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EXPLORING EXPLORATION

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Foreword from the Executive Editor

Jenny Willis

As we publish this 18th edition of Lifewide Magazine, we embark on another New Year, 2017. My use of the word 'embark' reflects a common metaphor of our lives being a journey. This in turn, implies venturing into new experiences, perhaps uncovering new lands, people, languages and customs. It is therefore timely for us to launch (another analogy!) our first forays into the misleadingly simple concept of exploration and exploring the unknown as we face the uncertainties and insecurities of a new year.

A visitor to Lifewide Education's website will learn that, integral to realising lifewide learning, is our aim 'to grow and curate knowledge.' Having had the privilege of editing this magazine from the outset, I have been part of the journey that has taken us from a publication of moderate length to the weighty journal that it now is. During this time, we have indeed, curated material, generated our own research and harnessed the deepest thoughts of our contributors. We have, undoubtedly, 'grown knowledge.'

But working on Lifewide #18 has been a different experience: I have a profound sense of breaking new ground. Exploration is such a natural component of our lives, that we have neglected to give it serious academic study. Furthermore, exploration is, it emerges, far from a simple concept. What lies beneath and before any exploration is often as significant as the exploration itself. The pieces in this edition exude an almost tangible sense of the excitement of discovery, however 'minor' or personal the outcome of an exploration. They give us intimate insights into the human qualities that drive us. We are, I believe, making perhaps our greatest contribution to knowledge so far.

The articles that follow are, as always, diverse, and we are grateful to every one of you who has contributed. They include conceptual pieces on exploration and explorativity, examples of personal journeys of exploration and accounts of how students in Higher Education are being encouraged to develop their own curiosity and dispositions to explore. These intimate reflections reveal just how little scientific analysis has been conducted on the subject. I believe we are on the cusp of discovering something new. What that is, we can't yet know, but we are so excited by the explorations to date, that we are dedicating Lifewide #19 to examination of exploration in the many disciplines of Higher Education. We also have a new Google forum where we can continue our conversations. Full details are on the final page of this magazine. We hope that you will want to contribute to this ground-breaking work, so that we have representation across the disciplines.

So, I wish you all a very happy and productive New Year as we build on this explosive start to 2017!

Jenny

http://png.clipart.me/graphics/thumbs/142/ vector-firework_142980325.jpg

'EXPLORING EXPLORATION: INTRODUCTION

Norman Jackson, Commissioning Editor

As I make my final adjustments to my introduction and I look at the rich, contextualised knowledge that has been assembled and shared, I can appreciate just how true these words of Gregory Bateson's are.

> 'an explorer can never know what he is exploring until it has been explored' (Gregory Bateson[1])

One of the great joys in life is to discover something that we did not know. Sometimes it's by chance but often it emerges through deliberate acts of searching in order to find out. We explore to put ourselves into the places and spaces with highest potential to find what we are looking for and often discover other things as a bi-product of this process. This is perhaps the simplest act of exploration and it's something that is innate to being human.

We explore to experience the world and to learn and understand it, and often ourselves, better. The number of contexts for exploration is only limited by our imagination and that is pretty limitless. My Christmas read this year is a book called 'Pragmatic Imagination'[2], after I got through the glowing endorsements, of which there were many, I came across these words, *'efficacy in the world today requires a productive entanglement of imagination and action'.* I think nowhere is this productive entanglement more apparent than when we engage in exploration regardless of whether we are exploring the far reaches of the universe or our own limitations and capabilities: in fact the two are often interlinked. Indeed life itself is an exploration from the moment we play with our first toy to the moment we close our eyes for the last time.

WARNING:

THIS MAGAZINE

IS AN

EXPLORATION SITE

Exploration can be a psychological process of examining ourselves, our own thinking, emotions, purposes and actions and or a cognitive process of inquiry involving the investigation of ideas or problems in any subject or any context or circumstance. It can involve travelling through physical spaces and landscapes that are new to us, for example when we explore a new place. And it can involve journeys in and through new virtual environments, using technological tools that are new to us and the new social interactions they present. It can involve contexts and phenomena in our unfolding present, reconstructions of the past or imaginings of the future.

We explore in the disciplines: in fact we are devoting the next issue of Lifewide Magazine to extend our exploration of exploration into the contexts afforded by different disciplines. Each discipline develops its own tools and methodologies for conducting explorations. For example, I once practised as an exploration geologist searching for mineral deposits in western Saudi Arabia. I used satellite and airborne remote sensing techniques and prospecting methods on the ground, geochemical surveys and all sorts of imagination and reasoning based on the knowledge I had acquired through study and experience, but often finding something useful was a matter of chance, of putting myself into the areas of highest potential, of walking a little bit further up a dry river bed because I just had a feeling that I might discover something. And that sort of hunch drives a lot of what I call 'wandering with intent': mostly nothing comes of it but sometimes our persistence pays off and we discover something that is significant to us.

We explore when we innovate and we explore when we are not sure where to go next. Exploration underlies research and it underlies, what John Dewey called 'productive inquiry', 'finding out what we need to know in order to do the things we need to do'. Exploring is an attitude or orientation requiring the willingness to engage with things that are not known or are poorly understood. It may involve overcoming fear and anxiety and dealing with uncertainty but also unimagined affordance. Exploration involves a physical and mental *journey* as we venture into the unknown or unfamiliar and it requires courage, confidence and self-belief that we will be able to cope with whatever emerges. Being willing to explore, to put ourselves into unfamiliar contexts to deal with unfamiliar situations and problems is an important orientation that we need in life - especially when life is disrupted or when we need to break away from existing routines in order to develop.

Exploration in order to develop something like an idea is a necessary part of creation. Being willing to explore, and the act of exploration are important features of a self-determined ecology for learning or achieving something new. The challenge for educators is to encourage learners to explore, to embark on journeys into what is unknown to them in order to learn. Given the way higher education is structured and assessed many might feel that we squeeze out much of the affordance for more explorative and discovery-oriented forms of learning, and this is the challenge educators face all over the world.

Developing students' capability and capacity to explore is not simply a matter of developing the requisite knowledge and skills to explore in a particular domain. It also requires the building of confidence and attitudes, orientations and character like the willingness to take risks, to work with uncertainty and environments that are often not well ordered, to persist in the face of disappointment, and to try again if efforts fail to realise a goal. It also requires learners to harness their pragmatic imaginations to not only visualise a fuzzy goal but to imagine and turn into action the steps to achieving such a goal. To follow such a pathway without being sure of reward requires self-belief and trust in one's own processes and practices. Learning environments that foster these imaginings and behaviours have become increasingly rarer as our higher education system and society for that matter has become more risk averse and where teaching efficiency and predictable outcomes are the most valued indicators of a quality education. Developing the explorative capacity of students is therefore a challenge to educators and educational institutions all over the world, but it is something we have to do if we are to enable each new generation to solve the problems created by the last.

> *I feel a mighty anger welling up when your text makers me realise just how much formal education has strangled exploration, has alienated the mind from its own natural desire to understand anything*[2]

In this issue of Lifewide Magazine we will explore the idea and practice of exploring to develop a better understanding of the way in which exploration features in our ecologies for learning, development and achievement. Through this exploration perhaps we might recognise shortcomings in the affordance for self-directed, self-motivated exploration in undergraduate education. While exploring what was already known about exploration it struck me that very little has been written about the concept of exploration so I hope that the diverse contexts for and perspectives on exploration we are sharing will help expand our awareness of its importance in learning and in achieving our goals.

As always we cannot produce our magazine without the generous contributions of our writers. I would like to sincerely thank all the contributors for sharing their thinking and personal experiences of exploration: by sharing your perspectives and insights I believe we are making a useful contribution to our understanding.

Citations

1 Bateson, G. (2000 reprint. First published 1972). *Steps to an Ecology of Mind: Collected Essays in Anthropology, Psychiatry, Evolution, and Epistemology*. Chicago, Illinois: University of Chicago Press

2 Pendleton-Jullian and Seely Brown J (2016) Pragmatic Imagination

INSPIRING OTHERS TO EXPLORE BY BEING AN EXPLORER

Justin Miles

Justin Miles is a professional adventurer or explorer. His adventures take place in polar, mountain, jungle and desert regions and he uses his adventures to support global education projects, to engage with schools around the world and to support various charities such as Magpas and Educate The World, and the programme Educate A Child. Justin has written several books including the Ultimate Explorer Guide

You can find out more about him and his inspiring life stories from being brain damaged in a car accident to tackling adventures and expeditions all over the world by visiting his website http://www.justforthechallenge.com/

How a Chance Encounter Changed My Life

I didn't realise it at the time, but a conversation that I had with a complete stranger in a tiny pub set in a small but very picturesque country town in South Devon, England, was a catalyst for challenging my thoughts and beliefs on how education 'works'.

The 'Old Exeter Inn' was my local pub. The eclectic mix of denizens were quite restricted in number; the pub had the 'Cheers effect' – everybody knew everybody and everybody knew everybody's business.

One Monday evening I ventured in to meet with the regular gentlemen who sit on the same seats and discuss the same topics, but I was surprised to find that I was the only person at the bar. The only 'known' person, I should say, for there was a chap sat on one of the stools whom I had never encountered before. He stood out from the usual patrons because of his less than usual dress for that establishment; ripped denim jeans, a faded and scuffed leather bikers-style jacket and his greasy long blonde hair tussled and tangled with his unshaven face – we were more used to seeing tweed jackets or farming overalls.

Taking the stool next to him at the bar, the conversation started without effort and I was immediately fascinated and captivated by the depth and breadth of his knowledge and experience. In that one evening we discussed a whole myriad of subjects from politics and religion to war, famine, medicine and practically everything in between. Everything that we discussed included an academic element, but was also formed around his own experiences, real experiences of so many things that the mind boggled.

The conversation eventually turned to education and that's when I really started to question my opinions. This chap, this knowledgeable chap who was obviously far better informed than me on such a wide range of subjects was the same age as me. He didn't do well at school. He didn't just not pass his exams, he failed school entirely. Or maybe I should say that school failed him. Right from the beginning of his school life his attendance was fractured. From the age of thirteen he no longer attended school at all and he was classified as one of those 'problem children' to be tutored at home – but that never happened with any degree of regularity so it transpired that he didn't receive any formal education whatsoever.

By his own admission he was not at all interested in what and how he was being taught. He didn't want to learn facts and recite them. He wanted to play, to ask questions and find out answers, to experience things for himself and learn from those experiences. He didn't suit the education system and the education system didn't suit him.

At the age of sixteen he developed an interest in travel - so he travelled. His first adventures took him through Europe and then on to Australia and from there to North America, and then to Mexico and then South American countries and from there to a whole plethora of other countries and regions. From the Far East to the Middle East to the West he toured the world and everywhere that he went he explored, he questioned and he learned.

In 1989 he was in Europe at the time of the collapse of the Berlin wall and the beginning of the unification of Germany. He didn't just watch it and whiz on by in a rush to his next destination. He was inquisitive, curious, nosy and he met people, he

asked questions and he experienced life and his knowledge grew – far more than he would have ever learned from text books.

As he explored and travelled his thirst for knowledge increased and through an organic process he learned to learn and his education developed.

I had a good education but was usurped by this guy who had left school at the age of thirteen. That chance meeting was the first time that I ever really questioned the value of how we teach and how we measure success.

At the time of that meeting I was already laying plans to turn my passion for adventure in to my profession.

A few years previously a car accident had resulted in brain injuries and the brain injuries left me having to re-learn almost every basic function, from walking and talking to dressing and feeding myself.

It was during my recovery that I decided that I wanted to turn my passion for adventure in to my profession by becoming a 'professional explorer'; toughing it out in the world's harshest environments, battling the elements and my own physicality and using my experiences, my exploits, to encourage people to do more, to experience more and to learn more.

In the early stages of my recovery the outlook, according to medical teams, was less than brilliant. I was told to expect a painful and protracted recovery until I would finally reach a point in approximately five years, where I could expect to return to work, part-time, to a sedentary job.

Unfortunately the picture painted for my future didn't fit with my personal aspirations. Nine months after the accident I ran a marathon and two years later I ran a marathon distance run every week for a year and once I'd done that I'd proven to myself that anything was possible. I made and laid plans, objectives and goals, to leave 'corporate life' forever and follow the dream that had given me the drive and determination that I needed to motivate me through recovery.

I wanted to become an explorer, but before I could do it I had to give the word 'explorer' a definition, a shape and form that suited me.

I came up with my own version of the term 'explorer'. I wanted to explore the world as it is now, to see it for what it is, to meet the people, to learn its ways and its history, to explore people and places and things which were new and unknown to me and to ask as many questions as I felt necessary to help me to understand how the world works.

When one thinks of an explorer, that usually conjures up images of gentlemen in pith helmets investigating unknown corners of the world, creating maps and collecting never-before-seen flora and fauna. Or hardy types such as Scott and Amundsen dressed in animal skins and furs racing to claim Antarctica in the name of their home countries.

After an expedition to the North Pole went horribly wrong and resulted in him being flown home for emergency surgery, Justin went on to lead a ten person team on an expedition to take paddle boarding to the Arctic in August last year.

With the world now extremely well explored and investigated and with science being supplemented with technology, such as satellite imagery which gives us the ability to create extremely accurate maps of the entire planet, I came up with my own version of the term 'explorer'. I wanted to explore the world as it is now, to see it for what it is, to meet the people, to learn its ways and its history, to explore people and places and things which were new and unknown to me and to ask as many questions as I felt necessary to help me to understand how the world works.

I've always had an interest in education (at one time in my younger life I thought that I wanted to become a teacher, but that idea was very short lived!) so I wanted to use my experiences to support the education system in some way. Through a process which was very much based on 'trial and error' in the early days, I connected my adventures and experiences with various education programmes around the world. I started to use technology and various other platforms to quite literally 'bring the world in to classrooms' all around the globe, giving children the opportunity to see and experience the world as it is right now and enable them to ask the questions that they want to ask rather than rely on second-hand information.

Being an 'explorer' is easy and difficult all at the same time. It's exciting and exhilarating and breath-taking at times, it can be very boring, it's often physically demanding and mentally draining but anyone can do it and it's important that everyone realises and accepts that anyone can do it.

To explore you don't need to discover new places or phenomena, you don't need to be rough and tough, you just need an inherent level of curiosity, a strong desire to learn and the passion to 'get out there' and make it happen.

Through my travels and adventures I've witnessed and experienced the very best and the very worst in education and I became frightfully aware of the disparity in the quality of education and the fact that not every child has the opportunity to go to school, so four years ago I took the decision to focus my attention on raising awareness of the global education crisis.

My work often gives me the opportunity to witness the evolution of education in developing regions and countries and that's led me to question the education process: the way that we teach and the way that we measure success. Thanks to wonders of modern technology like skype, my work also enables me to interact with young people while they are in their classrooms as in the image on the right.

The Challenge for Education

The challenge for education is to encourage and enable young people to be adventurous and fully explore the possibilities in their life and the world around them.

In my simple terms, teaching in many areas, regions, countries is based around the transmission of knowledge by the teacher and the assimilation of that knowledge by the student and success is measured by the students' ability to regurgitate that knowledge, the facts, in such a way as to be able to pass an exam – to get a tick in the right box.

Real life in 2017 is very different. Success doesn't hinge on what you know any more because knowledge is all around us and for most people, relatively easy to access. We have computers and laptops and tablets and mobile phones that access the internet and can give us all of the facts that we need. There are search engines and 'wikis' that are updated umpteen times a day with the very latest information so the information that we desire, the facts, are right there at our fingertips.

Education is at the core of every one of Justin's expeditions, adventures and projects.

Working in conjunction with world leading partners Justin literally 'brings the world to life' in classrooms all over the globe. From telephoning schools from the tops of mountains and inside a volcano, to conducting Skype calls with classrooms from the edge of an African rainforest, Justin harnesses the very latest technology to give children a window to the world.

Using the brilliant Microsoft Education platform, Skype Classroom, Justin connects with somewhere in the region of 4,500 children a month globally when he delivers virtual workshops and lectures. Schools taking part in Justin's sessions come from the US, Canada, Mexico, Argentina, Chile, Peru, Costa Rica, France, Spain, Italy, Greece, Cyprus, Turkey, Ukraine, China, India, Japan, Australia, New Zealand, Kenya, South Africa, UAE, Qatar, Pakistan, Portugal, Finland, Norway, Vietnam, Uruguay, Egypt and of course the UK.

Success no longer needs to be determined by what we know, the facts that we can recall and recite as and when needed, because that no longer has relevance or importance in modern life. Success should now be measured by what you can do with what you know, and if you don't know something knowing how to go about finding out, because ultimately, that's what really matters.

To make things happen, to create successes beyond the classroom we need to encourage creative approaches to solving problems and to finding and/or creating the resources to solve problems. We need to encourage innovation and usually innovation requires exploration in order to develop ideas, things and forms of society.

To succeed we need to innovate: to innovate we need to be able and willing to explore

What do I mean by innovation? In a very simplistic view, there are two key types of innovator. In the first instance there are what I call the 'STEM' innovators – innovators that effect what I very unscientifically refer to as 'stuff' - from new ergonomically shaped paper cups to computing to transport to robotics.

Then there are social innovators, the people who effect, alter and drive the way that we act, react, engage, communicate and even believe.

And within those two types of innovator are two types of innovation. 'Incremental innovation' is a gradual evolutionary process of improvement. 'Disruptive innovation' is precisely that; a disruptive occurrence that alters, entirely, a process or product and has a significant and immediate impact.

Why is innovation, and the creation of innovators, so important? The answer is, that innovation is the foundation of success and the foundation of progress in any society. Innovation is the key to economic success, the key to the progression of the human race and the key to how we live in harmony with the planet that we're lucky enough to inhabit.

The process of innovation begins with someone being curious, with someone asking questions and with someone exploring the question (usually many questions) and the many possible answers to those questions in order to find the best solutions.

Can creativity and innovation actually be taught in schools, colleges and universities? Probably not, because I believe that you can't teach and measure something which by its very nature is immeasurable. However, I do believe that learning outcomes from creative and innovative processes can be measured, which brings us a huge step closer to having education systems that encourage children and students of all ages to play with their passions, develop a purpose, explore, create and innovate – to do things that actually make a difference.

