its emotions in all our sense making, and the importance of the story-structuring and emotion-orienting tools of mythic understanding that we can deploy, and the importance of the energizing tools that engage us with reality and enable us to recognize the human dimensions of knowledge that come along with romantic understanding, and the importance of the philosophic searching tools that bring order and pattern to our understanding.<sup>4:82-3</sup>

So why irony? As a form of consciousness, irony enables students to be flexible thinkers, able to hold “that multiperspectival congregation of views in the one mind at the one time. It’s an intellectual homecoming”<sup>4:83</sup>. Students with ironic consciousness feel at home in being insecure in knowing and experiencing the world that irony brings along. They appreciate the great game they are playing in searching for truths, absolutes, even

scientific proofs. Ironically put: The ironist is not going to hang or burn people or starve populations through a lack of the imagination that comes with irony's recognition that ideologies or metaphysical schemes are products of an intellectual-ordering tool kit out of control. The controller, the modulating tool of our mature intellectual life, is irony.<sup>4:83</sup>

## Ironic thinkers in the history of education

While Socrates is the most obvious go-to thinker when discussing the history of ironic consciousness, Christine de Pizan is another great example. Not strictly speaking a teacher, writing in Late Medieval Period she seemed to have exhibited a great deal of ironic consciousness. Facing the facts of her subordinate position in patriarchal notions of femininity, she found herself all alone, writing an educational book for women, teaching them about the origins of ideas, certain truths and scientific inventions. If I was to give an example of ironic understanding as is conceived by Egan, I would say that her *The City of Ladies*<sup>5</sup> first published in 1405, encourages us to recognize all of the kinds of understanding within Egan's conception of Imaginative Education. She sets out to find opposing virtues, continues with inventing the most fantastic heroic women, all the while ordering and distinguishing the different parts of her story into an abstract conception and defense of women's rationality. At the same time, she posits herself as devoid of any knowledge. Performing both the master and the slave, while subverting this dialectic with buoyant playfulness; transgressing time and space, fiction and reality. What I find most intriguing in her rhetoric is her insistence on questioning the patriarchal system from within. She does not set out looking for some alternative femininity or sexual economy but uses the inner logic of the patriarchal system to expose its limited perception and sense making.



## An example of utilizing irony in teaching

I was recently teaching Rousseau's *Emile*<sup>6</sup> to undergraduate students. Going over the historical period of his life and the juicy events that shaped his theories, we then discussed both Emile and Sophie. After the discussion, which was already somewhat heated due to the objections to his theory on Sophie's education by the majority of my women students, I divided the class. Both sides of the class had to pretend they wrote Emile (and Sophie), but they wrote it as a woman Rousseau. One half had to argue their Emile as a woman who agreed with the subordinate position of women's education and the other half argued as the radical opponent of such subordination. The debate was definitely heated. From anger to laughter, the students had a lot of fun performing as a woman Rousseau. What I tried to foster with this exercise was the dispersion of point of view, as well as a speculative and an imaginative approach to reading theory. From there, we moved on to reading Catherine Macaulay's response to Rousseau's Emile in her *Letters on Education*<sup>7</sup>, first published in 1790. As a well-articulated critique, her text served as another point of view. We contrasted my student's arguments, coming from their point of view as millennials with those of Macaulay, deeply imbedded in the historical period just after Rousseau. This encouraged yet another level of reflexivity in their own thinking, as it pointed to the social, cultural and historical constraints imposed on their own thinking processes. And as it befits irony, as one student pointed out, how ironic is it that so many of the students' arguments and critiques against the position of women today, aligned perfectly well with those of Macaulay, some 200 years ago?

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## Image credit

[https://www.brooklynmuseum.org/eascfa/dinner\\_party/place\\_settings/christine\\_de\\_pizan](https://www.brooklynmuseum.org/eascfa/dinner_party/place_settings/christine_de_pizan)



# Imaginative Education, Online Teaching, Moodle and Me

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## What's Online IE?

Today I was genuinely stuck for an answer when asked for quick advice about how “to do” Imaginative Education in online teaching. It came as a question from an experienced colleague who teaches graduate courses online. She likes to be creative in her teaching just as I do, and knows of the Imaginative Education (IE) approach (<http://ierg.ca/>). Like me, my colleague works in Moodle using the “tried and true” format which is the usual set-up for online post-secondary courses. Online courses typically feature readings, discussion forums, written assignments, and sometimes oral presentations. Her question about IE was a hurried “by the way...” to close a routine phone call about administrative procedures, and to invite further conversation. “Hmm... Let’s sit down and talk for an hour or two over curriculum and coffee the next time you are in town,” I blithely replied. I was well-aware, however, that there is no instant formula for implementing IE in online teaching. An hour or two would be a slightly optimistic estimate of the time it would take. I am going to attempt a brief, written response to this question here based on examples from my own teaching online in post-secondary Education courses.

Inspired by the thinking, writing and practices of Kieran Egan and Gillian Judson,<sup>1,2,3</sup> Imaginative Education is a pedagogical passion of mine. This methodology embodies thoughts and feelings about teaching that run close to my core as a teacher and warm my blood as a lifelong learner. Imaginative Education approaches make learning and teaching not only fun, creative, and engaging, but they make it last. Mainly, they help educators like me teach according to Erickson’s<sup>4</sup> reminder: “Students learn what they care about and remember what they understand.”

My muses for the Imaginative Education approach are Kieran Egan and Gillian Judson, both of Simon Fraser University and Co-Directors of the Imaginative Education Research Group (IERG). Their scholarship combined with the work of the larger IERG community offer an engaging and comprehensive framework for this original methodology (IERG website: <http://ierg.ca/>). Resources, articles, and discussions by IE educators feed both the emotional and intellectual engagement of educators, teachers and student teachers with numerous stories, explanations, and lesson plans for implementing an imaginative education approach in one’s own teaching. How many times have I visited that site over the years for ideas, lesson plans, examples, and inspiration?! (A new source of inspiration is Gillian’s blog for educators PreK-Post-Secondary imaginED: <http://www.educationthatinspires.ca>)

What seems so right about IE is the underlying principle about learning and teaching that it embodies. The originator of IE, Egan explains this well: “All knowledge is human knowledge; it grows out of human hopes, fears, and passions. Imaginative engagement with knowledge comes from learning in the context of hopes, fears, and passions from which it has grown or in which it finds a living meaning.” (<http://ierg.ca/>)

## Implementing Imaginative Education OnLine

Trying out Imaginative Education (IE) in online teaching is a “pet project” of mine. I have been whittling away at it without complete satisfaction for an eternity, bravely trying to bring the excitement of the storied approach of IE to online teaching one step or “cognitive tool” at a time. I should have an immediate reply up my sleeve to the question of how to “do” IE online. I have been working away at this for almost a decade so as to reap the benefits of IE - that is, to simultaneously evoke students’ feelings, imagination, and attachment to subject matter all the while helping them sharpen their understanding, analysis, memory, and application of the topics and skills they are studying during the online graduate Education courses and faculty training workshops that I facilitate. I am also aware that in the process of assisting them to use the cognitive tools of IE (story, metaphor, compare and contrast, philosophic thinking, irony and humour) that they are developing tools for their own teaching.

Full implementation of IE in online teaching has proven to be the proverbial “tall order” for me to fill. Online teaching and learning are largely asynchronous activities. Discussions and participation by students and teachers generally happen “around the clock” at different times without much face-to-face contact amongst students and teachers. We usually do not “see” and “hear” each other in “real time”. We are not able to perceive and benefit from eye contact, facial expression, laughter, and gestures that give us clues about when there is understanding or confusion. And the type of academic talk used in online discussions is a “new hybrid” of conversational, “light” talk imbued with the more serious intentions of academic discourse. This “combo discourse” is not entirely like traditional post-secondary academic talk. Educators who research and explain social presence theory related to online teaching and learning<sup>5,6,7,8</sup> provide excellent discussions of these features (some might call them the “negatives” or “lackings” of online teaching).

I like to represent the IE approach visually for teachers in this way - the heart and mind speaking to each other, feeling, thinking and learning together. These dual human superpowers - emotion and thought - enlist all the forces of learners’ imaginative and cognitive efforts when they are brought together in a teaching and learning approach that embraces imagination. This is what IE is all about.



Gillian Judson recently presented a TEDxTalk about the Imaginative Education approach in Vancouver in October, 2017 <https://www.youtube.com/watch?v=loIZyzPVgrU>. In a fleeting eight minutes she brilliantly illustrates how story and other common IE “thinking tools” are able to empower students’ emotions and understandings to “make lessons stick”.

Isn’t this the type of creativity that we want to tap into in our teaching, particularly online? Lessons in Moodle and our other online platforms can seem “two dimensional” at best, engaging mainly the brute force of student determination and “time on task” in efforts to get through and digest the readings with some time left over to converse about those readings in the “discussion questions” or forums.

There typically have been few visual cues in online courses - save for the occasional “smiley face” inserted by a playful classmate to explain the intention of a rueful comment. One blessing is that the academic readings are usually readily accessible via links to scholarly articles online, and we do save on the commute time to campus. I dare say that more still needs to be done to make online courses, teaching and learning “imaginative”.

However, there are online instructors like me who are making inroads into bringing imagination and creativity to online teaching. I will illustrate with a few examples from my recent teaching online of a graduate course about the foundations of adult education - EDUC 6323/The Foundations of Adult Education.

## An Imaginative Approach To OnLine Teaching: EDUC 6323

I am fortunate at my current university that a virtual classroom with all the bells and whistles of audio, video, whiteboard, and “share” features is readily available in each online classroom. Let me admit that I would really not like to teach online anymore without this robust virtual classroom called “OmniJoin”. It enables me to e-meet with students once a week. It gives us a place to talk about the concepts and ideas, procedures, and assignments of the course in an “almost face-to-face” way. After our first meeting students seem so much “more at home” in the class. Maybe it is because they have been able to put a face and voice to their instructor, and have figured out that she is “approachable”. These virtual e-meetings have eased the way in my bringing some of the emotional and intellectual engagement of Imaginative Education to my online teaching.

Take, for example, the conversations that I have had in that recent Foundations of Education course with my Master’s students online. I have been able to bring the power of “the story” of our heroes and heroines of adult education to our activities there through our virtual OmniJoin meetings - most students do join even though it is not required. Before the first e-class, I ask students to choose one of the educators that they have met in our course readings - perhaps Paulo Freire who brought education to the masses in Brazil; or, Lev Vygotsky, Myles Horton, or Violet McNaughton.

When I ask each person to research one of our heroes of adult education and to present him/her during our e-meeting, they know I am looking for those “tidbits” of information, achievements, qualities, and contradictions in their lives that will inspire a sense of awe about the marks these heroes have left in the field of adult education. My students share photos and regale us with the adventures, travels, service, exiles of these educators who have gone before them. Some share a brief video clip or ancient radio interview of these adventurers, or an illustration from a newspaper from the times. These Imaginative Education “touches” are an excellent “jumping off” point for our discussions about bringing education to the public. They breathe life into the persons and field that my Adult Education students - my educators and “educators-to-be” - are striving to know and contribute to in the future.



During the next OmmiJoin e-session in this particular course, we tried out the Imaginative Education tool of metaphor and simile. We chose the metaphor of cooking to discuss and analyze the work of the adult education heroes we had met last time. Some of my students were nutritionists and nutrition educators; others were in health care; everyone liked to eat, and most liked to cook. Well, we all agreed that none of our “education heroes” would recommend fast food! It was interesting - and, I dare say, memorable - to explain Paulo Freire’s work in bringing literacy to the masses in Brazil via the cooking metaphor. Knowing of his passion for bringing reading and writing to all according to the topics and knowledge of their jobs and everyday lives, we decided that he would gather local ingredients and foods prepared by the people themselves with the right balance of nutritious ingredients and spices according to each village’s tastes.

I could go on and on here about how we “do” Imaginative Education in our online course - about how we take a look at relevant cartoons and discuss the irony and contradictions in certain educational movements; about how we philosophize and develop the “big story” of the educational concepts we have discussed, attempting to bring each of these “meta-narratives” together in an outline for a brief TEDx Talk. There is more to be explained about teaching online with Imaginative Education. And more to be done! But I will leave that for future conversations.