Editor: If you want to inspire your children or grandchildren to be adventurous Justin's 'Ultimate Explorer Guide for Kids' is a great read.
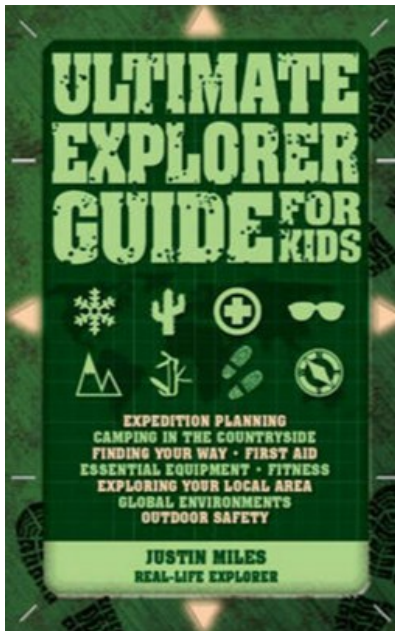
https://www.amazon.co.uk/s/ref=nb_sb_noss?url=search-alias%3Daps&field-keywords=ultimate+explorer+guide

'Teach The World' is creating a living, interactive multi-media 'documentary' designed primarily for school audiences around the world. 'The children that we engage, inspire, motivate and empower now will be the business people, the educators and the political leaders of the future who can, and will, make universal education provision happen' To find out more about Justin's latest educational project visit http://www.letsteachtheworld.org/

Curiosity didn't kill anything. | Justin Miles | TEDxNorwichED

https://www.youtube.com/watch?v=hFjTgPizrmQ&feature=youtu.be

Curiosity didn't kill anything. Curiosity is the catalyst that sparks questioning, ignites creativity and fans the flames of innovation, and innovation is the key to economic success, progression of the human race and living in harmony with the planet. This TEDx presentation explores the human characteristic of 'nosiness' and our inherent desire to explore, create and innovate.

The life of a polar explorer who developed a hernia in -30C conditions was saved after he was diagnosed by an A&E consultant 2,000 miles away in the UK.
By Telegraph reporters
9:09AM GMT 10 Jan 2013
Justin Miles was on a 900-mile trek to the North Pole when he was struck by excruciating abdominal pains and left unable to pull his 300kg sledge. The 40 year-old professional explorer and his walking partner Alex Hibbert, 26, were at least three days from medical help.
However, the pair were friends with one of the NHS's top A&E consultants and called the doctor back in the UK.
Dr Rod Mackenzie, head of emergency medicine at Addenbrooke's Hospital in Cambridge was driving along in his car when he took the call from the Arctic. During a 20-minute conversation he told Mr Miles to undress so Mr Hibbert could press his abdomen and tell him what he felt.
Read more at http://www.telegraph.co.uk/news/uknews/9793113/Arctic-explorers-life-saved-by-doctor-2000-miles-away-in-UK.html

LEARNING TO EXPLORE THROUGH PLAY

Norman Jackson

The idea that exploring is programmed into our DNA seems self-evident from the way babies and children learn about the world through playing with whatever comes into their world. Exploring objects, the environment and the reactions of other people through playing is innate and instinctive.

Play is the way we explore the world, before we learn any rules about the world: play is often the way we learn the rules of the world we inhabit. Through play we learn how to explore and the way we learn the value and techniques of exploring as a means of engaging with the world.

Play may seem simple, yet it is profound to a child's development (and therefore to our becoming a person). Play makes learning something that happens naturally and joyfully, when a child laughs and wonders, explores and imagines[1:3] (White 2013:3). Play as "anything that spontaneously is done for its own sake." It "appears purposeless, produces pleasure and joy, [and] leads one to the next stage of mastery"[2]

For learning and unlearning-leading-to-new-learning: The smallest children play as a form of unencumbered experimentation. This is how they begin to learn about the world as unique individuals – playing on their own to discover the world and them-selves in the world as a concrete thing. Then play becomes social. One plays to learn with others, then about others and how one fits into the social puzzle. For children, play is a way to learn about the world – concretely and socially – experimenting to see how things respond, testing boundaries, playing with possibilities. The world is a place of magic because the 'rules' of the world are not yet clear to them and so their imaginations are as engaged in making sense of it, as in seeing the possibilities in it.[3]

Piaget believed children to be little scientists, who were driven to perform everyday "experiments" that would reveal the nature of their world. Through solitary object play and exploratory play, children are introduced to the ways objects work ("What does it do?") and how they can exert control over those objects ("What can I do with it?")[4:154]. Research has shown that children can indeed use play to scientifically reason about novel objects in their environment and to test hypotheses about how those objects operate. Studies have demonstrated that when young children are presented with a puzzling new toy, their first instinct is to engage in exploratory play, touching and manipulating parts of the toy to figure out how it works[5]

Amazingly, children's play with objects not only teaches them about the particular objects with which they personally interact, but the knowledge gained through exploratory play can help children generalize about broad categories of similar objects[6]

There is a link between exploration of objects and materials and the growth of the brain[7]. Brierley[8] suggests that physical exploration is vital

PLAY IS PLEASURABLE. Children must enjoy the activity or it is not play.

PLAY IS INTRINSICALLY MOTIVATED. Children engage in play simply for the satisfaction the behavior itself brings. It has no extrinsically motivated function or goal.

PLAY IS PROCESS ORIENTED. When children play, the means are more important than the ends.

PLAY IS FREELY CHOSEN. It is spontaneous and voluntary. If a child is pressured, she will likely not think of the activity as play.

PLAY IS ACTIVELY ENGAGED. Players must be physically and/or mentally involved in the activity.

PLAY IS NON-LITERAL. It involves make-believe.

in building in the brain a model or understanding of the world: 'Exploration is essential if we are to build up in the brain a representation or "model" which is useful for the accurate interpretation of the world building up knowledge of the world through our senses and by trial and error is the basis of all later intellectual activity' [8:75-6]
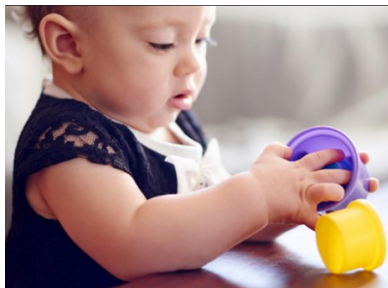
MIT researcher Laura Schulz finds that babies learning about the world have much in common with the way scientists explore phenomenon (Trafton) Schulz's research, much of which she does at a "Play Lab" at Boston Children's Museum. The lab investigates the theory that children's representations of the world resemble scientific theories that allow them to form categories and identify relationships between different things. Specifically, Schulz studied causal inferences — the process of drawing conclusions based on observed causes and effects.

Her work reveals that children, and even babies, inherently use many of the same strategies employed in the scientific method — a systematic process of forming hypotheses and testing them based on observed evidence. "All of these abilities that we think of as scientific abilities emerged because of the hardest problem of early childhood learning, which is how to get accurate abstract representations from sparse, noisy data,"

Schulz became interested not only in how children learn from observed evidence, but also how they generate evidence through exploration. She has found that many of the components of the scientific method — isolating variables, recognizing when evidence is confounded, positing unobserved variables to explain novel events — are in fact core to children's early cognition. In one experiment she explored the value of offering lessons versus allowing children to explore on their own. Schulz found that children who were shown how to make a toy squeak were less likely to discover the toy's other features than children who were simply given the toy with no instruction. "There's a trade off of instruction versus exploration," she says. "If I instruct you more, you will explore less, because you assume that if other things were true, I would have demonstrated them."

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The double-edged sword of pedagogy: Instruction limits spontaneous exploration and discovery
Elizabeth Bonawitz, Patrick Shafto, Hyowon Gweon, Noah D. Goodman, Elizabeth Spelke, Laura Schulz

Abstract
Motivated by computational analyses, we look at how teaching affects exploration and discovery. In Experiment 1, we investigated children's exploratory play after an adult pedagogically demonstrated a function of a toy, after an interrupted pedagogical demonstration, after a naïve adult demonstrated the function, and at baseline. Preschoolers in the pedagogical condition focused almost exclusively on the target function; by contrast, children in the other conditions explored broadly. In Experiment 2, we show that children restrict their exploration both after direct instruction to themselves and after overhearing direct instruction given to another child; they do not show this constraint after observing direct instruction given to an adult or after observing a non-pedagogical intentional action. We discuss these findings as the result of rational inductive biases. In pedagogical contexts, a teacher's failure to provide evidence for additional functions provides evidence for their absence; such contexts generalize from child to child (because children are likely to have comparable states of knowledge) but not from adult to child. Thus, pedagogy promotes efficient learning but at a cost: children are less likely to perform potentially irrelevant actions but also less likely to discover novel information.
You can read the complete article at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3369499/

EXPLORATIVITY: PART 1– EMERGENCE OF AN IDEA AND ITS APPLICATION IN EDUCATION

Russ Law

Russ is a founding member of the Lifewide Education team. He is a former Director of The British International School in Jeddah, Saudi Arabia, and now works as a consultant, trainer, coach and assessor in education. This and a companion article relate to his book 'Get a Life'[1]

A starting point

It's often the case that our significant explorations in life start with what seems, at the time, an insignificant step. The journey I will describe to explore an idea began when I lived in Saudi Arabia, during a short school holiday during the 2004-5 academic year. Unlike most of our friends and colleagues, who had taken off for the break, my wife and I had decided not to travel this time, preferring to relax and enjoy what was now a quiet and peaceful compound. We were thinking, planning, and reflecting on the imminent end to our work in Saudi Arabia (over 25 years) planning our next summer holiday and looking forward to travelling through Syria and Lebanon, which we had not so far visited in our many years in the Middle East. We were discussing how useful it would be to have one of those travellers' guides to our intended destinations, but feeling that it could be difficult to obtain one. However, we noted that a brand new stationery and book shop had just been opened about a kilometre away, and there was a slim chance that we could find something of use. We set off, by bicycle.

This ordinary undertaking was unusually exciting for us, for several reasons. Firstly, we had to wend our way past many anti-terrorist security barriers, and indeed would have been thought by some of our friends to be rash in stepping (or rather pedalling) out in the prevailing climate of unease. Secondly, in this part of the world, it was unusual to see women cycling. Women were not permitted to drive, and the spectacle of a lady on a bike was even more culturally incongruous, to the extent that it seemed to have no categorisation in legal terms. My wife had learnt to cycle only in adult life, and every bike ride was something of a challenge. In addition, I had to admit it was fun to visit a new shop.

After a short search of the bookshop we were amazed to find the exact book that we were looking for. On the way back, we started to think about the sense of achievement we were experiencing (our children would have considered us "sad" to be excited by such a trivial outing, but we were feeling quite pleased with ourselves). Without consciously thinking about it, we suddenly decided that it was because we had been "explorative" – our experiences had revealed something important to us, and so the idea of being explorative was born and given meaning in the context of our everyday life.

Both of us wanted to share this feeling and this experience, and it happened that at the time one our friends was frequently prompting musings of a somewhat academic nature, and so I decided to let him know about it. Everyone seemed to be publishing books on how to improve your life, increase brain power, bring oneself good fortune, become more personally effective, cope with the unexpected removal of one's cheese, be assertive, look inward at the workings of one's soul and spirit, look around at one's habits, exercises, diets and so on, so why not a book on being explorative? I was now convinced of the authenticity of the word!

Writing as an explorative act

I'd just been teaching myself to touch-type, and had achieved the not-so-remarkable feat of being able to do so at roughly the same speed as that at which I could muster and articulate reasonably coherent thoughts. So I had some new skills that were still a novelty; I'd had an enjoyable, accidental experience; I was getting encouragement from a friend, I had the time and space to think, and the related themes were floating about in the atmosphere during a holiday. There was therefore what some would call an ideal set of circumstances for an *ecology* to form and grow (not that the term had crossed into my consciousness in that context at that stage).

I put fingers to keyboard to do something new and see where it would lead and what would happen, not even noticing at the time that this very process was itself an illustration of being explorative - what the book I was about to write came to be all about.

> Ultimately, I think writing is a mixture of craft, inspiration, and being incredibly, courageously explorative with yourself - and being ex-brutally honest, too.
>
> — *Philip Seymour Hoffman* —

Weeks later, the ideas had been deepened, widened, shared and shaped in numerous conversations and my reading. I had tried my ideas out on other people in a light-hearted quiz, and, in the manner of a conscientious lifewide learner, applied them to other experiences in my life. Soon there was a first draft which was shared amongst friends, and then in the months that followed I discovered further links and fascinating correspondences, especially those emerging from the Surrey Centre for Excellence in Professional Training and Education (SCEPTrE), where I worked part-time for a year and half after returning to the UK from the Middle East.

Ongoing fascination

Since then, I've continued to be fascinated by these ideas and I have been interested to see how recent trends or movements born of seriously academic reflections and expertise have echoed so many of those early thoughts in my book on explorativity[1]: learning through discovery (not new, but revived yet again); experiential learning (which I experienced in an amazing collaboration with Professor Colin Beard, of which more later); mindfulness; Growth Mindset; the CLEAR model of coaching; and the phenomenal bubbling-over of technology-boosted communications in blogs, tweets, online communities and the breathtaking richness and speed of digital links. The school curriculum remains at the centre of opposing forces: breadth and balance on the one hand, but constraint and narrow, easily testable prescription on the other. On a light note, I'm honoured to know that, at the school where I'm a governor, the Value of the Month for January 2017 is to be "Explorativity"! Society similarly demonstrates contradictory sentiments: outward-looking, open, curious, welcoming, diverse and adventurous in some respects, but anxious, introspective, cautious, defensive and inclined to fear unexpected change and innovation in other ways: Brexit and Trump are merely the latest manifestations. (Too overtly political, if true??)
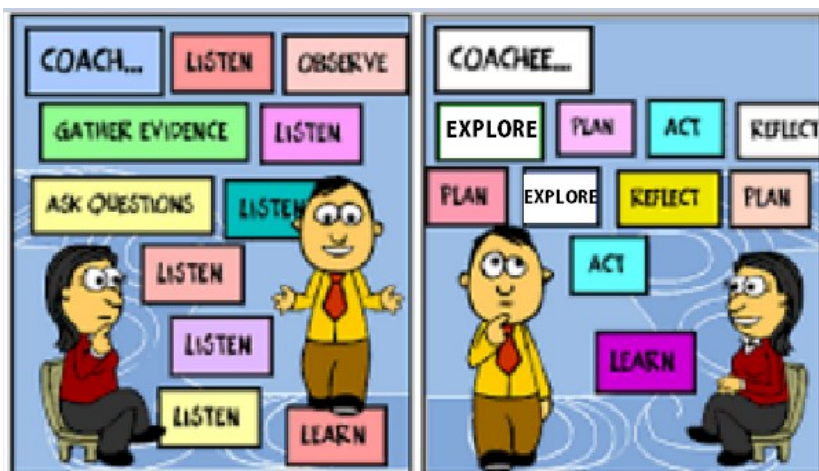
I've been coaching many people in the field of education since returning to the UK, and the CLEAR acronym represents the key elements of the approach I prefer. It's compatible with other models, such as GROW, OSKAR and, more recently GROWTH (GCI), all of which the interested reader can look up, but the CLEAR model of coaching has the magic ingredient that makes it special for me: E stands for "explore". So, when the client/coachee and the coach have agreed the terms and conditions for the coaching session or series of sessions, the coach listens very carefully to the things the client has to say about the current situation, and there follows some consideration of what a better future scenario might look like. Before deciding on actions, and the will and intentions of the client, there ensues a period of exploration in the dialogue. By definition, no one is sure where this will lead. Sometimes it leads nowhere useful, and sometimes it goes round in a circle; but most often, given the right atmosphere of trust, inspiration and imagination, it does lead to some spark of an idea for moving forward. Sometimes, amazingly neat and unanticipated solutions emerge.

Applying the idea to professional development

While working at SCEPTrE in 2008-09, I tried to apply my ideas on explorativity to the design and facilitation of a professional development experiences. The opportunity came in SCEPTrE's Experiential Academy led by Professor Colin Beard[2]. We wanted to provide participants with the opportunity to experience being explorative in a physical context and environment that was unfamiliar, with people they did not know, with a challenge they had never encountered before. We wanted them to think about how they felt with all this unfamiliarity while trying to accomplish tasks and challenges that had been set. I spent many weekends designing and testing my *edventure* which I conceived as a team-based explorative stroll through Guildford, solving riddles, performing tasks and reflecting on the experience.

The Guide I prepared can be downloaded from the Experiential Academy wiki[2] and the basic idea can be adapted to any town or landscape. Participants were organised into groups of 4. They were provided with a map of Guildford town centre, briefed on the nature of the edventure and then given their edventure Guide.

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

On the second day of Experiential Academy participants created their own digital stories describing their experiences and each team presented its own unique experience and shared the learning that had been gained through their edventure.

By the end of the two day experience most participants claimed to have discovered aspects of themselves (and of others), that were life-changing, and that they would never forget, not least because they would apply their learning and new knowledge in the future. This was a powerful lesson for participants and facilitators on the educational value and potential in the practice of being 'explorative'.

Members of SCEPTrE's Experiential Academy 2009 facilitated by Professor Beard (bottom 4th from left)

As I look back on my life to date, I have reasoned that life is a process of discovery – of who we are, what we can do, and, potentially, why we exist and what we believe. It is a circular process, because when we discover what we are capable of, it changes the way we see ourselves, which can send us off in new directions, discovering new capabilities and new reasons for our existence. This spiralling journey is the true meaning of explorative. It's a way of being that we can and should employ in all parts of our life (lifewide) and throughout our life (lifelong), and it remains, for those who pursue it, an endlessly fascinating experience, one which enriches not only the individual but all those around.

Explorativity in school education

Most of the useful things I have learned in life, despite having had the privilege of a comparatively liberal and even privileged education in state and private institutions in the UK, have been learned outside school. When I finally got round to writing my little book on explorativity, it was a process of self-actualisation and self-directed learning for me. I was encouraged by the provocative input of others, including friends, but there was a circularity about a process that was essentially self-illustrative: I was being explorative myself in the context and circumstances of my own life.

But what a waste of opportunities whilst at school! All those tedious hours spent rote-learning; all the times when I had interesting ideas that I'd have liked to look into or try out; and how the handful of chances to be creative and collaborative and enquiring stand out like rare jewels against a dull background in my recollections. Talking to friends and colleagues, I know I'm not alone when I think these things.

Perhaps now, decades later, we have the chance to do better. So let's look at the connections between explorativity as a way of being and doing things, and the scope of some sample curricular aims and approaches.

Professor Guy Claxton, creator of programmes including 'Building Learning Power' (BLP)[3], author of 'What's the Point of School?'[4], provides a list of learning dispositions, which he shared at a conference of Teaching Leaders in 2010. Note the obvious explorative elements right at the start, but actually, all of these points are relevant to an explorative mindset and way of being.

1. *Inquisitive: generally shows a questioning and positive attitude to learning*
2. *Adventurous: is willing to risk and 'have a go' when facing a new challenge*
3. *Persistent: stays determined and positive in the face of difficulty or mistakes*
4. *Focused: concentrates, ignores distractions, and quickly becomes engrossed*
5. *Imaginative: easily comes up with creative ideas and possibilities*
6. *Connecting: looks for links and relationships, likes to 'hook up' things*
7. *Crafting: is keen to work hard on improving products and developing skills*
8. *Capitalising: makes good use of resources, tools and materials to support his/her learning*
9. *Methodical: is well organised and thinks things through carefully*
10. *Self-evaluative: makes honest and accurate judgements for himself/herself about 'how it's going'*
11. *Self-aware: knows his/her own strengths, styles and interests as a learner*
12. *Transferring: shows evidence of looking for other applications in lessons for the future*
13. *Independent: articulates and defends his/her own thoughts and ideas in discussion*
14. *Leading: shows initiative and is willing to take a lead in group learning and problem-solving*
15. *Open-minded: asks for, accepts and makes good use of feedback, advice and support*
16. *Empathic: is good at understanding others, and offering helpful feedback and suggestions*

Claxton promotes these enlightened approaches in schools, and points out:

> *The BLP approach is now used in thousands of schools and local authorities around the UK, as well as in Australia, New Zealand, Malaysia, Hong Kong, Chile and Argentina.*
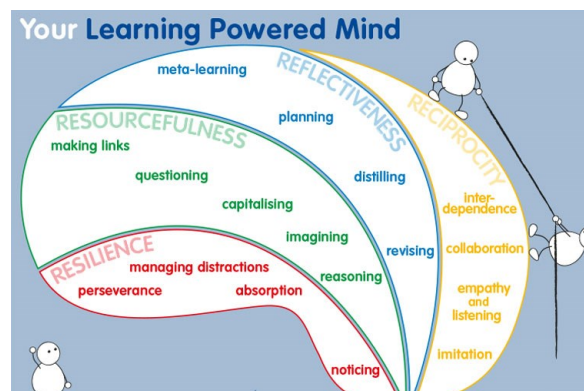
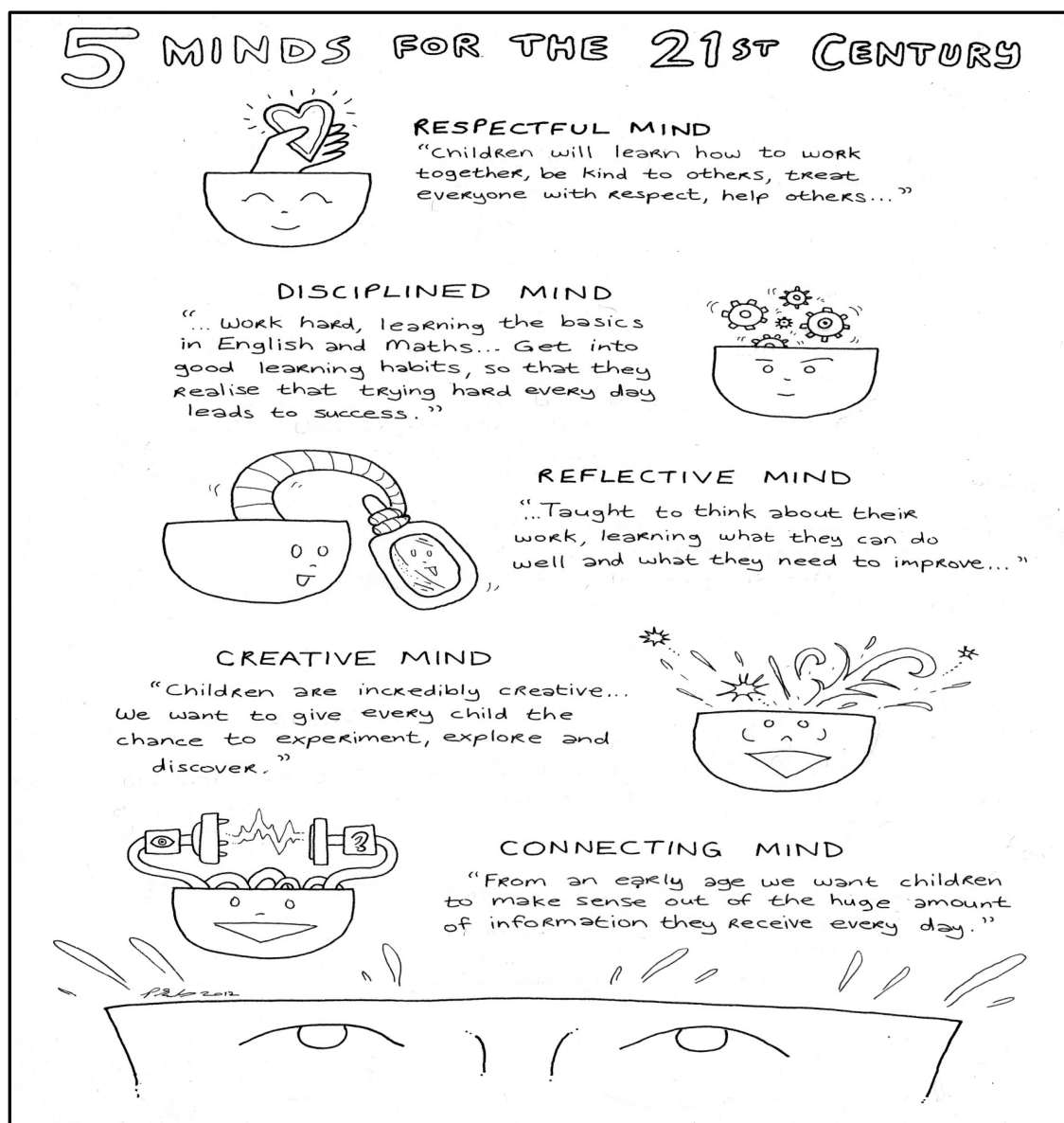Other educators favour the "Five Minds for the 21st Century":

Illustration by Patrick Sanders of Lifewide Education Community artist

The International Primary Curriculum (IPC) offers a rigorous framework for explorative educational experience. It starts with three guiding questions:

> *What kind of world will our children live and work in?*
> *What kinds of children are likely to succeed in the world?*
> *What kinds of learning will our children need and how should they learn it?*

Its subjects include Language Arts, Mathematics, Science, Information Technology, Design Technology, History, Geography, Music, Physical Education, Art and Society.

Its personal goals *refer to those individual qualities and dispositions we believe children will find essential in the 21st Century.*

They help to develop those qualities that will enable children to be at ease with the continually changing context of their lives. There are personal goals for enquiry, resilience, morality, communication, thoughtfulness, cooperation, respect & adaptability.

An explorative education

We could go on and on looking at the aims of curricular frameworks throughout the world. We can weigh the arguments for intrinsic or extrinsic education, or for economic, cultural or political emphasis. Meanwhile, though, it seems blindingly obvious that, as Ken Robinson points out, all education must be personal, whatever else it is besides. Clearly, in many cases, we are talking the same explorative language about lifewide, lifelong learning, even if there may be challenges in reconciling these aims with established systems and approaches.

We know how difficult it is to predict with confidence the potential of any given person. Almost by definition, potential is that which is not highly evident. I believe that an explorative education would be a good education because it would be a holistic one that truly enabled potential to be discovered and realised by individuals. It would require a variety of style, focus and opportunity, to cater for the diverse capacities of different people, and people who change over time. It would recognise multiple intelligences, even if the term itself were not used: linguistic, musical, logical-mathematical, bodily-kinaesthetic, personal and interpersonal; many would add spiritual.

In an explorative education, experimentation, research, and creativity would feature prominently, as in the approach of London school leader Peter Rhodes, using Concept Oriented Reading Instruction, expounded by Emily Swan. It might use one or more of many frameworks, such as the International Primary Curriculum, the International Baccalaureate, or home-grown versions.

Over its lifelong course, an explorative curriculum would therefore ensure a varied range of experiences, to ensure trying out and finding out about life, the universe and oneself. This is all very well, but we encounter a crucial problem: no matter how rich, relevant, inspiring and indeed explorative the curriculum is, certain conditions must be in place in order for it to be productive, fulfilling and useful. These conditions must be those that *permit the curriculum to do its work, and allow learners to do theirs*. They are those that foster the positive attitudes and confident approaches that usefully accompany explorativity in learners. But the Organisation for Economic Cooperation and Development (OECD) has found that the life chances of children in the West are fixed by the time they are three, such is the restriction to social mobility caused by the sharing by children of their own parents' economic and social circumstances. How can they be expected to be truly explorative with this inbuilt disadvantage?

Among the undesirable consequences of social inequity we have its impact on the happiness of learners. Unhappy learners are not likely to display the confidence to benefit from being explorative; they are less able to learn effectively at all. In the UK specifically, Susie Orbach argues in an article for the RSA:

> *If the government's wellbeing agenda is to amount to anything, we need first to challenge the idea that happiness depends on individual attainment.*

> *Where Sure Start provided support to all in the crucial early years of life, not only underpinning the emotional life of the child but also engaging the weary, worried and under-resourced parent, we are now seeing the dismantling of a democratically oriented social provision.*

We need early interventions in the social, emotional, psychological lives of children, to foster their well-being and the empathy that will in turn support their explorative development, as well as providing greater social equity. Political and governmental attitudes and policies are vital here.

We have been considering how schools undertake to release the potential of young people, in order to provide a better future for themselves and others. Notions of ambition, aspiration and self-actualisation were considered. I described in some detail the nature of the concept of explorativity. We have thought about the approaches, roles and duties of governments and society in the way in which they determine the conditions and foundations for the curriculum and of education itself. *Those in power need to be explorative*, and not trapped in the traditions, political ideologies and habits of the past; they need to be prepared to do things differently, to try out bold and liberating opportunities. Whether we are thinking about learners, teachers or politicians, it is interesting to note that these ideas can all be related to the development of the motivation of an individual to move forward. As Stephen Covey has recently put it, *"motivation is a fire within"*, with more than an echo of the concept of explorativity, adding:

> *"You won't be remembered for the things you were going to do, only for the things you actually did. If you don't start a journey, you will always be in the same place. But if you get going, who knows what routes will open up for you?"*

So the duty of those who govern education or personally educate others is to set each learner off on their journey. If governments, teachers and school leaders feel a genuine sense of accountability, they may have somewhere in their professional being the germ of a scenario in which they meet with a pupil after a period of, say, ten, twenty or thirty years, to find out how their lives are progressing on the basis of the foundations laid, and the inspirations given at school. In adumbration of the essence of the Appreciative Inquiry or '4Ds' approach to coaching and development, whereby clients are invited to discover, dream and design in pursuit of their destiny, Mark Twain offered useful words of encouragement:

> *Twenty years from now you will be more disappointed by the things that you didn't do than by the ones you did do. So throw off the bowlines. Sail away from the safe harbor. Catch the trade winds in your sails. Explore. Dream. Discover.*

How fervently one hopes that educators will not continue to be straitjacketed by the prescriptive pressures of Ofsted-friendly teaching, or by league-table-attractive curricular provision, as learners aspire to explore the potential of the above-mentioned freedom.

We have encountered *homo sapiens* (wise or knowing man), *homo habilis* (handy man)*, and *homo faber* (man the creator). Some of us have heard of *homo narrator* (man of words, or man the story-teller) and others. Perhaps you, Reader, are one or more of the above. I would like to encourage each of us, those we teach, and those who govern education and society for us, to find and use the potential of our human status as *homo explorator*.

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Image credit: https://mkx20bvs5a2cy6u43bq2jqtp-wpengine.netdna-ssl.com/wp-content/uploads/2014/11/Your-Learning-Powered-Mind.jpg

EXPLORATIVITY: PART 2—EXPLORING THE CONCEPT

Russ Law

Introduction

In a companion article[1] I described how the idea of explorativity and being explorative came about and how, over a period of a few months, I explored the idea through my own experiences as I authored a small book.[2] In this article I want to deconstruct the idea. At the time I wrote about it I could only find one other example of its use, in connection with genetic research, and no other dictionary definitions; since then I have discovered it in a number of on-line dictionaries, and Edexel GCSE Drama now uses the term - "*explorative strategies* to explore a theme or a text".[3]

My current working descriptive definition of explorative is:

> *An attitude, approach or orientation that is likely to improve or enhance situations, states of mind, relationships, environments, lifestyles and the sense of fulfilment. In essence it involves the willingness and actions of a person to engage with and experience the new and unfamiliar, and an awareness of the ways in which such deliberate acts enrich their life, contribute to personal development and a sense of wellbeing, and help them achieve things they value.*

Given that this disposition or orientation influences the decisions we make about what to do and how we do it when we are under its influence, it's an important concept for lifewide learning and personal development. It affects us from moment to moment and has the potential to shape our actions and behaviours and consequently our intended and our unintended learning and development (learning *en passant*[4]). It is also my contention that explorativity can be a habitual means of ensuring one's lifelong learning in an informal or formal way, and that its principles are well aligned with several currently accepted and desirable approaches to formal education.

By developing the qualities, dispositions and other attributes of an explorative person, we can achieve certain worthwhile objectives. We can:

> bring about developments in ourselves (personal changes) that make our own lives more satisfying see and experience innovation and development as normal and unthreatening features of life – even to be able to see the positive potential of unavoidable change, or at least to be able to deal better with its impact become a more interesting person, more engaged and empathetic with the world we inhabit.
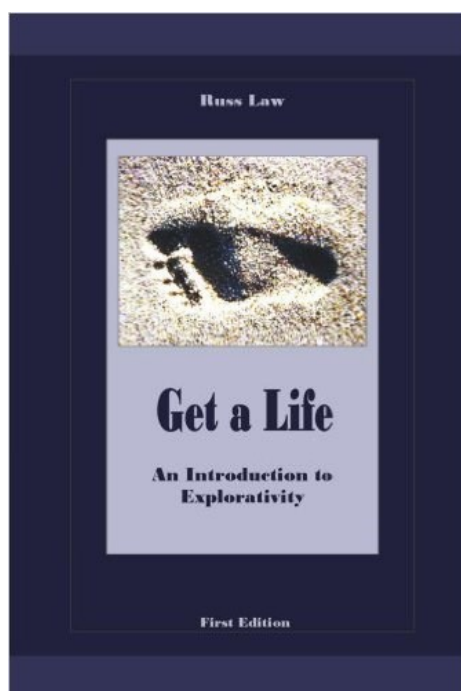
There are other reasons, too, for explorativity:

Our capacity for being consciously explorative is one of the features that distinguishes *homo sapiens* from other life forms. Closely allied to the capacity for imagining and for language, it is what has been mainly responsible for making us what we are: powerful, diverse and accomplished occupants of the planet, who have spread over its surface and survived in many challenging environments, finding and making systems and artefacts, traditions and cultures that excite and sustain.

Our brainpower is apparently underused. This may or may not be so, but it cannot be denied that we sometimes fail to do our brains the favour of treating them well, with food, water, exercise and variety. Unchallenging but tiring tasks, or challenging and stressful ones, leave us incapable of enjoying what more our brains can offer. But by being intelligently explorative we can tap into the exciting resources that are there at our disposal.

What are the characteristics of an explorative person?

Identifying some of the attributes of an explorative individual can help us see more clearly how an explorative approach can enhance our own lives and circumstances. People who are explorative will have many of the following qualities.

1 They are alert to opportunities and ready for different situations. They can see opportunity in new situations. Rather than rejecting innovation in favour of the comforts of the familiar, a person with an explorative disposition is on the lookout for ways of embracing innovations. They are interested in what is going on around them, in both close and distant environments.

2 They are good at making links, and they like to communicate. They are not so arrogant (or frightened?) as to think that they can or need to do it all themselves. All those other minds, all that other knowledge, all those other stimuli... They read, research and listen, and are keen to join in dialogues. They are able to take a step into the unfamiliar, and to see the wood as well as the trees. They will make that call, ask that question, look down that road, chase that ambition…

3 They know that it is better to do something, even if the direct usefulness of a particular action is unknown. Their attitude is often: "Do something - anything!" Instead of feeling paralysed, they make something happen and then evaluate whether it was helpful or not.

4 They are perceptive of people. They can spot and value the 'action drivers'. They recognise the charismatic people who make things happen. They gravitate towards the uninhibited and are ready to line up alongside the bold. They welcome change-makers and do not fear them; he or she probably is one, at some level or other. They see bandwagons coming, and they may leap into the driver's seat.

5 They like to keep their options open. They may have special interests and talents, but they will resist limiting their focus to only one thing. Their approach is to get in among others like them (and unlike them) and worry about the details later.

6 They are likely to find more than just financial benefits in a job. They will enjoy the rich variety of contacts with different people and situations. They are likely to want to travel before settling down – if indeed they do settle down.

7 They are not afraid to take risks: they will say *carpe diem* in the sense of making the most of an opportunity even if it means encountering experiences and situations that are unfamiliar. This may require a degree of courage and a willingness to experience failure.

8 They are committed to making a start on something even if they are not entirely clear about what it is they want to achieve or where they want to go. They believe to start is more important than having a predetermined destination, or "to travel hopefully is a better thing than to arrive", as Robert Louis Stevenson wrote. They do not fret over the question "What if nothing happens and I reach a dead end?" They know that venturing does not guarantee a pot of gold, but they usually think 'nothing ventured, nothing gained'.

9 They are ready to risk embarrassment on the basis that no one is likely to care more about what they sound and look like (or to be more critical) than themselves. They respect people who have a go more than those who skulk on the sidelines. They prefer the risk of regretting doing something to that of regretting *not* doing something. They do not spend time unnecessarily in self-reproach, but look at the positives of what they have learnt from their experience if things do not work out.

10 They do demanding things for no apparent reason other than to take on something that will challenge them. They may climb a hill just because it is there, or go camping despite the necessity to pitch a tent and carry equipment to remote locations.

11 They believe in serendipity – but they don't ever rely on it. They know that it is out there, but do not consider that it has any obligation to come their way. They have a knack of creating their own luck and opportunities – they give things the chance to happen. But they are also resourceful and know that they have the power to influence events and create new opportunities. They may never make a great scientific discovery, but they are aware that many an invention has been achieved partly by chance and an attentive mind.

12 They are prepared to make the most of whatever talents they have and to try to rekindle dormant talents. They are willing to reach back into their youth and take up afresh something abandoned or not previously developed. They are ready to become new learners. They believe that dogs, young or old, can be taught new tricks.