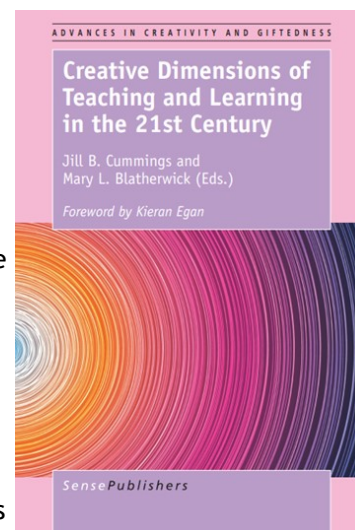
How do I make the Imaginative Education approach to online teaching and learning a reality in my virtual classrooms? One “cognitive tool and step” at a time. Does it make a difference? It does to me - and my participants, I believe. Imaginative Education enlivens our discussions and brings meaning and analysis to our activities together online. It provides an engaging framework for thinking about knowledge and content - a framework that educators in my courses are learning to use and will take to their own learners in their future teaching. I imagine that through these activities and the intentional use and practice of the thinking tools of IE - story, humour, metaphor, philosophical thinking, and irony - that my students will become more engaging educators themselves.

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Jill’s most recent book edited with Mary Blatherwick is called, ‘*Creative Dimensions of Teaching and Learning in the 21st Century*’ Sense Publishers. <http://tinyurl.com/y9crsv4g>

*Creative Dimensions of Teaching and Learning in the 21st Century* will appeal to the many educators across disciplines who want to develop teaching practices that promote creative and critical thinking. During our extensive experience in teacher education we have experienced “first hand” the need for a current and engaging scholarly text which will facilitate critical discussion of innovation in teaching, as well as share a wide range of creative approaches and practical strategies. Creativity and critical thinking are 21st century challenges for educators. They are addressed in this book by educators who have designed and implemented solutions that have worked with learning groups at every level of education. In the thirty-five original chapters that follow you will hear from experienced educators - mainly from across Canada and the United States. They focus creatively on conceptual and practical solutions for contexts ranging from mathematics to music; aboriginal wisdom to arts education; and, social justice to STEM. These approaches and projects facilitate deep learning connected to issues vital in education today - engagement, creativity, identity, relevance, collaborative learning, dynamic assessment, learner autonomy, multi-modal literacy, sensory learning, aesthetics, critical thinking, digital tools, teacher education, online learning, and more. As editors, we have invited contributions by experienced educators and researchers who share their passion for teaching and learning in a collection that critically examines innovations in today’s K-12 schools, post-secondary programs, and adult and community learning. To teach creatively the educator needs to think, discuss, and act creatively. By examining, discussing, implementing and adapting the approaches presented in this book, we believe that you as educators will develop your own creative thinking and pedagogies. And your creativity and innovations will transform teaching and learning in the 21<sup>st</sup> century. - Jill Cummings and Mary Blatherwick (Eds.) <http://tinyurl.com/y9crsv4g>





# Unclipping Research Presuppositions

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Working in a small, teaching-focused university means I get to see my students many times throughout their university career. This works to my advantage because I am privy to their wide-eyed, first-year experiences, the intermediary quandaries and struggles and, at the end, the challenging of merging all their learning together to completed capstone courses like the “Undergraduate Research Project” class. Prior to this culminating activity, I teach a 4<sup>th</sup> year “Advanced Research Methods” class where they are asked to come up with a primary research plan of their very own. This is a massive task for them, but what I find the most challenging is coming up with a way to cultivate the courage and confidence to move beyond the preconceived notions of their research topics. I aim to provoke them to move beyond the notions that they already *know* the topic and just need a method to prove they are correct. This is a common research stance, because it is much more difficult to engage with uncertainty than live with solid, unquestioned facts. The students may feel uneasy, because after four years of post-secondary education, during which topics and issues have been stated with much certainty, they are now being asked to question everything including who *they* are and what they *bring* to their research field.

It's our first class of the term. We are all still beaming with energy from the sunny, restful summer and spend the first few minutes catching up. Finally, we get to the logistics of the class; their end-of-term task, a proposal for their research project. The excitement about research is tempered by my warning that there are many research holes they may find and fall into. With that warning I begin walking around the classroom handing out a paperclip to each student. They look at the clip, then at me, then at the clip again.

“Before you decide on a research question, and dive into the literature, we are going to learn how to *nurture* our focus and attention—with a paperclip”

*Normally, by the time we reach adulthood, we find it difficult to bring our whole selves to any task. The complete absorption that small children demonstrate in play and in learning language gives way in later childhood and adulthood to a mind full of distractions, associations and worries. Yet our powers of absorption never quite disappear... It can be strengthened...*<sup>1:10</sup>

I grasp the paperclip between my fingers, hold it up to the students and slowly say: “Be *one* with it. But be warned—there will be images, thoughts and *many* distractions that will be vying for your attention”.

*Distractions from thinking are fascinating liars. They don't announce themselves as distractions at all. They slink into our consciousness, wolves in sheep's clothing, disguised as our very own thoughts*<sup>1:36</sup>

I say, “Acknowledge these distractions, let them go, and bring your attention back to the paperclip; *trust* your ability to focus, find the wonder and *mystery* of the paperclip. Remember our friend, Marshall McLuhan, from your “Explorations of Mass Media” class with me. Remember how he asked us to be a safe -crackers, to listen and look carefully and to experience the world as fully as we can. We need to be open to careful and meaningful engagement with the world and to use *all* of our senses...”

*As we grow older, we dim down the sensory responses, and increase the sensory inputs, turning ourselves into robots.*<sup>2</sup>



I say, “Also, remember McLuhan warns us to not assume we know what is happening, rather remain alert and open to what may *actually* be happening. So instead of believing you know *all* there is to know about the paperclip, ask questions about it. Where was it made? How? Who invented it? *But* don’t answer these. Try to live with these unanswered questions”

Heads tilt from side to side, paperclips slide between fingers, metal bends.  
“OK... I’ll time you for 2 minutes. Begin!”

*[We can] create moments in life when we can withdraw into ourselves in silence and solitude...In these quiet moments, every flower, every animal, and every action will disclose mysteries undreamed of. This prepares us to receive new sense impressions of the outer world with eyes quite different than before.*<sup>3</sup>



“Ok, time is up”.

The students sigh with relief.

Now I must admit this exercise may seem ‘out there’ and I think that is why I gravitate towards it. It has so many qualities that I feel are part of an interesting educational experience: extremes, mystery, humour, metaphor and anomalies. These qualities make up important parts of my 4<sup>th</sup> year research class focus—moving away from what we believe we know to a place of openness and discovery.

*Ignorance of our presuppositions, and ignorance that our thinking is largely determined by these presuppositions, blinds us to the real nature of our disagreements...and leads us to believe that our opponents are wicked charlatans and idiots because they reach different conclusions based on the same premises*<sup>4</sup>.