13 They enjoy time alone but they also enjoy time spent in the company of others. They have varying sets of friends and acquaintances, and are happy to move from circle to circle without becoming fixed in one clique.
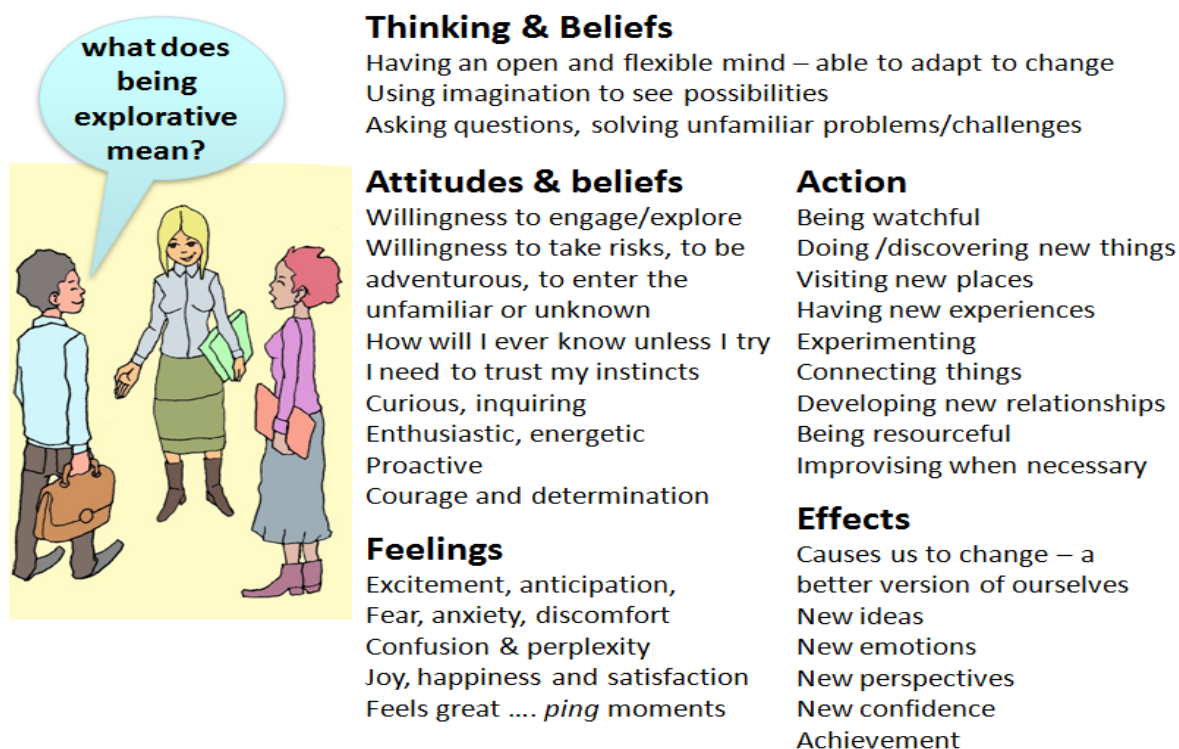
14 They are good listeners. They motivate people to talk to them because of the interest they show in them.

15 They are proactive. When faced with reasons or excuses for not doing something, they do it anyway. On a dull, cold, rainy day they will put on their coats and go out.

Mapping the dimensions of explorativity

The concept of explorativity remains broad and fuzzy. Figure 1 attempts to map some of the most important dimensions of being explorative. They should not be seen as a checklist, rather they are the sorts of things that are drawn upon when a person engages with an opportunity in their life to explore.

Figure 1 Some of the dimensions of being explorative

what does being explorative mean?

Thinking & Beliefs
Having an open and flexible mind – able to adapt to change
Using imagination to see possibilities
Asking questions, solving unfamiliar problems/challenges

Attitudes & beliefs
Willingness to engage/explore
Willingness to take risks, to be adventurous, to enter the unfamiliar or unknown
How will I ever know unless I try
I need to trust my instincts
Curious, inquiring
Enthusiastic, energetic
Proactive
Courage and determination

Feelings
Excitement, anticipation,
Fear, anxiety, discomfort
Confusion & perplexity
Joy, happiness and satisfaction
Feels great …. *ping* moments

Action
Being watchful
Doing /discovering new things
Visiting new places
Having new experiences
Experimenting
Connecting things
Developing new relationships
Being resourceful
Improvising when necessary

Effects
Causes us to change – a better version of ourselves
New ideas
New emotions
New perspectives
New confidence
Achievement

The influence of context and challenge

The idea of explorativity is valuable in our familiar everyday world: even though everything might seem familiar, if we use our explorative powers we can discover new opportunity for learning or new people we might benefit from knowing or helping. But an explorative orientation is essential when we either find or put ourselves into circumstances that we have not experienced before.

One of the most useful conceptual tools we have for analysing situations and our responses to dealing with them or creating new situations is the framework developed by the late Professor John Stephenson[5]. Here we consider its value in the context of explorativity.

Situations can be categorised according to whether the context is familiar or unfamiliar and whether the problem (challenge or opportunity) is familiar or unfamiliar (Figure 2). Much of our life is spent in familiar situations where we don't have to pay too much attention to what we are doing and we can reproduce our responses without really thinking deeply about our actions (position 1, Figure 2). We don't have to be explorative here but we can choose to be - simply by making the familiar unfamiliar, like going for a bike ride if it is not something we normally do.

Figure 2 Relationship between context, capability and creativity (adapted from Stephenson 1998:5 by Jackson 2011). Letters refer to scenarios described below. The shaded area represent situations where we have to be explorative.

Moving to the other domains in Figure 2 we can appreciate that if we are confronted with a problem, challenge or opportunity that is new to us (fields 2 & 3 in Figure 2), and/or we enter a context that is unfamiliar (fields 3 & 4 in Figure 2) we have to develop new contextual understandings and/or invent and try out new practices and ways of thinking and behaving. Regardless of whether we have created the situation or we have been put into it we have to behave in an explorative (open, flexible, enquiring, responsive, adaptive, inventive) way in order to deal with it.
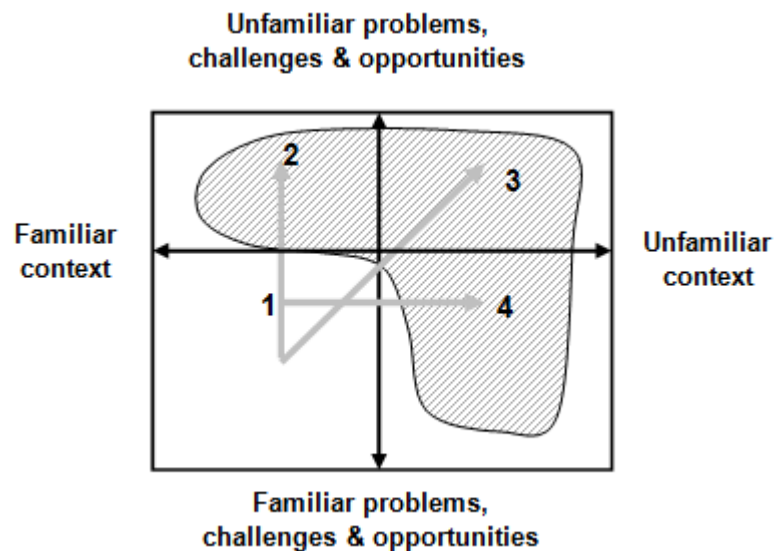
From the perspective of being explorative, we can use this situational framework to encourage ourselves to think about the situations we encounter and reflect on whether we are restricting ourselves to contexts and challenges that are familiar and comfortable, or are involving ourselves in unfamiliar problems, challenges, opportunities and contexts that will require us to be explorative, creative and resourceful. If we are teachers, we might also use this framework in our teaching to help us reflect on the creative potential of the situations we design and implement within our courses or classrooms.

Some of the ways in which being explorative manifests itself in everyday life are described below.

Explorativity in our physical world

The physical world is rich in opportunities for exploration, and there is a broad range of possibilities for explorativity through physical action. At one end of the spectrum are the extreme challenges, like setting out to discover the source of the Nile, a new trade route to the Indies, a passage from North America to Asia, or the possibility of landing on Mars and returning alive! At the other end of the spectrum come simpler tasks like getting up from in front of the TV or computer screen, and cooking a meal you have never tried making before or taking the dog for a walk on the lookout for something new or interesting to happen. Even in these modest examples, there are explorative opportunities that can serve to engage one's potential - by using intellect to decide on a recipe and prepare a meal, or by allowing one to enter a less familiar and less controlled environment (outside), where chance encounters may occur, or new ideas come to mind from what one sees and hears, smells, tastes or feels.

Moving up a notch or two, for those fortunate enough to be sound in wind and limb (not to be taken for granted) there are the benefits of more robust physical exercise. In addition to the stimulus of a change of scenery, as in a brisk walk or a gentle jog, there are those of an increased oxygen supply to the brain, of helpful chemical reactions in the body, and thus of a more relaxed and yet productive basis for personal effectiveness. Naturally generated endorphins are a healthy drug, and there is even a credible and growing body of opinion that the effects of good exercise are as great as those of antidepressants for those suffering from certain forms of mild depressive conditions - and the side-effects are less of a concern.

So when was the last time you found yourself in situations that were uncomfortably unfamiliar?

On a larger scale, but still within the bounds of ordinary people, there are other possibilities. Many years ago, as a relatively new teacher, I sat in the staffroom of the school where I taught and considered my next forty years as a teacher, and a feeling of desperation began to creep into me. I was still relatively young, and I felt that the future was closing down into a narrow and unadventurous channel. A substitute teacher mentioned that he knew someone who had applied for a teaching job abroad, and said that he also intended to work in some interesting or at least different location. Although the fact that this was a prime example of explorativity escaped me at the time, the conversation was to be a defining one in my life. Perhaps because I was mentally prepared for adventure this chance conversation ultimately led my wife and me to many years of professional and personal challenge, opportunity and fulfilment in the Middle East. A change of location can open up the doors of explorativity, or be a demonstration of it. The important point is that large-scale or small-scale physical action can allow for productive explorativity both of one's own personal potential and of the wider environment.

Explorativity in our inner world

It is not always practicable to up and move. Nor can everyone start jogging round the area like a marathon contender. But physical mobilisation is not the only course of action. This is why it is important to engage in occasional, serious and focused spells of self-examination. Many busy people, even those who work in areas full of other people, lack a proportionate level of what Professor Howard Gardner terms "intrapersonal intelligence". They can be so busy sorting out major issues, petty problems and the things that are going on in other people's heads, relationships and lives, that they neglect what goes on (or doesn't go on) in their own.

It is not recommended that one turn into a navel-gazing, self-obsessed introvert; but each of us deserves the benefit of a few minutes of our own valuable time! So it can be useful to ask oneself certain key questions, and to take time - perhaps a period of days or weeks - in answering them. If there are trusty friends or relatives to help, then so much the better, but they are not essential to the process. For example, the relevant questions might include:

- What is really important to me?
- What might I regret *not* doing before the opportunity is gone?
- What things would I like to do if I only had the time/energy/focus?
- What new talents could I try to develop?
- Have I got a skill or ability that is lying unused?
- Did I once start something and then give it up because of the circumstances? Can I give it another go?
- Am I discouraged from doing something because I am not very good at it?

In answering the above, one takes a step towards the application of explorativity for what people call personal growth, life-long learning, continuing professional development and self-actualisation.

If everyone stopped listening to music because they could never rival the genius of Mozart or Ella Fitzgerald, or gave up tennis because they would never get to Wimbledon, then life would be dull in the extreme. One does not have to be a great poet to write a poem, a concert musician to pick out a tune on an instrument, or a literary giant to write a letter.

There are two areas of focus in potential outcomes from the above, and they could be seen as the active and the passive - e.g. listening to music or making it; watching sport or playing it, reading a letter or writing one. But even the apparently passive angles can be critical, focused, structured, energetic – active. *Critical* listening, reading, viewing and appreciation are all active processes.

Explorativity in our personal relationships

Earlier I mentioned communication or language as being one of the defining features of humanity. While most people would probably recognise this, it is easy for us to neglect this mysterious and special facility that we have. We do so to our detriment. One of the most self-affirming phenomena in society is to relate to others. A good way of overcoming the blues is to be taken out of oneself - to be in company that occupies our attention.

There are more benefits in communicative connections. These are the ones that lead to the discovery of mutual interests, new information, new ideas and stimuli. Take that staffroom chat about jobs abroad that I referred to earlier, for example.

There have been similar episodes in my life, such as the one in which I casually enquired how someone had come to be in their particular line of work, and then found myself on a pathway that they initiated and that led me into the same field via a series of conversations that I would never have foreseen.

But the most obvious potential benefit of explorative communication and relationship building is that it makes people less isolated; it can remove mistrust and misunderstanding; it allows life to be more sociable and interesting. When at the supermarket, do you stand in silence at the checkout, or do you brighten your day, and probably the checkout operator's too, by exchanging brief pleasantries?

Explorative synthesis

While the above subheadings suggest discrete domains in which we are explorative, there is often an overlap - exploration takes you where you need to go and it does not stop at a physical or mental boundary. Some of the most productive areas of human activity are those that make connections between people and ideas, concepts and processes. One of the best jobs I ever heard of was invented in a science fiction story by A E van Vogt, called 'The Voyage of the Space Beagle', said to have inspired the film 'Alien' many years later. (You may also notice the reference to Darwin's explorations – but I digress, as may be typical of explorative activity.) The job was that of 'nexialist', who had some understanding of various fields of science and technology, and who had to bring together the disparate elements and people needed for cosmos-saving projects.

Several of the gifted musicians at a school at which I worked had the ability not only to play brilliantly, to enjoy serious music and to teach the subject as an academic discipline, but also to foster a general attitude among students, staff and friends that music held something for everyone. All genres were worthy of a hearing, and even modest live performance was respected. By a process of cajoling and encouragement, bands and ensembles were formed in which adults and children - beginners, *faux débutants* and the highly accomplished - sat together and made music. For the participants, and even for the varied audiences, the results were astonishing. What a self-actualising experience for those who had been coerced into making our own, humble contributions!

Similarly, the reasons for joining the local flower-arranging class or jogging club are not only to become better flower-arrangers or faster joggers. Conversation and what used to be called fellowship are also potential benefits. Explorative connections can often lead to a synthesis of communication, interest and activity that takes everyone into unexpected areas of individual fulfilment and shared achievement.

Explorativity and the Internet

Following the theme of conversation and the value of shared interests, one has to recognise the enormous impact and worth of Google and other search engines to extend our capacities for exploration: to enable us to become even more explorative human beings. Virtual communities, unbounded by physical geography and culture, provide important forums for discussing, sharing and publicising common interests and information. While they do have some hazardous elements (lack of regulation, unverified input, anonymity and plagiarism, for example), they are powerful and potentially useful social instruments that when used wisely extend our capacity to explore and learn through social interaction.

Although I earlier raised the matter of getting up from the screen and moving about a bit (still to be recommended), one has to appreciate the liberating potential of the Internet for both the mobile and the less mobile person. Indeed, the very term surfing suggests the speculative, *explorative* nature of much Internet use. It can take one in unplanned directions, make connections, aid communication, provide a medium for intellectual and artistic activity and open up unpredictable possibilities.

Our need to be explorative

We are all different and our temperaments and circumstances shape the extent to which we either need or desire to adopt an explorative disposition. However, the rapidly changing and sometimes disruptive and unforgiving world we live in period-ically demands us to explore new circumstances that we have been forced into, or new opportunities that have emerged in our lives. In such situations we have to have the confidence, attitudes and abilities to explore or we will be disadvantaged or miss that chance to change our lives for the better.

Some people are born explorers; they seem to do it naturally, moving effortlessly and seemingly without too much disturbance into a different pattern of life, while other people find it hard to move out of the familiar, comfortable patterns of their life. For such people it is possible to influence and facilitate your own development towards an orientation that is more comfortable with jumping into and exploring the unfamiliar or unknown. To help people on this journey I developed a simple 'Personal Explorativity Kit': a checklist of approaches you might try to encourage you to be more explorative. The first part is a list of contexts those places in which you can consider being explorative:

YOUR LIFEWIDE CONTEXTS in the different parts of your life - the potential for exploring something in:

- Your working life
- Your leisure and recreational life
- Your relationships
- Your physical environments
- The virtual on-line communities you inhabit

POSSIBLE EXPLORATIVE ACTIVITIES - potential benefit from carrying out any of the following activities in any of these contexts:

- Go somewhere you have never been before
- Ask a question(s) or conduct an inquiry
- Research something you don't know very much about
- Make a telephone call or send a message to someone you don't know very well
- Set out to learn something new
- Practise something you are not very good at
- Make, compose, perform, prepare or build something
- Take a chance - see an opportunity and just go for it

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AN ECOLOGICAL PERSPECTIVE ON EXPLORING & EXPLORATION

Norman Jackson

Individuals' learning is related to their circumstances and contexts, their needs, desires and purposes, and the people and social interactions that take place in the situations they experience. In other words, individuals' learning is a relational or ecological phenomenon and it's useful to consider how, why and when we learn through the concept of a learning ecology[1,2]

> I'm a storyteller; that's what exploration really is all about. Going to places where others haven't been and returning to tell a story they haven't heard before.
> *James Cameron*

In nature an ecosystem comprises the complex set of relationships and interactions among the inhabitants, resources and habitats in an environment for the purpose of living. Each organism within an ecosystem has its own unique ecology within the   ecosystem through which it lives its daily life, so the whole ecosystem is made up of many individual ecologies competing or collaborating for resources and contributing to the system as a whole so that the whole system is maintained and sustained.

A similar conceptualisation can be applied to human ecological systems or ecosocial systems - the set of relationships and interactions among the people, resources, habitats, and other residents of an environment for the purpose of living[2]. While all ecosystems are complex adaptive systems that learn to live with, and when necessary adapt to, their environment, the making and meanings and sharing of understandings (learning) are a primary interest and purpose of human ecosocial systems together with their continuous development and improvement[3].

Every organism has an environment: the organism shapes its environment and the environment shapes the organism. So it helps to think of an indivisible totality of 'organism plus environment' - best seen as an ongoing process of growth and development[4]. From an environmental perspective it does not make sense to talk about the environment in which we are learning without reference to ourselves as the organism that is perceiving and interacting with our environment and our particular circumstances within it in order to learn, develop and achieve.

Applying the idea of ecology to learning, personal development and achievement is an attempt to view a person their purposes, ambitions, goals, interests, needs and circumstances, and the social and physical relationships with the world they inhabit, as inseparable and interdependent. The idea of ecology encourages us to think more holistically and more dynamically about the way we inhabit and relate to the world and our particular circumstances in it. It encourages us to think in a more holistic way about our life: how we connect up the moments in our lives to form experiences and achievements that mean something to us.

Growing out of the exploration of this idea is a belief that our ecologies for learning embrace all the physical and virtual places and spaces we inhabit in our every-day lives and the learning and the meaning we gain from the contexts and situations that constitute our lives. They are the product of both imagination and reason and they are enacted using all our capability and ingenuity. They are therefore one of our most important sites for our creativity and they enable us to develop ourselves personally and professionally in all aspects of our lives. To promote discussion I developed a model to explain my conception of a learning ecology. In this version I have shown how each of the elements of the model are involved in exploration (Figure 1, overleaf).

Figure 1 Important components of a learning ecology[2] showing how each component might be involved in exploration
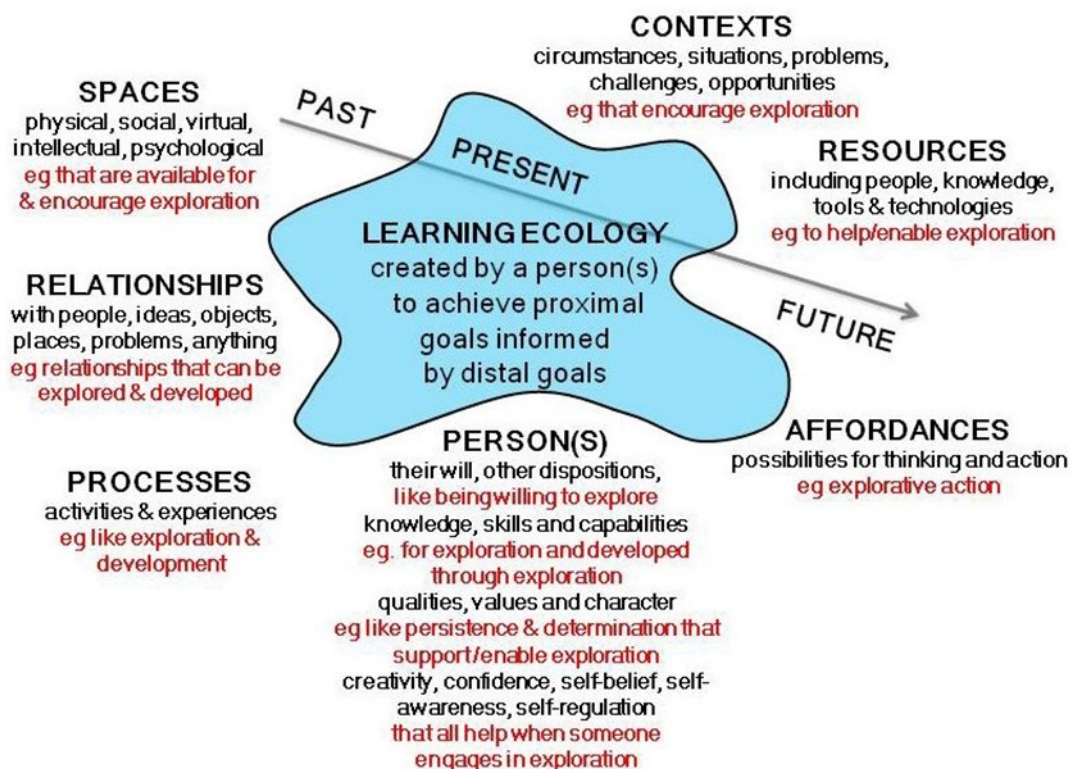
Exploring - a key process within our ecologies for learning and creating

Exploration occurs in all non-sessile (not fixed) animal species. It's the way in which organisms make sense of their environment and change their environment if they have to. It's a fundamental part of an organism's ecology for surviving: an organism's life depends on the success of its explorations to find food and water if they are a land animal, security (safe places to rest) and procreation (they need to find mates to propagate their species). Exploration is programmed into the DNA of life and is a fundamental process in the ecology of every organism and every ecosystem.

> In wisdom gathered over time, I have found that every experience is a form of exploration.
> *Ansel Adams*

This goes for people too. The history of man is a history of exploration. Only through exploration can we come to understand the world and the universe we inhabit. There is no other way of achieving this. Every period of history, every culture and every advance in knowledge and technology is the product of many explorations often unique to an individual.

To explore or the act of exploring are used as a 'transitive verb' - to denote either the systematic investigation, study, search for or analysis, testing or experimentation or less systematic forms e.g. to look into something, to become familiar with, to get a sense of.... Exploration and exploring involve travelling physically, virtually and or mentally into places and spaces that are unknown or unfamiliar.

Exploring is both an activity that leads to experience through which we learn and a 'state of being engaged and involved in something in a particular way'. While exploration can involve aimless wandering, (and even aimless wandering has a place), it is usually undertaken with intent and involves a repertoire of activities e.g. questioning, searching, contacting, relationship building, participating, experiencing, observing, noting, interpreting, connecting, recording, mapping, narrating. Exploration and exploring are thus processes within which many different activities and experiences can be incorporated depending on the contexts and situations involved. So a mathematician exploring an abstract mathematical problem will use an entirely different set of skills, activities, methodologies and tools to a geologist exploring and mapping a terrain that is not known, or a potter who is experimenting in order to create new works, or a dancer who is developing the choreography for a new dance. But all are united by a search for a purpose involving mind, body and tools in productive entanglement.

For human beings the motivation to explore includes but goes beyond their basic needs of food, security and relationships for the purpose of sex and procreation. The motivation to explore is deeply embedded in a our need and desire to know, to understand in order to control, manipulate and exploit our environment for a multitude of purposes, and to bring entirely new things into existence. Our desire to explore is also linked to our desire to grow and develop as a human being, to challenge ourselves to stretch ourselves by moving outside our comfort zone - the known and familiar into our stretch zone. Our desire to explore is also connected to our aesthetic world - to create beautiful objects with significant meanings.

Our own attempts to explore ideas relating to lifewide learning and creativity provide an example of exploration that is fundamentally driven by the desire to learn and to use this knowledge to improve not only the systems for education we have created but also to improve our own thinking and behaviour.

While social animals like bees and ants can communicate what they have discovered in their immediate environment to other bees and ants, they have not and will never have knowledge of food sources in another country. Not only do these animals lack the capability to explore outside their immediate environment they lack the means to communicate and the tools and mediums to convey complex information about environments other than their own. This is another distinguishing feature of humans and our ability to explore. We have developed complex spoken and written languages that enable us to codify what we have discovered, and preserve and share this knowledge with others. We create complex machines and tools to transport and support us in hostile environments or enable us to

Figure 2 Senningers[5] Learning Zone model

search in environments that we cannot physically go to, and we create maps that enable us and others to navigate and find what we have discovered. We have invented powerful computers and internet technologies that enable us to search and find knowledge and people that enable us to explore and share our discoveries. In other words our ability to explore is not limited by the capacities and functionalities we possess as individuals. Rather, our ability to explore is constrained by our ability to imagine and ingenuity to make the tools that will enable us to explore a particular environment.

As the articles in this issue of Lifewide Magazine reveal - exploring is a way that people deal with and make sense of perplexity and uncertainty if we are put into a circumstance that is unfamiliar and not of our making or we put ourselves into new and unfamiliar places. Through our explorations we make these spaces more familiar, and develop our confidence and capabilities to inhabit them. Exploration is the way that we develop ourselves and the things that we care about.

> Exploration really is the essence of the human spirit, and to pause, to falter, to turn our back on the quest for knowledge, is to perish.
> *Frank Borman*

Exploration is related to the idea of 'quest' a prolonged search for something that is difficult to find or an attempt to achieve something difficult[6] like the search for new drugs or a cure for cancer. Exploration is the pathway to creating something new: exploration underpins experimentation and the process by which new products, processes, forms of organisation and performances are developed.

Our willingness to explore and to take risks by putting ourselves into contexts, challenges and experiences that are unfamiliar or unknown (what Russ Law calls an explorative disposition[7]), exposes us to new situations and circumstances, encourages us to think and act in ways that are new to us, and enables us to use and develop abilities and capacities in ways that we had not experienced before. The process and act of exploring helps us to develop and experience the world in a relational way as an ecological animal. It enables us to see and feel the connections we make as one thing leads to, or results in, another. Exploring a complex problem allows and encourages us to think ecologically, to see the connections and relationships within complex systems.

Exploration can be in any part of our ecology for learning and achieving. It's the means by which we search for, develop awareness and begin to realise the potential of the affordance for something in any aspect of our life. It can be undertaken to understand the contexts and situations we are in - the problems, challenges and opportunities we have to deal with. The potential, limitations and constraints of the spaces we have at our disposal. To find and develop resources we need to achieve

something, and to develop new relationships. The importance of exploration is manifest in the rich vocabulary we have developed to describe and give meaning to what we do when we are exploring. Furthermore, different fields often have their own words to describe the act of exploring. Common expressions like searching, seeking, questing, trying, playing, experimenting, investigating, developing, tinkering, messing around, poking around, sucking it to see what might happen, adapting, tweaking, examining, testing, probing, scanning, hunting, evaluating, inquiring, questioning, surveying, mapping, sifting, reviewing, studying, delving or digging into, having a look often convey not only the sense of behaviour and activity but also the mental processes that accompany our 'doings'.

The exploring mind

Exploration is an active process - we have to do something in order to find or discover something even if we don't know exactly what it is we are looking for. An important part of this doing something is the mental processing that accompanies us on our journey. Our thinking helps us imagine and anticipate what might lie ahead in our exploration and helps us make decisions about what to do and what not to do. Exploring also requires appropriate attitudes like the willingness and courage to venture into unfamiliar territory and take risks, and the will and determination to persevere when our explorations when we reach a dead end or barrier that obstructs us. It requires us to be open and awake to possibilities, to keep an open mind, and sometimes to suspend our disbelief and critical judgements in order to try something out. But it also requires decision making based on reasoning and judgement of what our exploration is revealing. Exploration involves sensing what is emerging from our journey and making sense of the feedback we gain through our explorations. Such revelations are not just cognitive they may also be affective since exploration often involves us as a whole person acting in the world and sensing our effects in the world and the way the world affects us.

When we tackle and explore a problem, challenge or opportunity, we use both our imagination and our critical ways of thinking in a complex synergistic interplay, 'a productive entanglement of imagination, reasoning and action'[7] Pendleton-Jullian and Brown[7] have developed the concept of pragmatic imagination to represent this interplay and avoid the traditional separation of reasoning and imagination. Pragmatic imagination sees thought and action as individual and reciprocal.

These authors represent thinking as a continuum including perception, reasoning and imagination (Figure 3) 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'[7:73]

Figure 3 The spectrum of thinking developed Pendleton-Jullian and Brown[7]
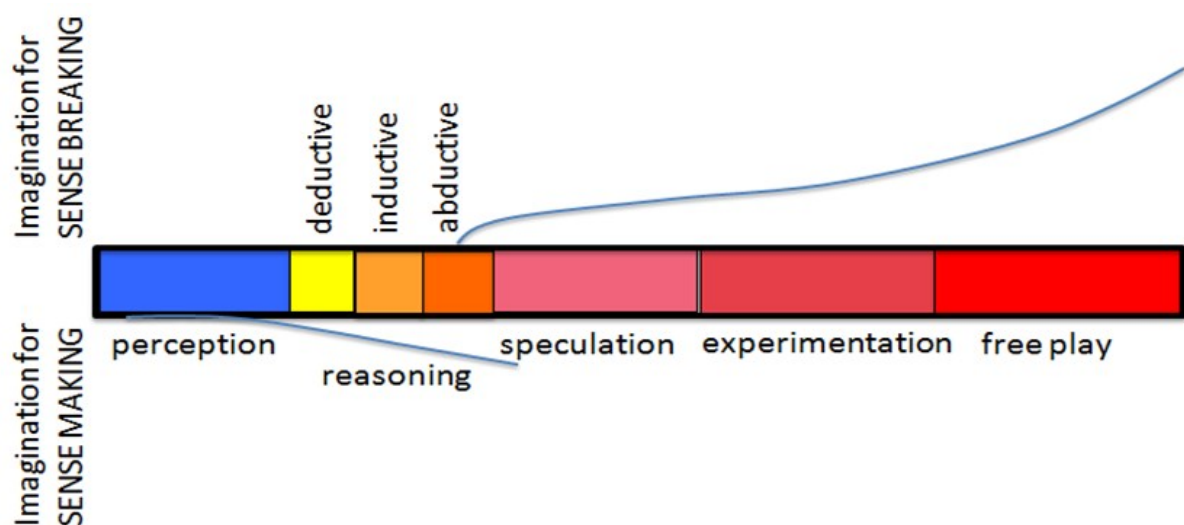
Puccio et al[8] also recognized this productive entanglement of thinking and action suggesting that specific cognitive and affective domains are activated at different points as a problem is explored and resolved. (Table 1).

Table 1 Representation of the thinking processes involved in solving a complex problem which integrates creative thinking and critical thinking[8]

Hypothetical steps in a problem solving scenario							
1	2	3	4	5	6	7	
Assessing Situation	Exploring a Vision	Formulating Challenges	Exploring Ideas	Formulating Solutions	Exploring Acceptance	Formulating a Plan	
Cognitive Skills							
Diagnostic	Visionary	Strategic	Ideational	Evaluative	Contextual	Tactical	
Affective Skills							
Curiosity	Imagining Dreaming	Sensing Gaps	Playfulness	Avoiding Premature Closure	Sensitivity to Environment	Tolerance for Risks	

In the early stages the individual assessing the situation, is driven by their curiosity and imagination to comprehend the problem but also uses their diagnostic skills such as analyzing, describing, and selecting. Puccio et al[8] note that openness to novelty, tolerance for ambiguity, and tolerance for complexity underlie all stages of creative problem solving.

Another perspective on the involvement of integrative ways of thinking during complex explorations and problem solving is provided by Conklin[10] who cites Rittel and Webber's[9] study of how a group of engineers solved the problem of designing 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. Each participant was asked to think out loud while they explored and worked on the problem. The sessions were videotaped and analyzed in great detail.

The analysis showed that the designers worked simultaneously *on understanding the problem* and *formulating a solution*. They exhibited two ways of trying to understand the problem (Figure 4): firstly, they tried to understand the requirements for the system (from a one page problem statement they were given at the beginning of the process); secondly they created mental models and 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....").
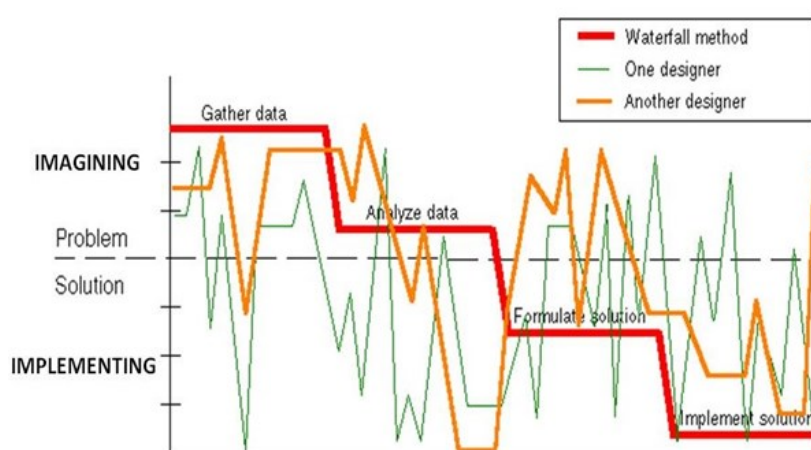

Figure 4 Patterns of thinking exhibited by life design engineers[10:6]

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 prevailing 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 gathering and analyzing 'requirements' from customers or users. Once you have the problem specified and the requirements analyzed, you are ready to formulate a solution, and eventually to implement that solution.

However, the subjects in the elevator experiment did not follow a waterfall type pattern. 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 4. This jagged-line pattern is typical of opportunity-driven learning, because in each moment the designers are seeking the best opportunity for progress toward a solution. 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.

The study demonstrated 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.

Figure 4 illustrates another feature of solving a complex problems namely, exploring the problem in order to understand it continues to evolve until the very end of the process. Even late in the process the engineers returned to problem understanding, the upper part of the graph. This pattern of exploration in 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 experts 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 it', rather it is the mark of an intelligent and creative learning process. The jagged line of opportunity-driven problem solving is a picture of exploration, learning and the developing ideas and possible solutions involving the integration of critical and creative thinking. This is the way creativity emerges from our ecologies for learning when tackling novel and challenging problems in a particular context.

Lifewide Education's ecology for exploration

Exploration has a context. It is undertaken for a purpose. We have conceptualised our magazine as a vehicle and a tool for exploring ideas and curating what we discover - that is its purpose and our context is our lifewide education project. Every issue of the magazine requires us to build an ecology through which we explore, develop ideas and learn. We are searching for existing information and knowledge resources and developing our own.

Our ecology connects to our past (what we know and what others have discovered). It has an unfolding present from when we start exploring until we end this particular exploration usually when we publish the magazine. What we discover will help us advance our ideas and connect to future ecologies for exploration and learning. Affordance for learning is everywhere and the purpose of exploration is to realise this affordance through our own research and contributions that are made. In building our ecology we are creating our new intellectual spaces for inquiry and thinking. Much of the editorial effort goes into exploration activities which include - searching, finding, filtering, interpreting, connecting, combining, synthesising and contextualising the knowledge that we find and developing a narrative that gives this knowledge coherent and compelling forms that are appropriate for our inquiry. It's a search collaborative effort involving everyone who contributes and through the process we co-create new meanings and enrich our understandings.

Perhaps the most important affordance in our ecology for exploration is in people and relationships and the job of exploration is to find people who are willing to share their perspectives. Our ecology depends on the fundamental belief that people want to share their knowledge and be part of something bigger than themselves. The job of the editors is to find people who want to contribute and help them communicate their knowledge and contribute to the overall narrative that is being formed. Our magazine is the product of our exploration. By curating these resources and making them freely available we are trying to contribute to the knowledge resources of the global higher education ecosystem, and of course we hope that one day people who are conducting their own explorations will find and make good use of this resource. If the people who read this magazine just pick up one or two ideas and appropriate and act on them then over time this resource, and our exploration efforts will have made a small impact on the ecosystem. And that is the way an ecology for exploration works.

What conclusions might we draw from our exploration of exploration?

As TS Elliot reminds us, exploring anything should enhance our understanding of what has been explored, but what is discovered in one exploration is often the starting point for another.

In my own explorations for this issue of the magazine I was surprised to find very little literature was available to me on the subject of exploration. There are many articles on exploring something but I found very little information on the idea of exploration or exploring itself. Perhaps it's an idea that is taken for granted – so obvious that it is not worth exploring. In this magazine we have explored a number of perspectives and codified what we have learnt so that others can learn from what we have discovered. Through our explorations we have developed, in our own small way, our understanding of the role of exploration in our ecologies for learning and problem solving. We have consolidated our belief that the success of our ecologies for learning is fundamentally based on our ability to explore and make sense and use of our discoveries.