I believe this unpacking of our presuppositions, moving beyond polarized viewpoints, recognizing nuances and complexities in issues and debates become increasingly essential in our current climate of instant *likes* and responses that can only be heard if portioned into 140 characters. In all of my classes we talk about our media saturated lifestyles and the tendency to retreat from dialogue with opponents. My students often lament about their media dependency and their fears of the role media is playing in shaping them. They do, however, laugh at their inability to wait 5 seconds for a website to load or the illogical sense of panic when they don’t have their phone in their hands to relieve *boredom*.

*The less we can focus, the less we receive the significance of the world—like tired readers who see the words but no longer get the sense of the text...We hasten through a senseless world with restless minds.*<sup>1:32</sup>

Although they disclosed how easily distracted they were while doing this exercise, they also recognized that they did feel/sense a deep focus; it was possible. So, asking them to focus on a paperclip for 2 minutes and ‘be’ with it is just odd enough to create a bit of an anomaly for self-reflection with the hope of cultivating and reminding them that a sense of unease is part of research, that living with an object long enough provokes a dialogue with it in the most unexpected way.

*...our distractions are never creative. They are all about ‘me’ in one way or another.... They never really break new ground.*<sup>1:37</sup>

After the exercise I go around the room and ask them to share the lingering inquiries about the paperclip. Reminding them first to fight any urge to answer the questions, we witness the collection of our abilities to create thoughtful, intriguing questions; with small moments of focus we did break new ground, we moved beyond the simple, ‘what else can a paperclip do?’ to ‘where was its material mined from?’ And ‘what impact might that have had on the people living there?’

*It is with that sort of unease and in the midst of interrogation that I find my freedom*<sup>5</sup>

For my students, the continued task of revealing their perceptions, and recognizing the complexity of relationships in their research, is essential, yet difficult—to be *one* with their research, to be *one* with self takes a bit of a trickster approach to education<sup>6</sup>. If they can ask a seemingly endless number of questions about this silly, little paper clip, imagine how wonderful their research site can be, how amazing the person they are interviewing can become, how complex the site of observation can be, how intriguing the digging into the library database can be. Wondering, pondering, questioning can be endless. They can move one step away from what they *suspect* the research field can tell them to being open to its surprising messiness and nuances of research.

## Sources

1 Michael Lipson, *Stairway of Surprise: Six Steps to a Creative Life* (Herndon, VA: SteinerBooks, 2002), The quote is from Ralph Waldo Emerson’s poem “Merlin.” Lipson, *Stairway of Surprise*

2 Eric McLuhan, “Marshall McLuhan’s Theory of Communication,” *Global Media Journal* 1 (2008): 27. McLuhan suggests that when the sensory input is dim (cool versus hot; missing information, like poetry or abstract art) that we have to do the work and thus the sensory response is strong.

3 Rudolf Steiner, *How to Know Higher Worlds* (New York: Anthroposophic Press, 1994), 23.

4 Kieran Egan, “Letting Our Presuppositions Think for Us” <https://www.sfu.ca/~egan/Presuppositions.html>

5 Maxime Greene, *Releasing the Imagination*, 113.

6 Kym Stewart, “Teaching the media with Mouse Woman: Adventures in Imaginative Education” (PhD thesis, Simon Fraser University, 2014).

# Unswaddling the Practice of Assessment

Annabella Cant



Annabella teaches in the Early Childhood Care & Education program at Capilano University. She received her PhD from Simon Fraser University in the Curriculum Theory and Implementation program with her work: *Unswaddling Pedagogies; Imagining a new beginning to the practice of Imaginative Education*. She is a graduate sessional instructor and Associate Director of the Imaginative Education Research Group at Simon Fraser University. Annabella is the initiator and manager of the *Journal of Childhoods and Pedagogies* - the online journal of the ECCE department of Capilano University. Her areas of interest include: unswaddling pedagogies; Somatic Understanding within the Imaginative Education philosophy; wonder and its pedagogical value in education; inclusive practices in ECCE; imaginative teaching at undergraduate and graduate levels; faculty learning communities.

Proposing a new lens for a pedagogical practice has been my goal for the past 30 years. Since the age of 14, when I started teacher training college at the “Normal School”, I realised that education needed a thorough wake-up call. I noticed that all the lessons and examples of practice that I was being taught, focused mostly on everything except children’s actual needs, desires, or competencies. It was during those first school experiences that I decided I would not be brainwashed into accepting something that was already broken. The educational system was broken in a trillion pieces, in my mind. I took on the challenge to move away from the models I was given and headed on a journey to rearrange the pieces in new, unique shapes by acknowledging the children, with all their complexities.

And this is what I am still working on today.

The theory of Imaginative Education found me in the early 90s and it has never let me go. It has been my close advisor and inspiration. It gifted me with a language for all my thoughts and instincts that I was fighting to express to others. It is still within me, during the writing of this very piece. Today, I am a professor in education and here is a story that shares how imagination embraces me still...

*A fresh, new day. The classroom, filled with third year students, gathered for assignment presentations. Everybody here. Everybody, **unready** to get up in front of the class and present to us their knowledge to us. I decide to walk around the tables, as I usually do before each class. Risky move due to the time-crunch. I can never fit all presentations in the short time period assigned for them because I don’t like to interrupt the deep conversations that each presentation sparks. Regardless, I walk calmly around the class, feeling its energy; noticing students who need a word, an expression of trust, or an encouraging tap on their shoulder. They are different today; suddenly the well-cultivated relationship, the humorous atmosphere, the courage, all seem to have disappeared and morphed into a palpable distance. I start asking myself: why is this important moment of us sharing knowledge with each other, creating a fissure in the pedagogical relationship?*<sup>1</sup>

And, whenever I ask myself a big question, I get ready to answer it.