We need exploration at all levels of mankind. At the global and national ecosystem level we need highly skilled knowledgeable people working in multidisciplinary teams to solve the most difficult and complex social, political, economic, technological, medical challenges facing the world. At the organisational level we need exploration to work with the challenges, problems and opportunities with which it is concerned. At the individual level, we need to be able to explore our world to discover the things we need to know to do the things we need to do and live a productive and fulfilled life. It would seem that helping learners develop the dispositions and capabilities to explore is an essential and moral obligation of a 21st century higher education.

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LEARNING TO EXPLORE MARS—THE EXO-MARS PROJECT

Science is all about exploration for new and better knowledge and the application of new knowledge using the methodologies and tools developed to investigate phenomena within a particular disciplinary field. Scientific investigation relies on making observations, asking and seeking answers to questions, forming hypotheses and experimenting to test whether these working concepts are valid. Sometimes new observations and insights are made possible by the development of a new technological tools that enable a domain or phenomenon to be explored in ways that that have not been possible before. For example, the Hubble Space Telescope launched in 1990 has enabled astronomers to make observations of our universe that were not possible before leading to many breakthroughs in our understanding on the way galaxies, stars and planets are formed, the nature of black holes, and the expansion of the universe.

Space exploration is particularly interesting because it is happening now in a very visible way. A recent BBC4 Sky at Night programme called 'Life on Mars' illuminated some of the preparations being made to explore Mars (below) by a team of UK scientists.
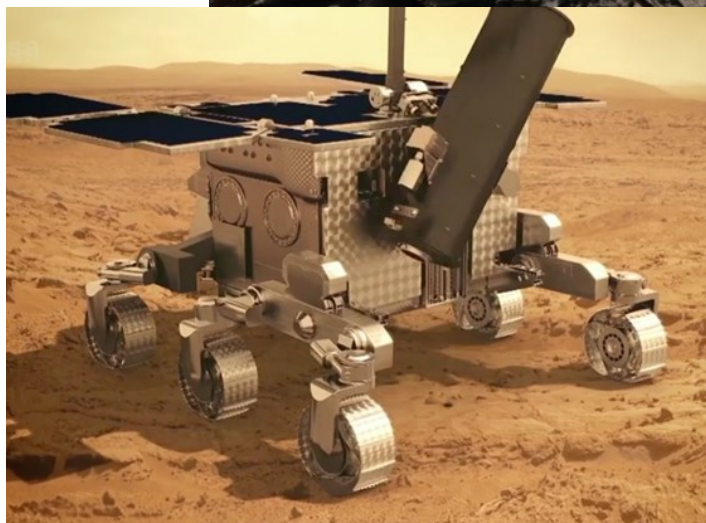
Scientific exploration is driven by questions and one of the most important is 'is there life in other parts of the universe?' The ExoMars project is intended to land a rover on Mars in 2020 to drill beneath the surface to search for evidence of life. The programme illustrates that to explore a field not only do we have to develop the specialist knowledge to be able to make sense of the phenomenon we are exploring but we have to learn how to use the technologies that we will use to enable us to explore.

In the programme presenter Chris Lynton visits Harwell where a team of British scientists are learning an essential skill for their exploration of Mars: learning to use and drive a remotely controlled rover that will be connect them and their expertise to Mars. The presenter interviews Dr Louise Preston.

Louisa Preston (right): Welcome to our Mars Operation Centre.... this is where the MURFI mission, which stands for the Mars Utah Rover Field Investigation mission, is housed. This is where all our British scientists are working together to try and emulate a Mars mission.

Presenter: So to do that you've got a real rover, exploring a real landscape.

Louisa: Yes, this landscape. It's actually the badlands of Utah, seven kilometers outside of Hanksville. We don't actually know where the rover is right now. It has been dropped in a landing ellipse, just like we'd have on Mars. The idea is, it gets dropped, it opens its eyes, which is the camera eyes, and we get sent images, and from those images we need to localize ourselves, find out where the rover is, what it's looking at, and start doing some exploring.
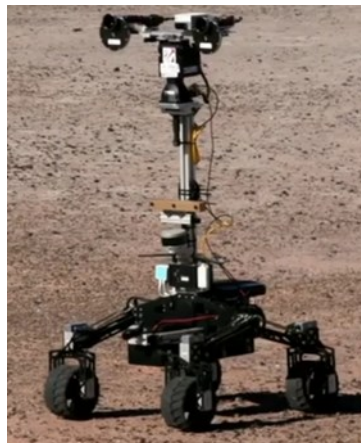
Presenter: The purpose of this mission is to allow the team to build the skills needed to remotely explore a distant world, so that when the European rover does go to Mars, they'll be ready and prepared. So for a geologist, how different is exploring a landscape with a rover, compared to being there, and being able to look around and touch things?

Louisa: It's incredibly difficult. The main point of this mission is actually really to train us to almost be quite hands-off. To make us look at images and choose things. Choose sites of interest that might be able to answer our overriding science question, which is to hunt for signs of life, just like the ExoMars rover will do in 2020.

Presenter: So what will ExoMars be able to do that Curiosity and the other rovers haven't done so far?

Louisa: So the key thing ExoMars is going to be able to do is drill up to maybe 2 meters into the surface, and so that's something that we're also going to emulate in Utah. The reason is, the surface of Mars is cold and it's bombarded by UV radiation. If you're going to look for bio signatures of life the chances are they are buried and preserved underneath the ground, using the rocks for protection. So drilling is the best way to get to them. We are trying to find the type of rocks that we know might be able to preserve ancient signs of life, such as clays and sulphates, which is what we also have on Mars. So hopefully we can find some clays and sulphates, we can analyze them using the tools on MURFI, potentially find evidence of organisms. Then we can prove that we know what we're doing, we can prove the tools know what they are doing, and then hopefully when ExoMars 2020 comes along we know exactly where to go and what to look for.

Acknowledgement

Image below: https://www-tc.pbs.org/exploringspace/_img/mars/terraforming/planets.jpg

EXPLORING, AND HIGHER LEVELS IN BLOOM'S TAXONOMY: RAMBLING REFLECTIONS ON MY QUEST TO EXPLORE EXPLORATION

John Cowan (Edinburgh Napier University)

John is an extraordinary teacher whose higher education career spans over 50 years during which he has championed and practised student-centred learning. He is a founding member of the Lifewide Education community and has made many contributions to help us advance our thinking on the nature, value and recognition of lifewide learning.

Propositions

I will suggest, in this short and somewhat rambling piece, that exploring is not covered by Bloom's Taxonomy, that it should certainly feature as preceding many levels therein, and that it presents unique and important pedagogical challenges due to its serendipitous and somewhat rambling nature. I further suggest that, as teachers, we can make good use of our own explorations to gain insights into the nature and characteristics of exploration.

Introduction

A few weeks before writing this article, I was busy offering online feed-forward on a plethora of reflective reviews drafted by second and third year students of civil engineering at Limerick University. This course intriguingly presented them with one productive challenge after another; their reflections on these experiences made great reading. I was having to allow other emails to stack in my in-tray, while I formulated feed-forward comments on the students' reflections. However, one email heading caught my attention and distracted me for a few minutes. It was a message from Norman Jackson, headed boldly:

EXPLORING AND BLOOMS TAXONOMY[1].

The message itself was short:

> *'I have been wondering how exploring connects to the taxonomy...does it cut across/combine domains? Is this something you might be interested in writing a short piece on for the next issue of Lifewide Magazine?'*

I quickly responded that I would try to do justice to this inquiry - after completing the job I had in hand. So I returned to the Limerick students, who had been set to search out and pursue creative notions about possibilities which excited (sic) them. Their remits had been wide-ranging, and the attendant learning had to be derived from independent study. In the second year, the Design Studio Module provides an opportunity for students to choose and explore a topic or problem of interest to them, maximising their freedom of choice

Figure 1: Revised Bloom's taxonomy [2]

and opportunity for creativity. Students in the past have chosen to explore a diverse range of topics, issues and problems, ranging from urban design to shuttering systems for reinforced concrete, and sleeping accommodation for homeless people. The Integrated Design Project in third year combines 4 modules. Students in teams of 5 or 6 refer to precedents that they have studied and sketched, in order to innovatively suggest and evaluate alternative foundation and superstructure reinforced concrete solutions for a real architectural proposal on a real site. They have to deal with all necessary planning, risk assessment, vertical and horizontal design load cases, and qualitative and quantitative structural analyses. They present their solution as a team, to an audience including their teachers, fellow students and industry experts.

It was obvious from their reflective reviews that they had been exploring unknown territories – for them and often for their peers and teachers. Consequently, I noted that amongst the claimed development of abilities in the reflective reviews were such activities as problem-*finding* before problem-*solving*; conceiving and asking productive questions; listening empathically to potential clients and users, and detecting the nuances in their responses; sustaining effort levels; and nurturing the courage to take professional risks. Most of this seemed to involve the exploration of theoretical and practice areas which were unfamiliar territory for the students.

Reflecting on the demands of exploration

My wife and I had arranged to share a break with my son and daughter-in-law during the following weekend. We spent this in Dundee – the 'City of Discovery'. With the thoughts of exploration that had been put into my mind by Norman's email, I enjoyed a fascinating morning in the Discovery Centre and on the Discovery itself. This was supplemented by bedtime reading, for I had taken with me a small selection of well-thumbed records of polar exploration.

When I returned home, my thoughts returned to my search for an answer to Norman's question, and to the short paper by Rex Heer[3] which had been attached to his email. This added considerable richness in depth to my long-held commitment to Bloom. Starkly it dawned upon me that Bloom et al's well-established model offered no place for the concept of exploration that was now at the front of my mind. I could not even identify anything mildly akin to that activity. I sent Norman an email, asking him to define exploration as he wished me to use that term. In return, he provided a draft of his article *An Ecological Perspective on Exploring and Exploration[4].* In this he pointed out tellingly that:

> 'While exploration can involve aimless wandering, (and even aimless wandering has a place), it is usually undertaken with intent and involves a repertoire of activities eg questioning, searching, contacting, relationship building, participating, experiencing, observing, noting, interpreting, connecting, recording, mapping, narrating.'

I found myself bothered by what a Dundonian would call a wheen (tsunami) of questions. Was this aimless wandering and searching, undertaken with intent, exactly what Tom Cosgrove and colleagues had been expecting of their students through a well-constructed sequence of individual and group tasks? Was this the aspect of these tasks which the students had found most demanding? And, more importantly, has it any place in course structures with predetermined outcomes, whether directed by teachers or by learners? Finally, (Norman's question), how does it fit into Bloom's Taxonomy? *Does* it fit into Bloom's Taxonomy?

Exploration - and SMART objectives

Structured learning activity nowadays centres upon predetermined and carefully specified intended learning outcomes, or objectives. Many authorities in education and training stress that learning objectives should be pursued in accordance with SMART principles, an acronym for whose five letters different writers assign different words. My preference is to take SMART as encompassing Specific, Measurable, Attainable, Reasonable and Time-managed activity.

I now choose to explain what each descriptor implies, using examples taken from Polar exploration. In so doing I have a dual purpose in mind. I seek to establish the meaning I attach to these terms; and I use examples which I hope illustrate that much polar exploration has been far from SMART. This is an important point, as I eventually ramble back towards my answer to Norman's question.

For I believe that my five examples demonstrate the absence of SMART principles in planning and carrying out otherwise well-regarded polar explorations.
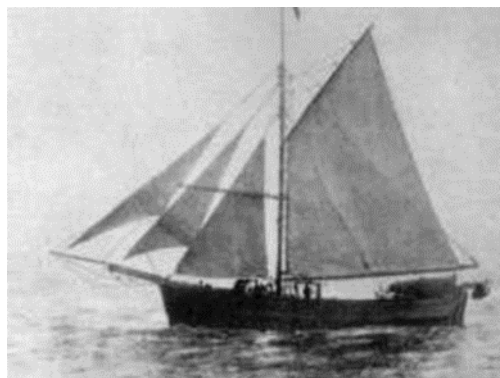
- In promoting Scott's first expedition, the Royal Society made *their* aim quite clear. 'A dash for the South Pole is not what British science at the present time desires.' The records of Scott's first year in Antarctica, with the march south paramount, make it obvious that there was more than some ambiguity between sponsors and leader about the aim of his venture. The exploration lacked a **Specific** aim.

The lack of a specific aim, of course, is an opening characteristic of the Limerick project work. The students had only a vague aim; their first priority was to transform this into something specific, through exploration.

Scott's Terra Nova Expedition 2012 (photo a)

- During his first traverse of the North-West Passage, Amundsen's search for the moving Northern Magnetic Pole proved unsuccessful. The exploration had set out to determine an elusive location. This did not prove a **Measurable** objective**.**

A characteristic of many commendable efforts by Limerick students was the difficulty they experienced in estimating or even quantifying the eventual outcomes of their activity, and especially the undoubted development of their abilities. They had found that this could not be claimed in measurable terms.

Gjøa, the first ship to sail through the Northwest Passage (photo b)

In the summer of 1893, Nansen sailed a ship of his own design to become icebound and undertake a hypothesised drift across the North Pole which geographers of the time believed to be founded on a land mass. The Royal Society therefore bluntly ridiculed his ingenious plan, on the grounds that the exploration was obviously not **Attainable.**

Several of the Limerick students set out on journeys seeking imaginative outcomes which they *hoped* they could achieve; yet they were well aware that success was not certain and could well prove unattainable.

- In their separate expeditions, Scott and Shackleton both committed to the employment of horses (photo d right) and to man-hauling, rather than the use of skis with dog teams. These decisions were totally contrary to the evidence from past expeditions, and were notably dismissive of the advice of the revered exploring expert, Fridtjof Nansen. This aspect of the plans for exploration was not **Reasonable -** and undoubtedly contributed to their lack of complete success.

It was a common experience for students on the Limerick Integrated Design Project to conceive and commit to an initial plan which proved technically or practically impossible. When it proved unreasonable, it could be rejected by them – leading to a fresh start.

- Scott's first expedition, with its supposedly scientific aim, certainly discovered the Cape Crozier emperor penguin colony and the polar plateau. But it spent an unplanned extra year in the Antarctic, when Scott was unwilling to abandon the frozen-in Discovery, and to return on the waiting relief ship. The exploration was not **Time-managed**.

In both Limerick groups, the claims for the development of skills for time-management testified in detail to the need for more effective time-management of the opening phases of their earnest explorations of options and new possibilities.

Thus it seemed to me that these polar explorations and Limerick students' project work lacked commitment to SMART objectives – and that, contrary to the approach promoted by SMART objectives, this discrepancy often yielded successful outcomes, a need only discovered during the event.

Characteristics of my own exploration

I could describe my own exploratory searches regarding the role of exploration in learning, in terms akin to the efforts of a last-minute Christmas shopper, desperately looking around for good – and fresh - ideas. This experience I shared with the most creative of the second and third year students, when they had been in search of an idea to work on and work up. Like the students, I certainly had had a clear if vague aim, which was to find an acceptable target to address. But, again like them, I had had no real notion of what form the chosen solution would take. Ours were hardly *specific* searches at the outset; rather were they *serendipitous* ones, in which we hoped to *stumble* upon a revelation of value to our quest.

Figure 2 Visual representation of my exploration

Norman had described exploration as '*wandering with intent*.' On reflection, that certainly describes my erratic journey towards the preparation of this article, whose final form bears little or no relation to a string of early attempts to answer the question in Norman's email invitation. I had found myself repeatedly wandering from that initially specific aim – into thoughts about the Limerick students' creative experiences, into digging deep into the resources of the Discovery Centre, into browsing through old expedition narratives. In all of this I did have a general intent – which was to broaden my thinking about the concept of exploration. Much of my efforts led me into learning and thinking which does not feature in this draft (such as the eventual exploration of the North-West Passage), for which my readers should probably be grateful. But some were to lead me into thinking about educational aims, objectives and learning which have been new and worthwhile territory for me.

In all of this, I set aside the temptation to follow an ordered and planned response to my remit. I explored unfamiliar territory. I sought answers to questions about features that were new for me. I returned to familiar territory and looked for things I had been overlooking. I worked to no plan or schedule, and I set myself no deadlines. I kept an open mind in amassing findings, many of which were to prove of no subsequent use to me. Although on my 85th year, I thus exemplified Norman's definition of exploration which:

> ....is an active process - we have to do something in order to find or discover something even if we don't know exactly what it is we are looking for....(It is) the means by which we search for, develop awareness and begin to realise the potential of (an) affordance for something.

Was this not what the most creative to Tom's students had been doing? They had been seeking answers to questions which were new to them. They had no explicit and detailed aim, and a very flexible plan. Even when on familiar ground, they hoped to find something fresh, and usually did so.

Exploration and Bloom's Taxonomy

How then, does all this relate to Bloom's Taxonomy of learning objectives? I can probably make a case that even my relatively simple wanderings with intent in the two contexts I described above afforded me the opportunity to visit many of the learning objectives compiled in Rex Heer's model of the revised Bloom's Taxonomy (Figure 3). This is not to say that I necessarily achieved any real depth of learning, rather it is to show that exploration as a process or set of personally determined and self-motivated activities for learning, can and does, wander all over the taxonomy and provide enormous affordance for achieving many different learning objectives.