*I start imagining ways of erasing the Stress Factor (the twin of Assessment) who clearly does nothing constructive to the thinking and learning of my students. Erasing a main character in a story seems impossible. The twins seem inseparable. I need to turn to my special toolbox: the six themes of an Unswaddling Pedagogy, and see how they can inform my efforts to create unstressful assessments.*

*These themes are defining an educational practice that I call Unswaddling Pedagogy - a pedagogy that protects, feels, imagines, inspires, loves, cares, and respects students and their qualities of being in the world; a pedagogy that points to a relationship of reciprocal qualitative acknowledgement of capacities and abilities of making knowledge live*<sup>1:17</sup>

*So, how can I unwrap the stress-swaddle and detach it from the idea and reality of assessment? How can I support my students to feel less stress and have more pride while sharing knowledge? What are some of the first strategies that put reciprocity back into the pedagogical relationship during assessment?*

Relationship  
Openness  
Identity  
Movement  
Affect  
Trust





## Relationship

To make sure that the relationship built between the students and me is genuine and complex, I thrive to be fair when sharing deeply important aspects of our lives, professions, and passions. For example, whenever I invite students to practise reflective exercises, I perform them as well. I go through all the very same steps as they do. Reflection is organic and fluid, so I feel joy while repeating it.

## Openness

As a professor, I thrive to be open and flexible. Students know that they can talk to me. They also know that I have a colouring book in my office and, whenever they feel overwhelmed, they can visit and silently colour to calm down. I am also always ready with some snacks for both students or colleagues. For example, during an exam, I decided to change the core aspects of it and transformed it into one-on-one conversations with each student. These conversations, based on exam questions created by students, take place in my office - a familiar and safe space

## Identity

I welcome diversity and difference as gifts. Being aware of the uniqueness of each student is one of the pivotal elements of my practice. At the beginning of each course, I invite students to fill out an optional questionnaire with a few questions regarding their whole personhood, not only their academic one. I ask questions regarding their favourite music at the moment (then I build a playlist that we listen to during group work), their passions and hobbies (then, I benefit from their talents during the semester and offer them the opportunity to lead activities that are close to their hearts, such as: quick stretching exercises after sitting for too long; playing instruments when we need music, sharing certain technical skills, participating in extra-curricular events, sharing international knowledge, etc.). I also invite them to share features of their ideal courses, assignments, learnings; etc. As I do with the reflective exercises described above, before I collect the questionnaires, I share my own answers to the same questions.



## Movement

Movement is part of learning. My research focuses on the Somatic Understanding of the theory of Imaginative Education<sup>2</sup> - the whole-bodily learning, communicating, and being in the world. Being aware of the importance of physical setting during assignments, I ask my students to propose a class-setting that is more comfortable to them. Some lived examples are: sitting on tables in a circle; sitting on the ground; arranging the classroom as a party; decorating the classroom to create a celebratory atmosphere; holding assignment presentations outdoors; etc.

## Affect

Emotions are part of an Unswaddling educational practice. The theory and practice of Imaginative Education teaches us that “an emotional connection of the teacher to the teaching material, brings with it the opportunity and possibility for emotional engagement of the students with the material, subsequently, meaningful learning will take place”<sup>1:139</sup>. When I was a student teacher I was told to leave all emotions at the door. You can imagine how that felt to a young student-teacher who was flooded with emotions! How can I detach part of my identity

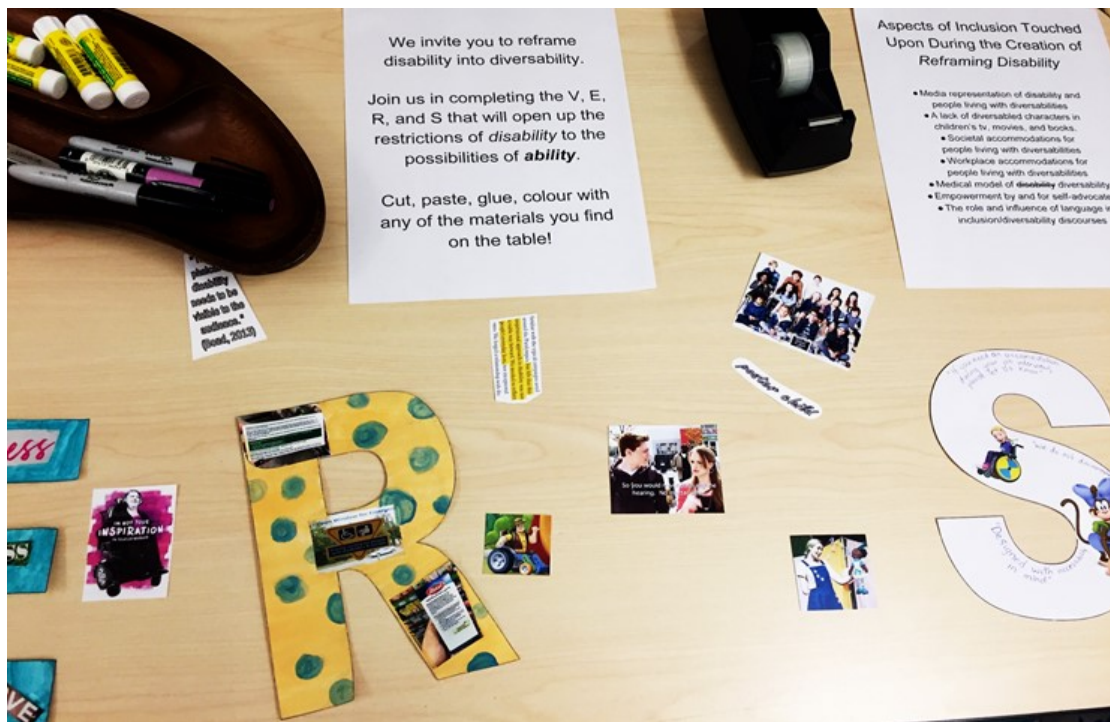
while teaching? Although it felt impossible for me, I have met some teachers who are seemingly able to abide by this rule -I have no memory of what they taught or even their names. Their lack of emotion meant a severe lack of connection.

## Trust

This last theme is epitomized by my trust in students to create their own assignments. I took this step because I trust their ability to create an assignment that will offer them, and me, a clear glimpse into who they are and what they know and also what they wish to know. Sometimes this assignment has been worth 20% of their final grade and the results have been fascinating.

How do I do it? During the first class, I prepare students by asking them to take some time and think about their favourite assignments (filling out the questionnaire from the theme of Identity, helps a lot with this aspect). In our next class, groups of students are offered time to create a complex assignment following just a few conditions such as: it has to be a group assignment; it needs to have a presentation component; it should contain one individual component; it will have to demonstrate learning in a multilateral way; etc. Then, each group presents or “pitches” their design in the most attractive way while the rest of the class “votes” and offers points. In the end I count the points accumulated for each and the most liked assignment design becomes the official one. The results have been astonishing! The complexity and student-friendliness of the assignments allowed us space and time to share genuine knowledge in an un-stressful way. I have never stopped offering this opportunity to students and I am working on developing the idea even more.