On reflection, I can see how some thinking at Bloom's higher levels can eschew exploration and still seem adequate. For example, analysis of a body of data can follow a pedestrian path in which established procedures are followed, and yield acceptable findings and conclusions. But the richness and depth which comes from analysis that is preceded by exploration which seeks out possible omissions, possible neglected thinking, possible fresh ideas, will be lost. Similarly, evaluation which applies familiar and well-established criteria will be judged acceptable. But it may then be denied the enhancement that can be provided when exploration opens up entirely new perspectives and ways of informing judgements. And similarly, the creativity which so often consists of merely identifying and adapting common and familiar solutions to problems of the type currently in hand, can be denied the inspiration of entirely new possibilities being discovered by exploration, possibly in other disciplines or in neglected writings offering simply tentative thoughts – with potential.
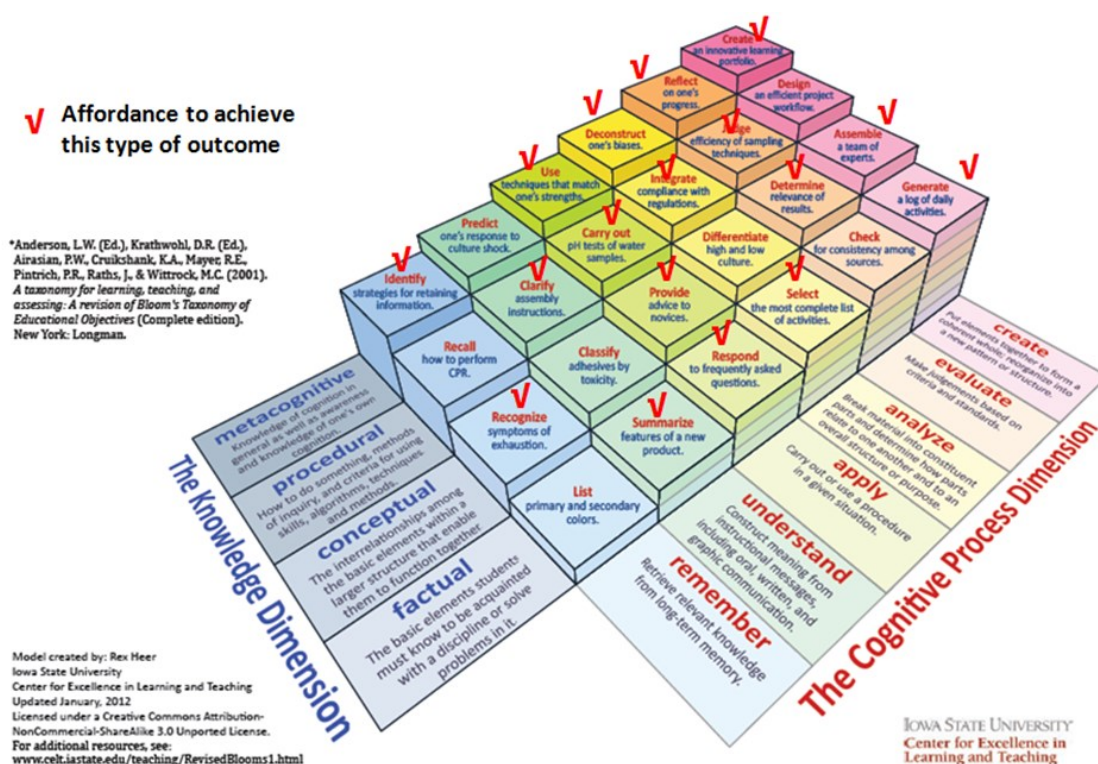
My exploration provided affordance for achieving many different types of objective or outcome.

Figure 3 Rex Heer's 'Model of Learning Objectives'[3]

There seems a strong case for arguing that, before commencing systematic activity, according to Bloom, educational programmes and professional activity should encourage exploration in which the explorers do not quite know what they are looking for and hence can discover valuable new academic territory. But how is such serendipitous inquiring to be "facilitated" – meaning prompted, encouraged and developed? How can teachers and mentors encourage the active pursuit of curiosity, the interest in ideas that seem strange or appealing to the inquirer, and the willingness to devote time and effort to vague possibilities? The first step is clearly to create situations in course programmes where learners must find and define worthwhile options, both in terms of the problem in hand and the development of the appropriate knowledge and abilities. It will be through confronting the necessity to decide what to do, how to do it, and how to acquire and develop the appropriate abilities that intellectual explorers will break into new territory, or ground which is new - for them, at least; and will equip themselves to engage more effectively with the next such challenge. I cannot see instructive teaching, or even tutoring, as appropriate for such intellectual development. However, I do see a role for facilitation which verges on what the Open University has long described as academic counselling. And I certainly see the need to establish all of this within any educational culture in which inquiry, probing and exploration are overtly valued and encouraged. However, this can prove demanding, as well as challenging.

One of the Limerick reflections on which I tried to offer helpful comments came from a third-year student from China, recently arrived to study in Ireland. The reflections began with a movingly frank disclosure:

> In this semester, I want to be brave when I study in Ireland. Firstly, I must be brave to communicate with foreigners in English. For example, if our group discusses some questions, I will be brave to give them my own opinion and ask them some problems I cannot understand. After class, I need to make friends with them initiatively. It is important for me to practice my English and promote my social skills and competence. Fortunately, I am braver than before.

Here is an example of a student exploring entirely new cultural and social territory and revealing that they know they will have to push themselves. We should not underestimate the courage needed to explore worlds that are unfamiliar to learners: without the courage to try, to take risks and not necessarily to succeed, learners will not explore.

Concluding reflection

The student reflections which I have been reading often describe, usually between the lines, an academic culture which encourages and expects innovation, risk-taking and exploration – and bravery. It is also a culture in which tasks, however awesome, are thoughtfully fashioned to prove – eventually – to be within the learners' capabilities; and where the tutor/student relationship enthuses, nurtures self-efficacy, and rejoices in successes, with vital attention thus being given to the affective aspects of learner support. As I thought back over the student reflections I had been reading, I recalled many mentions of periods of struggling to identify a potential project topic, or a replacement for a project topic which had proved unsatisfying. But I recalled little reflective mention in depth of how the students had undertaken these explorations. No student so far has highlighted the use or development of abilities associated with exploration. And to my shame, I recalled no prompting of mine to suggest that the ability to explore would have been one worthy of their detailed attention. Do we perhaps take this too much for granted, or even as inadmissible, in an educational world where systematic pursuit of predetermined SMART objectives is the expected norm?

I recalled that Norman wrote that:

> In my own explorations for this issue of the magazine I was surprised to find very little published literature that I could access was available on the subject of exploration. There are many articles on exploring something but I found very little information on the idea of exploration.

Is there not a strong case for educational research and curriculum development to place supported and promoted exploration in its proper place at the very outset of much activity in accordance with higher-level Bloom objectives (Figure 3)?

Perhaps the very idea of exploration offers a way of connecting up the different domains by arranging for learners to discover how they are related, by engaging in complex messy doings (and sometimes failings) as they struggle to master a difficult problem or situation that is unfamiliar to them.

Perhaps, as learners reflectively reconstruct their narratives of exploration, they could use Bloom to map and hence metacognitively analyse the dimensions of their learning achievements and activities.

And a postscript

I naturally checked out my almost final version of this article with Tom Cosgrove, whose charismatic vision and imaginative course design have so inspired the students with whom I have been working. His late-night response contained two paragraphs which fittingly cap the thoughts I have been expressing:

> *I feel a mighty anger welling up when your text makes me realise just how much formal education has strangled exploration, has alienated the mind from its own natural desire to understand anything and everything (not an argument for flying about in every direction, rather a plaintive cry to find once again the springs of curiosity, of wonder).*

> *Finding a good question **is** the whole of enquiry! (yes a slight overstatement for emphasis). The question is the most basic heuristic device, the anticipation of a known unknown. We must have some apprehension of what it is we are seeking: how else can we recognise it when we find it, seeing as we had no knowledge of it before we started? That apprehension stirs, emerges from the primordial undifferentiated wonder with which we confront the world once the notion of a question is born in us. The torrent never stops for a child.*

These thoughts endorsed my commitment to the words of Postman and Weingartner, which have inspired much of my engagement in educational development over the near half century since they were written:

> *Once you have learned how to ask relevant and appropriate questions, you have learned how to learn and no one can keep you from learning whatever you want or need to know.*[5:34]

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Image credits

Figure 1 Blooms Taxonomy (revised) http://www.homeschoolwithlove.com/2013/10/10/use-blooms-taxonomy-improve-homeschool/
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Photo a) http://1912terranovaexpedition.weebly.com/first-focusing-question.html
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Editor's Commentary: 'Pondering with Intent' on JC's Ecology for Exploration, Norman Jackson

'Wandering with intent' has a sister called 'pondering with intent;' both are necessary in an ecology for exploration.

'Once again, Norman Jackson has stirred this octogenarian out of his academic slumbers by sending me an important and thought-provoking question, and nudging me to find a response and then to dig deeper into the implications of that response.

One of the reasons I pose these sorts of questions to John is that he is one of only a handful of people I know who will either willingly or reluctantly (if I persist) tackle the question or invitation I put to him and devote time and intellectual effort into responding to my request. Furthermore, we invariably end up batting ideas and questions back and forth in a sort of ecological dance that usually enables both of us to progress our understanding.

By describing and discussing his explorations JC provided me with affordance to try to relate my ecological framework to his explorations.

WHO IS DOING IT? Clearly JC is doing it in his own uniquely personal and distinctive way, bringing all his beliefs and considerable past knowledge and experiences to bear, and all his capabilities.

WHY DO IT? For someone to create an ecology to explore as John did, the motivation to do it has to exceed the inertia to do nothing or alternatively to think about and do something else. I know from past explorations that the way to interest John is to encourage him to become perplexed. His curiosity and innate desire to resolve his perplexity then takes over. There is also something about 'caring' enough about something to do something about it.

Ames[1], Lepper and Hodell[2] suggest some strategies to increase students' classroom motivation. Turner and Paris[3] term these the 'Six C's of Motivation': choice, challenge, control (autonomy), collaboration, constructing meaning, and consequences (recognition). We are not in a classroom here, but it's possible that many if not all these factors formed part of the motivational framework for JC's ecology. But there are other C's and one of them *caring* is particularly important. You have to care enough about the what it is we are looking for to put an appropriate level of time, and intellect and emotional effort into the quest. Caring can be about ideas, problems and other things like people and enterprises. I suspect that in JC's case it might have involved all of these things.

The *contexts* were his own life and the challenge I gave him to explore a question and produce an article for LWM#18.

HOW IS EXPLORATION ACHIEVED? JC's exploration was a self-determined set of *activities* that he orchestrated and knitted together in an unfolding *process* (over three weeks). He sought and found *affordance* in two different situations in his life that were available to him at this point in his life. At another point in time these might not have been available and he would have to have found or created other situations. We might also add the writing and associated thinking process, the readings, google searches and email conversations that all contributed. He utilised various resources (readings, student reflections, email conversations, exhibitions and people). In order to explore he created the space to inquire and to have conversations to enable him to explore. He was open and receptive to ideas. These explorations are full of *relationships* with ideas, conceptual tools and frameworks, with people e.g. past explorers, me, students at a distance and their tutor, family members who accompanied him on his journey.

WHAT EMERGES? from John's ecology for exploration is learning which he has made explicit and generously shared through his article so that we might all benefit. As he so wisely points out, this type of wandering affords so many of the learning objectives in Bloom's Taxonomy to be realised. That is why exploration is such an important and valuable concept and process for learning in higher education and beyond. This is the outcome of productive entanglement of thinking and action in an ecology for exploration[3]

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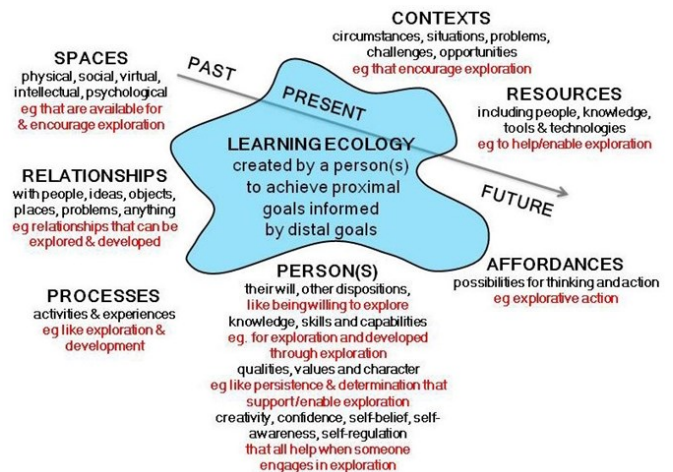
HOW DO WE ENCOURAGE AND ENABLE STUDENTS TO EXPLORE? Mapping the Landscape of Enquiry Tasks in Higher Education

Anindito Aditomo

Anindito is Director at the Centre for Innovation and Development in Learning and Teaching, at the University of Surabaya where he teaches undergraduate and postgraduate courses on educational psychology, research methods, academic writing, and psychological measurement. His research interests can be grouped under three areas:Epistemic Cognition in Teaching and Learning; Social and Motivational Variables in Learning; Technology-Supported Learning. His prior research in this area focused on collaborative writing and the identification of learning opportunities in online collaboration.

Background

Exploration requires contexts and resources, as well as certain dispositions, values, and skills on part of the explorer[1]. In this article, inquiry-based teaching is presented as a pedagogical approach which is well-suited to cultivate those dispositions, values, and skills which should enable students to engage in and learn from their own explorations.

At its core, inquiry-based teaching involves activities that are driven by problems or questions. Typically, it also requires active learning on the part of the students, who are provided with varying types and degrees of structure and guidance. Beyond this general description things become rather vague. Researchers and practitioners have used different terms to refer to similar processes; or conversely, use the same terms to describe different phenomena related to inquiry-based teaching. This may hinder lecturers who are new to inquiry-based teaching who wish to get a big picture of the field. This situation is also unhelpful for those who already employ inquiry-based teaching, but wish to locate their practice within the field of diverse practices.

In this article, I offer a map (Figure 1) which hopefully could bring a little more coherence to the field of inquiry-based teaching and learning practices. Such a map can help us understand the range of approaches being used to encourage learners to develop the skills, attitudes and values for effective and productive exploration in their disciplinary field. The map was constructed by a team of researchers at the University of Sydney[1], based on descriptions of inquiry-based learning tasks provided by 224 lecturers from various disciplines in three universities in Australia[1]. Hence, this map could be seen as descriptions that are grounded in practitioner conceptions.
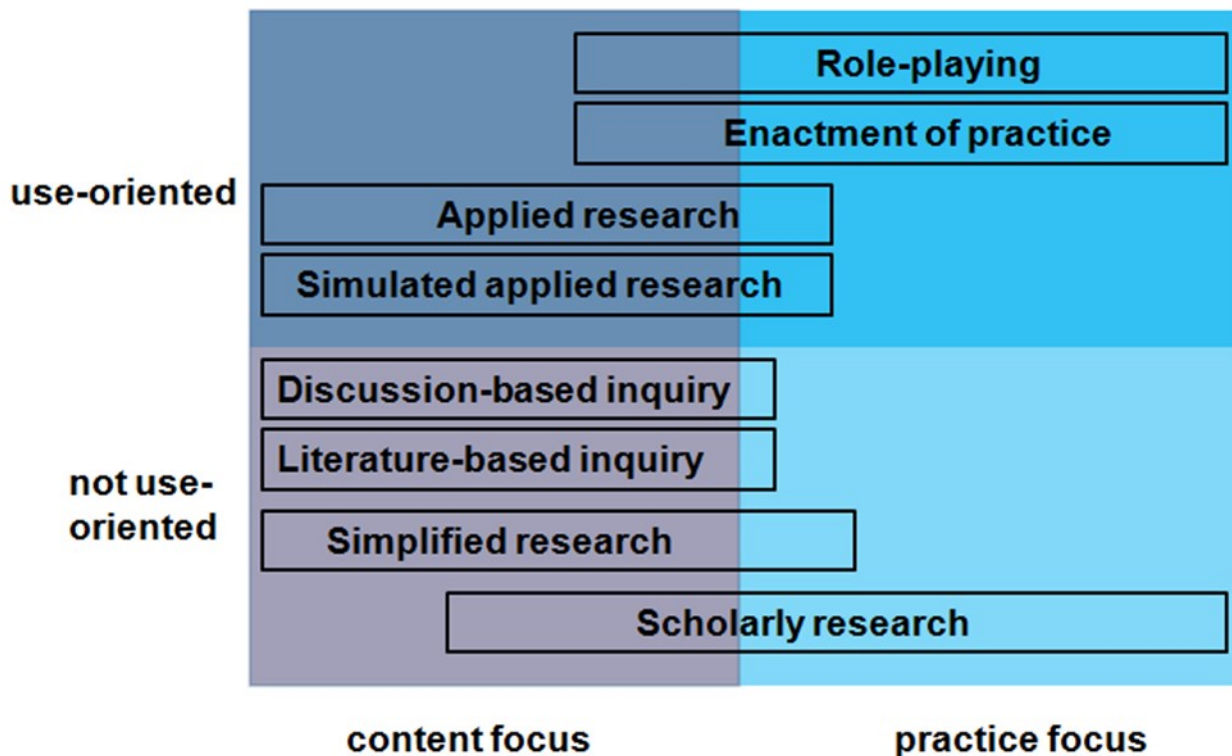
Content-practice and use-orientation

Our analysis of the survey responses suggested two dimensions to describe the various learning tasks which university teachers define as being inquiry-oriented[1] The first dimension, "content-practice", concerns the focus of the inquiry activity, i.e. whether a task requires students to focus on a discipline's abstract body of knowledge, or on (aspects of) practices which signify knowledge work in that discipline. The second dimension, "use orientation", is about the intended product or output of the task. Here the distinction is between tasks that are intended to result in artefacts that contribute to solving certain problems, and tasks that are indifferent or uncommitted to any practical applications.

Using a typology based on these two dimensions, we could see that inquiry tasks that require students to engage in "research" (which are indifferent to any practical applications) could be differentiated into those that are mostly focused on content and those that focus on the practice of research itself. The latter forms of research tasks are described in terms of general processes such as developing questions, collecting and analysing data, proposing interpretations, and communicating findings. In addition to the typical undergraduate thesis project, this category may also subsume tasks that invite students to conduct smaller-scale research of their own choosing. For example, one can imagine giving social science students a rich set of survey data containing numerous constructs and indicators, and have them propose their own research questions to investigate.

In contrast, research tasks that focus on content usually refer to pre-specified concepts and theories. These tasks still require students to explore, but in a more limited conceptual space. For example, a task in a physiology course may ask students to use certain theories to derive hypotheses about the "resting membrane potentials" of particular muscles, and collect data to test those hypotheses. A task in a cultural studies course may challenge students to apply the concepts of ideology, hegemony, and class – which lande been discussed in prior lecture sessions – to explain how globalisation has impacted their eating habits or choice of clothing, for instance. Other tasks in this category may be based solely on reviews of published studies, without requiring students to refer to any empirical data or personal experiences.

Figure 1 *Typlogy of IBL tasks[1:1250]*

The content-practice dimension can also distinguish between tasks that are oriented towards practical applications or problem solving. Some of these tasks focus on using specific concepts, theories, or methods in the context of specific problematic situations. Case-based teaching in business, as well as problem-based learning in medicine, could be seen as proto-typical examples of inquiry tasks under this category. Such tasks invite students to analyze phenomena using certain theories, identify problems and their causes, before proposing solutions to those problems.