In conclusion, I would like to invite all of educators to think with these six themes and practise a pedagogy that rearranges those broken pieces into fascinating works of art. Students’ imaginations are endless! Let’s offer our students more time and space to express their imaginations and, why not, all benefit from it!



## References

- 1 Cant, A. (2017). *Unswaddling Pedagogy*. Vancouver, BC: Kindle Direct Publishing,
- 2 Egan, K. (1997). *The Educated Mind How Cognitive Tools Shape Our Understanding*. Chicago, IL, U. of Chicago Press.

## Images

Student designed assignment: Art gallery entitled *Inclusivity*

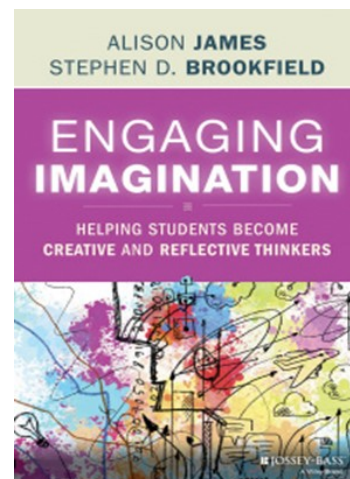
Students expressed their knowledge of inclusion and their advocacy intentions in a celebratory atmosphere with food, smiles, networking, music, and serious learning. Above is a project that invited guests to reframe “disability” into “diversability”.

Commissioning Editor:

To round off this issue we invited Alison James to share her perspectives on using and cultivating imagination in Higher Education. Alison co-authored a well regarded book with Stephen Brookfield describing a range of educational practices to engage learners' imaginations.

Engaging Imagination

<https://engagingimagination.com/>



## The Need for Space, a Fear of Freedom and Other Stories

Alison James



*Alison is Professor of Learning and Teaching and Director of Academic Quality and Development and at the University of Winchester and a former Higher Education Academy, National Teaching Fellow. Her trademark is creative and interactive approaches to pedagogy with a high level of staff and student involvement and plenty of humour to go with it. A substantial field of activity for her has been creative and alternative approaches to reflective practice and personal and professional development. In particular she has explored how students address questions of identity, self construction and personal learning narrative through these educational practices. This interest culminated in her book with Stephen Brookfield 'Engaging Imagination' Her current research interest is in play in higher education and she is writing an international collection on play with Chrissi Nerantzi, due out with Palgrave Macmillan in 2018.*

I don't remember much about my primary education, but what I do is vivid. The day in Reception when we opened the door onto the playground and fell into a huge snowdrift. The tall tv wheeled down the corridor so we could watch the Moon landings. The day that our headmaster, a beekeeper, was tending the hives in the cemetery by school. The bees swarmed all over the windows and blacked out the light in the classroom. These were the unusual, exciting, magical moments. Ever since then it is the quirky, unexpected, and imperfect that feeds my soul and sparks up my imagination.

There is something else too. Space. Mental and physical. To feel creative, open to ideas and at my best I need space around me - fields, wide vistas, big skies - and space in my head, where nothing is jostling for attention and position. I was not a child who thrived on after school clubs and lessons and arranged activities. All I wanted was to be unfettered and allowed to let my thoughts and inspire me. Working in universities I feel the same just before I take my summer holiday. The prospect of that joyous gap emerging from the mayhem, and all kinds of projects and thoughts start dancing in my head. Each is energising, exciting, and two days before leave all seem eminently feasible. Post-holiday I even put one or two into practice. Others, however, quietly disappear, submerged by the return of other constraints.

Our relationship with the space and freedom to learn can be a complex one, both longed for or feared. Several years ago Graham Barton, Academic Support Coordinator at UAL, and I ran workshops on stuckness in learning, using LEGO SERIOUS PLAY. In creating a metaphorical space where the only necessity was to build, discuss and tackle the things that hamper our learning we often found that the bricks and conversations offered a virtual world where solutions and alternatives took form. Looking at a problem in an entirely different form and context helped shift those stuck cogs of the imagination back into alignment and flow. Some participants came to us because the space in which they were working was not helping them. This was also space in the sense of boundary. One postgraduate, on an Applied Imagination MA (whom you would have thought would revel in a lack of boundaries) came to us because she had too much space, too much freedom. It overwhelmed her, and she did not know what to do with it. Her course gave her an unconstrained arena where she could choose and decide most things for herself; this actually undermined her confidence.



Thoughts about confidence and space prompt me to wonder what else affects our feelings about having the freedom to be creative. Sometimes this is guided by materials or stimuli, at others there are not structures or guides. Instead there is a clean page, symbolic or real, which you can mark in whatever way you choose or matters to you. In universities freedom and space are sometimes feared as wasteful of time or lacking in purpose. If there is not an outcome attached to the creativity or the freedom, then how can this offer value for money? This need to measure and account for is partly responsible for the way our compulsory education system crushes creativity in the young. Part of this seems to be down to the kinds of intelligence we value, what we think indicates capability and an element of conforming and conditioning. All of these can give the message, explicit or subliminal, to a student of any age - that what they want to do and how they want to learn is neither fitting, nor right. It is also not a new problem. Again, at primary school I remember a painting class. I couldn't tell you what I was trying to paint but I remember it was not turning out as I wanted. I daubed on different colours, and the more I tried to make it better the worse it seemed to get. In the end in desperation I wondered whether merging all my wet smudges together might produce the answer - even though I was not sure what that was. My paper ended up covered in shiny brown paint. What I remember most is not the failure of my attempt at art, but the action of the teacher, who called the headmaster into class and both stood over me. They made it clear that I had been very disobedient. And I was puzzled. Because in my head I'd only been trying to mend something, but the strongest message was that my painting was no good, but that I had been bad. By the time I reached secondary school I had almost entirely ceased to draw, and I certainly did not paint.

We try very hard now - or harder than we used to - to encourage students to appreciate failure, to see it as valuable and to be prepared to explore, despite our reservations or uncertainties about where we are going. We also, I hope, try to minimise the message to students that if they don't learn in the ways we advise this is down to some personal ineptitude or wilfulness.

However, some of our efforts to create positive, adventurous spaces for students - and colleagues - to learn in, still make them feel wary. It may be that they carry their own memories of educational experiences they would rather forget. Perhaps they are unfamiliar with what is being suggested and scared of trying it out. Or perhaps they have a sense that they are one kind of learner and not another. Glenn Fosbraey, Programme Leader of the BA Creative Writing at Winchester, and creative academic contributor, tells the story of his invitation to students to co-construct a module with him. Instead of Glenn deciding content, activity, learning outcomes and assessment in advance, he offered them the chance to shape it with him. I thought this was brave and exciting. He looked a little thoughtful when he told me that the students' responses to the opportunity had been very mixed - some of them terrified of either the chance or the responsibility to take those kinds of decisions. That was just one group and one experience, however it is another illustration of the work we need to do to diminish some of the fear or reluctance that can accompany creating something where nothing previously existed.



It seems therefore that we have work to do in restoring confidence and drawing out creative capabilities in staff and students. There is a delicate balance to be struck between not coercing or corraling creativity, but equally providing enough scaffolding or support to encourage experimentation. We also need to understand that when someone is creating, the most important part is not necessarily what they have made by the end, but the conversations and experiences they are having along the way. We sometimes have to undo the damage that has been done to people along the way in terms of their perceptions of themselves as creative or capable of creativity. We also need to avoid giving even the

subliminal impression that someone who has neither the appetite nor the confidence to explore their own creativity is lacking in it, or in imagination. What we do need to do is to provide the models, encouragement, spaces and the opportunities for them to come to create in their own time and their own way.

Choice is also important - one person's idea of joy in creativity may be another's worst nightmare. A final story; at our Play and Creativity Festival at the University of Winchester this year we created a Play Tent, with all kinds of activities and corners, including reflective origami, communal painting, collage, geo-mag and all sorts. We had already tested these through the previous year's Festival and knew they would be popular. What we had not tried out, was handing over our space to teachers to bring their university classes down out of their normal classrooms to teach in the Tent. What we learned was how we cannot anticipate how bringing students into new and alternative, unexpected spaces, can result in them owning, changing and enlivening the space and teaching us things instead.

Finally, to conclude this issue of *Creative Academic Magazine*, and give you a foretaste of the Google conversation that will form CAM #11B, Jailson Lima shares his thoughts on the experience of exploring imagination.

## Reflexions on Exploring Imagination

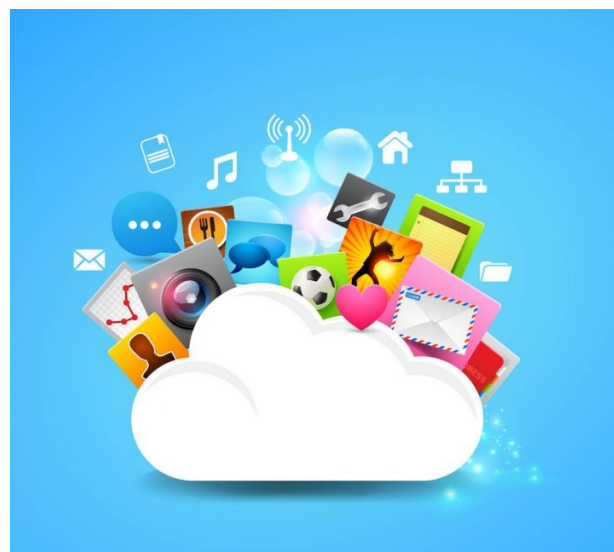
Jailson Lima

Stating that participating in the conversation on imagination provided me with “food for thought” would be a gross understatement that does not do it justice. A more appropriate metaphor would be to describe the experience as a “multiple exquisite-course banquet for thought.” The variety of visions and experiences presented in the conversation was truly remarkable and served as a powerful illustration of the infinite number of possibilities to explore in such a complex topic.

Assuming that one's imagination is a product of cultivated preferences and interests, as well as all experiences and interactions, either social, personal, or academic, explains why what stood out for me during the conversation is heavily biased. Reading several thought-provoking posts widened my perspectives. It is inspiring to experience that “I've-never-thought-about-that” feeling, which is, in my opinion, how imagination kicks in. As a science teacher with a great interest in art, I was mesmerized by the powerful, insightful examples that linked imagination with artistic expression and made connections with other fields, especially the natural sciences and math. For my teaching practice, this is the prime material for designing instructional strategies that bring to life the knowledge that lies dormant in our schoolbooks. On that note, the idea of developing a walking curriculum is promising and has kept me thinking about ways to integrate it into my current teaching practice.

Despite all the obvious advantages, cultivating one's imagination boils down to a personal choice. Throughout my life, I have encountered people from all walks of life who do not want to engage and do not appreciate imaginative thinking. Sparking one's imagination where there is no desire to even try has become one of the greatest challenges of my practice as a teacher. There was a moment in the conversation when it was mentioned that the importance of exchanging ideas and practices among peers to cross-pollinate imaginative thought. Although it might look obvious in hindsight, one of the responses to this suggestion was an eye-opening revelation: There is a large bunch of people who have no interest in exploring their imaginative side. I have met science teachers who have no interest in any kind of movies or music, art, pop culture or even sports! Being consciously deprived of so many sources of inspirations for “what if” moments might damage their imaginations beyond repair. By accepting this fact, we start to grapple with two pervasive ideas in education: The first claims that imagination cannot be taught, instilled, nurtured, developed, or cultivated, whereas the second assumes that imagination is innate. I would like to have heard suggestions on how to deal with this conundrum: Are there intrinsic limits to achieving a creative/imaginative school environment? Or even worse, are most of our schools doomed to be places that kill imagination?

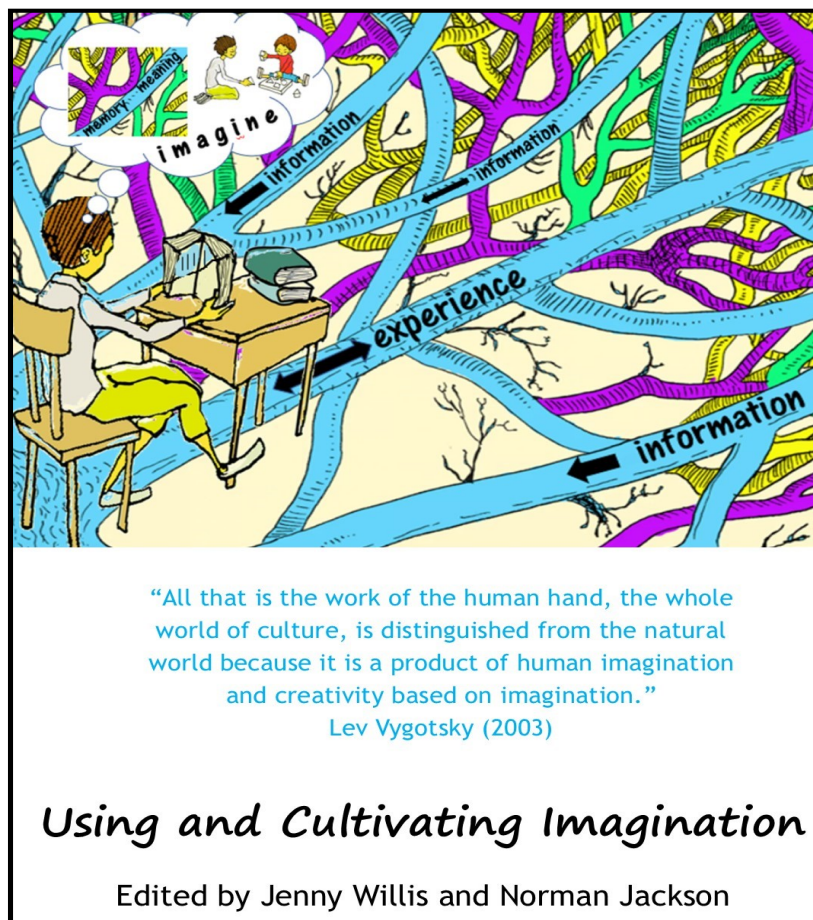
On various occasions during the conversation, participants mentioned the existence of a backlash against imagination in schools, with maybe the exception of professionals working with early childhood education. It seems that teachers, especially in the natural sciences, tend to look down on imaginative approaches for students who are older than toddlers, as if imagination is inferior to rational, Cartesian thought. This is a topic that interests me since I have experienced it first hand. I have taught pre-university courses and have noticed the discomfort of my peers anytime I mention my interest in exploring *imagination* in education. For them, imagination sounded like a horrible word, although they have trouble trying to elaborate why. Going against my beliefs, I have started describing my work by emphasizing the exploration of *creativity* instead of *imagination*. Creativity has become a buzzword in larger-than-life companies that are leaders in technological innovation; thus, creativity is now super cool, regardless of the context in which is used. Although related, the two terms are not exactly synonyms, but creativity does not carry the stigma that imagination does. Imagination is the capacity of conceiving what does not exist, whereas creativity is applied imagination. The literature on the topic traces this backlash against imagination to Plato's works and shows its broad ramifications reaching pedagogy through the works of, for example, Piaget. It would be nice to hear more from participants about this seemingly awkward, pervasive misperception and how can we counteract it to reverse this trend. Why do so many see *imagination* as a dirty word?



Although it is worth exploring imagination in all levels of instruction, this topic transcends the educational milieu to become a defining characteristic of the human experience. I particularly liked the conversations about the power of images and the reflection on how blind people imagine. The combination of image and narrative in personal portfolios was an interesting example of connecting one's imagination to one's identity by carefully crafting a collection of intermingled narratives with suggestive, powerful images. All these insights portray imagination as a powerful tool to engage in a world in flux as we project our dreams and expectations into the future. The examples shown during the conversation illustrated an intricate web that involves purposeful interaction, keen observation, multi-sense exploration, "what if" questioning, connecting seemingly unrelated concepts to create new meaning, and constant reflection throughout the process. What a tour de force!

As occurs in the discussion of any complex issue, we realize that all of the nuances regarding imagination will never be fully understood. I learned a lot, but I know that there is plenty of material for future conversations. Exploring imagination is an exciting and eternal work in progress.

Image credit: <http://www.md-hp.com/what-is-cloud-information-protection.htm>



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Creative Academic champions creativity in all its manifestations in higher education in the UK and the wider world. Our goal is to support a global network of people interested in creativity in higher education and committed to enabling students' creative development. Our aim is to encourage educational professionals to share practices that facilitate students' creative development in all disciplines and pedagogic contexts, and to connect researchers and their research to practitioners and their practice. Our ambition is to become a global HUB for the

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Creativity for Learning in HE course & community  
MODERATE


What do you want to share?

Ellie Hannan • General stuff, announcements • 6d

Hello everyone! For those of you with an interest in digital learning and teaching, myself and +Chrissi Nerantzi are hosting a Wildcard event this afternoon (1:30-3PM UK time) called the #101creativeideas challenge.

It is part of the ALT Winter Conference and the idea is to create and share ideas for creative digital practice in learning and teaching!

You don't need to register, just go to <https://altc.alt.ac.uk/online2016/sessions/101creativeideas-challenge-75>



Chrissi Nerantzi • Owner • General stuff, announcements • 6d

Hello everybody,

Nassi (15) has created an advent calendar for some daily inspiration. Please access <http://www.celt.mmu.ac.uk/advent/index.html> to unlock your daily star.

Feel free to share with others. Thank you.  
Chrissi from the #greenhouse

AC16  
celt.mmu.ac.uk

francisco j. santos: Nice and inspiring. Thank you Chrissi.


Sandra Sinfeld • Moderator • General stuff, announcements • 2w

#loveltd - loving this invitation! Thanks #clmoo!

Originally shared by Kevin Hodgson

<https://plus.google.com/communities/113507315355647483022>

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A space for people working or studying in higher education to share their thoughts and practices about creativity in higher education

What do you want to share?

Norman Jackson • Owner • General Information • 9w

CREATIVE PEDAGOGIES OPEN COLLABORATION

We have just published our first newsletter .. why not join us in our quest for new understandings for improving our educational practices  
<http://www.creativeacademic.uk/2016-17-programme.html>

The next #creativeHE conversation October 30- November 4 will explore the idea of creative pedagogies and learning ecologies.  
<https://plus.google.com/communities/110898703741307769041>

Norman Jackson • Owner • General Information • 3w

NOVEMBER ISSUE OF CREATIVE ACADEMIC MAGAZINE #7 HAS BEEN PUBLISHED

It contains a number of articles drawn from the recent #creativeHE conversation including a synthesis of the Little Boy Story.

We are intending to publish several more articles in the December update and welcome further contributions on the theme of Creative Pedagogies for Creative Learning Ecologies. Special thanks to contributors +Jennifer Willis +Simor ...