Other use-oriented tasks do not focus on content, but rather the enactment of professional roles. Abstract concepts, theories, and principles recede to the background while students perform those roles. Often, students are assumed to have understood, to a certain degree, domain knowledge that is relevant to successful enactment of those roles. In these tasks, students are asked to act based on domain knowledge that has been acquired in the abstract form. Prototypical examples of tasks in this category are the various practicums associated with professional training: teaching practicums for students training to be teachers, counseling practicums for psychology students, capstone programming projects for computer science students, etc. In this sense, project-based learning often found in engineering programs could also be seen as a form of use-oriented, practice-focused inquiry task.

Learning goals associated with inquiry tasks

As a pedagogical approach, inquiry is widely advocated because it is believed to provide opportunities for students to attain a wide range of valued outcomes in addition to mastery of disiplinary knowledge. An important category of learning outcomes, sometimes called "soft skills" or generic attributes are assumed to be independent of any specific discipline. These include skills such as the abiility to lead and work in teams, to communicate ideas clearly and persuasively, to think logically and critically, and so on. Inquiry tasks are also perceived to facilitate professional and research skills. These skills are more discipline-specific, such as applying specific techniques and using specialised software to produce artefacts (e.g. financial reports, legal drafts, product prototype, research proposals, etc.).

Both generic and disicpline-specific skills cannot be taught through direct instruction alone. One cannot expect an accounting students to be able to write a financial report, for example, simply by having them listen to lectures on the topic. The skills required to get a group of first-graders to participate in a class discussion, for instance, cannot be learnt by reading books on classroom management alone. Mastery of such skills require repeated practice which are often integral to the enactment of inquiry tasks. Our survey of university lecturers in Australia indicated that 11-16% of the inquiry task descriptions cited at least one soft skill as a learning outcome, while 33-36% cited at least one research or professional skill as a learning outcome[1:14]

Beyond declarative knowledge and demonstrable skills, inquiry tasks also afford learning of tacit knowledge as well as affective outcomes. These learning outcomes are essential to proficient performance in a discipline or profession, but are often difficult to articulate and convey in a comprehensive manner. For example, a lecturer in our survey wrote that her inquiry task was intended to develop business students' awareness of the need to be especially vigilant when consulting with successful organisations. A role playing task in a clinical pharmacy course was intended to make students accept that it is unrealistic to expect perfect counseling at the first attempt.

Other tacit knowledge cited as outcomes of inquiry tasks are epistemic in nature. For instance, a task in a visual arts course was designed to help students become aware of the difficulty of separating objective visual information from subjective judgement processes (which has important implications for the nature of knowledge in that field). Other lecturers more explicitly describe goals such as understanding about the nature of evidence, ways of generating knowledge, and limits of what can be claimed in a discipline. Still other tacit knowledge associated with inquiry tasks are ontologic, i.e. pertaining to students' beliefs about the phenomena under study. For example, some inquiry tasks in our survey intended to get students to become critically aware of their own personal (ofen implicit) beliefs about Aboriginal people or mental health.

Knowledge Types

Explicit knowledge =
- Tangible
- Visible
- Public
- Can be accessed by third persons
- Once shared, it belongs to everyone
- Can be seen "above the water"

20%

80%

Tacit knowledge =
- Intangible
- Invisible
- Private
- Can be accessed on only a first-person basis
- Hidden "underwater"

As with skills, tacit knowledge cannot be conveyed through direct instruction. Rather, practice in particular situations and contexts needs to be experienced i.e. students acquire this knowledge through practice in the context and activities that require the knowledge to be used.

Exploring the unfamiliar

Learning occurs when we explore unfamiliar problems, unfamiliar contexts, or unfamiliar problems in unfamiliar contexts[2]. In this sense, the most effective inquiry tasks are those that succeed in inviting students to explore the unfamiliar. This could come in the form of new conceptual spaces, such as when students are challenged with finding ways to make meaningful connections between what were previously disparate concepts and theories. The unfamiliar could also be phenomena that students have not encountered or experienced directly, as often presented by case-based and problem-based learning tasks. Inquiry tasks can also render familiar situations as unfamiliar.

What's more, inquiry tasks enable students to explore their personal (intellectual as well as emotional) responses to unfamiliar situations. It is this characteristic which makes inquiry-based teaching especially appealing when the goal is to develop not only skills and declarative knowledge, but also tacit knowledge and affective attributes which underlie skilled performance.

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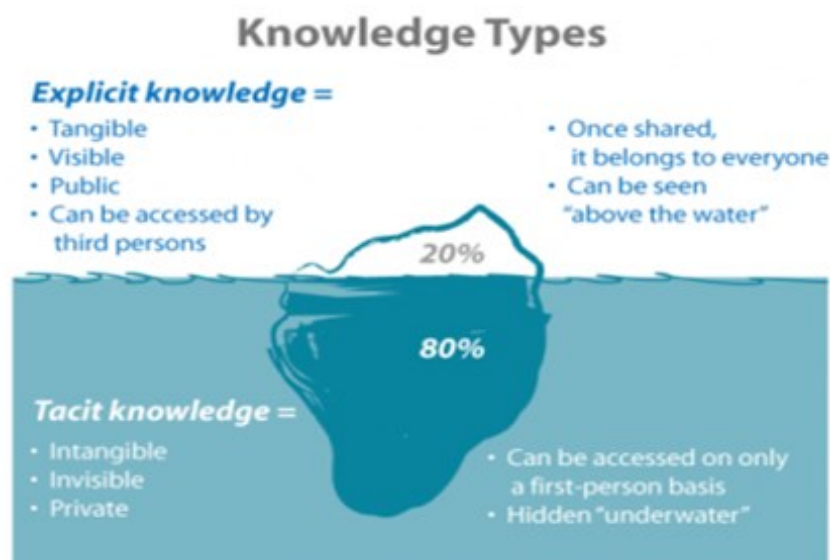
EXPLORING HOW STUDENTS EXPLORE IN HIGHER EDUCATION

John Duhring

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Introduction

Like any other enterprise, higher education will only prosper if those involved in it continually explore the effectiveness and relevance of the opportunities for learning they provide and the means by which they enable learners to utilise these opportunities. Increasingly, student success has become the watch word, but it involves more than what happens in the classroom. Student success goes beyond the grades they receive, just as athletic success goes beyond what is displayed on a scoreboard. A more granular and ecological view is called for.

This article describes an important process of exploration for me, which evolved as a way to help me understand more deeply what influences students' learning and appreciate the effective habits they develop in their college years. Through many interviews with students I have come to appreciate that higher education affords them an enormous opportunity to explore possibilities for their future lives through far more than the courses they choose to study or the degree they obtain. I found that successful students see the world with fresh eyes through a personal ecology in which relationships and relational interactions are central to their motivation, learning and achievement. In my research, they consistently looked to their relationships to help them recognize opportunities to make a difference in things that matter to their peers, teams and mentors. As simple as it sounds, students are better together, particularly in an environment where they can be free to explore something from multiple angles, make sense of all they have in front of them and commit themselves to a course of action without restraint.

In this article I suggest that examining what influences students in general, taking into account what happens beyond the classroom and the subject matter they are studying, promises to broaden and even flip the current model of higher education. The mixing function itself, of exploring new approaches in conjunction with peers, teammates and mentors, was consistently used by successful students to explore, test alternatives and eventually find their path. This finding even reflects what some companies like Pixar and Google call "casual collisions", where environments are designed so staffers regularly bump into people they might not see every day, where they have the opportunity to have a conversation that might inspire the next great idea.[1] It is clear to me that further research is warranted into the complex learning, development and achievement trajectories of individual students.

My Proposition

It is easy to underestimate just how much students themselves adapt and grow while in college. Without question, much of their growth happens outside of the classroom and beyond the scope of most educational technologies. However, technology plays a central role in their learning. Today's classroom is not their only learning environment: they inhabit many different spaces outside the classroom and they have a spectrum of news feeds, social media and educational resources available to them at any moment, and in any location. Moreover, they are inspired by mentors, influenced by peers and required to respond to family, financial and health issues. They often juggle the problems they solve in class with the real world problem solving they apply across a wide range of relationships
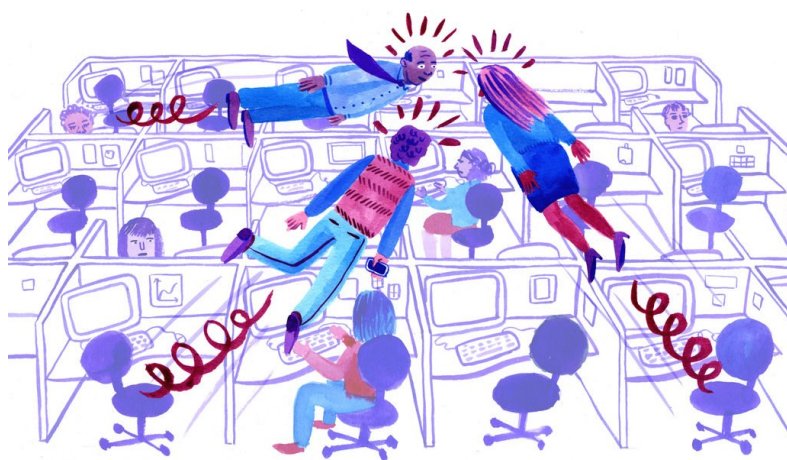
while attending college. After all, they are transitioning from personal lives, surrounded by friends and family, to professional lives in which they interact with peers to make their way forward. Observing, measuring and guiding how they tap into the array of resources at their fingertips in order to explore, adapt and grow may well help to identity the most effective educational technologies.

The Important Influences at Work Within Team Structures

When interviewing high performing students in the videos cited in this paper, I was struck by the mindsets at play and by the influence of peers and non-academic professionals on student growth. The team orientation they exhibit came as a surprise. In dozens of videos, a given student's identity and voice was influenced by their role in a team context as much as by the subject matter or an individual authority figure. By joining teams and taking on roles within team structures, their perspectives become more fluid than when working in isolation. They challenged themselves to explore what they offered the team as well as what they might take away as learning. In the words of one student, a "curriculum designed in which students do what they came to learn" might be the most effective environment for personal growth and professional development.

Over the past three years, students identified by faculty for their outstanding accomplishments in class were interviewed on video. These students were first asked to describe what brought them to college. Their answers were typically either to follow a passion or because they felt a certain level of "fit" with the school's culture. They were then asked what they were working on at the time, and their answers skewed to highly technical deep dives into their roles on teams and what they were able to accomplish together. Finally, they were asked to reflect on what changed for them along the way. This consistent line of questioning enabled a surfacing of both external, team and academic factors.

With the student videos serving as an early marker, their professional online portfolios, provided through LinkedIn and other platforms, offer a concise way to track their paths after graduation. The qualities these students exhibit in order to make meaning out of their role in a team setting - becoming comfortable with ambiguity and the unknown, navigating by surfacing feedback, embracing a project bigger than oneself, imagining refinements along the way and diving into the flow of the process, even without a clear end point - might very well point to the future of higher education. Here are three examples of students who engaged in personal explorations in learning to redefine their lives.

An Engineer Learns by Tutoring Others

Aaron Cohn admitted he didn't apply himself at school until his schoolwork made a difference to others. He couldn't bring himself to commit to learn something simply to pass a test. He would even say he was lazy, doing just enough to get by. Yet, as a senior during his second try at college he developed a graphic user interface to a server farm that enabled students to manage the queue of jobs stacked up at the rendering engine at the end of every semester.

For this senior project, Aaron asked what he could build in service for the college, and the render farm bottleneck bubbled to the top. In order to build the app, he needed to teach himself a new language (Python), to understand the functions of the server and to recognize the needs of the non-technical students who used the system to render out their class and portfolio work at the end of each term. He said, "Now, you can control it. You can do your work if you need to without having somebody else's job start rendering while you are working. For them, this didn't exist before. They had a command-line tool. Artists do not do well with command lines!" [2]

He also put into play the listening and decoding skills he had developed as a tutor, mentoring other students who were in many cases like himself. Aaron mentioned right up front that he knew I was there to make a video of his front end app for the render farm but that he also wanted to talk about tutoring. I asked what he meant by tutoring. He then told me that he had discovered he learned best by tutoring other students. He found meaning by exploring how to reach the student he was tutoring. He actualized his potential when he actuated the potential of others. "I could see points where I wasn't reaching them, and I could see points where I was reaching them. It would be like a light switch, on or off. I was either really getting to them, or really not."
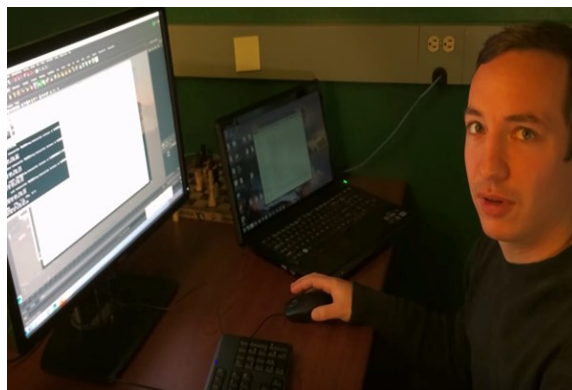
For Aaron, tutoring and mentoring others provided the structure and urgency he needed to commit himself fully. He recognized that through stepping up, by alerting others to the importance of what they were doing, he developed a professional voice. His willingness to commit himself as a tutor directly influenced him to volunteer for the render farm project. The critical thinking skills he imparted to the students he mentored also helped him to identify the core problems students were having with the render farm and to design an appropriate solution.

> "Critical thinking is a skill that you have to use in every aspect of your life. You cannot just take what you hear for granted. If you hear it, it doesn't necessarily mean it's true. Have the motivation to go on and verify it yourself. You have to be very careful, because a lot of people have opinions and a lot of people have expertise where they want to come from their position of authority and tell you 'this is how it's done'. But, they are not necessarily telling you that. They are actually saying, 'this is the way I do it' and their perception is that's how it is done. So, look at a lot of different sources. Take your teachers, books, and internet, wherever you can get all of your information. You combine all of those, and then you decide what the truth is." [3]

Aaron is now a Senior Associate Software Application Engineer at Workday, a company that was founded in 2005, went public in 2012, and now has over a billion dollars in yearly revenue. Workday provides SaaS-based enterprise solutions for their customers' human resources and financial management activities. While Aaron puts his technical knowledge to use in his career, the pathfinding methods he developed in college - including what serves to engage him fully by engaging others - have prepared him to operate in the most competitive and rewarding corporate settings.

A High School Physics Teacher Goes Full Stack By Getting Out of Town

Bakari Holmes was applying his degree in physics by teaching in high school when a representative from a college came to speak to his class about the benefits of hands-on, team-oriented learning made possible by working on real-world problems. In particular, the rep spoke about a video game program in which students designed and built apps in classes that are organized like studios and employ industry roles, methods and tools. Bakari had always loved video games and imagined how great it would be to participate in one of the most dynamic industries on earth.

As a new father, Bakari loved physics and enjoyed teaching, but had come to the realization that another career path might better enable him to provide for his family. For him, going back to college for another degree required a cost-benefit evaluation which would continually surface and guide his path going forward. Over the three years it took to get his new degree, Bakari would continually re-evaluate his position on his path towards this goal. The hands-on nature of his classes reinforced his decision. As his skill set evolved, so did his outlook on what was possible.

At first, Bakari thought his interest in music translated directly into designing the audio elements of games. He had always loved exploring musically, even publishing a Bobby McFerrin-style vocal solo on his zeemee.com portfolio.[4] He was inspired to explore how sound influences the behavior of players in video games just as they influence the emotional response of movie audiences. Exploring the world of sound designed opened his eyes as well as his ears.

However, he soon discovered that mobile games must use audio resources efficiently in order to respond to user behavior and to embrace a wide spectrum of sound designs. For instance, a sound like an explosion must be assembled algorithmically. By combining a "bing", a "bang" and a "boom" in different ways, a smart game developer can bring a wide variety of soundscapes to their work. When viewed from his cost-benefit perspective, Bakari saw his path veer towards hands-on programming. He wouldn't just produce the sounds, he would explore developing the games themselves.

For the summer before his senior year, Bakari landed an internship at the Sony Playstation program in San Diego, which led to a six-month consulting job at Sony Playstation in San Mateo. It was clear how important teamwork was for him in landing the consulting opportunity after his internship. "A lot of the people skills and passion that I have was really huge and stood out. Being able to answer questions about my previous experience, about what I did on teams, being specific about how that connects to being a successful candidate, that all stood out."[5]

After his experience working in San Diego and San Mateo, along with attending industry conferences and mixing with professionals in the field, Bakari's academic decisions now factored in not only his family interests, but also sharpened his focus as to what skills would serve him best going forward. He was keenly aware of the wide range of technologies involved in delivering video games to users who ran them on mobile devices connected to the game and to others by networks. While he had already directed himself towards a career in the game industry, Bakari also saw the value brought about by a broadened perspective. In his final year of college, he set about to finish the courses needed to be a full-stack developer. He focused on the JavaScript/MEAN stack -- including NodeJS, AngularJS, ExpressJS, MongoDB, ReactJS, and D3JS. As a generalist, he could address issues across an entire spectrum of connected devices, databases, networked APIs, and business logic to develop robust user experiences.

Bakari graduated with his second college degree in Software Engineering and is currently working as a JavaScript Sr. Software Engineer with Accenture's Liquid Application Studio. His online portfolios not only feature him singing with his acapella group "Business Casual", they highlight his fluency in interface design and passion for physics.[6]

From High School to Exploring AI by Modeling and Networking

Mari Smith admits she had no idea what to expect from college after graduating from high school. Like so many new students, she had to find her footing. She wanted to build digital models of virtual characters, of creating something tangible and real within games and films, and after making a cube into an actual person in her 3D Modeling class, she was hooked. What also hooked her, as a very organized person, was her ability to fill in for anyone who needed help.

> "A good example is in a 24 hour game jam. You have to go from concepting your game, developing all of your characters, to actually creating the game, making sure it is functional. A lot of the time you have people on your team who only know concepting and they are only really useful for the beginning stages of the game development process. But if you are able to do concepting, modeling and texturing, you're helping your team the entire time and it's a really good feeling."

While her skills evolved, so did her awareness of environments and the objects that populate them. She began to focus on the rooms characters move in, to examine not only what the character does but how they live. She became a digital anthropologist of sorts. She would ask herself, "In this room, what kind of character lives here? What are their daily activities? What is the story to be told here?" To answer these questions led to courses that helped her surface the history and physics behind any project she was working on.

Mastering the process of modeling led to deep dives into historical research, into the objects in fashion at a particular point in time and how they were used. Mastering texturing led to deep dives into physics, into how was light being diffused or reflected by a given object. Was the light celestial, moving in parallel onto an object, or radiating from a nearby source? How would light affect the color of the objects, particularly as seen from multiple angles? Mari invented uses of objects within scenes that helped support the overall story.

By seeing projects from such a deep understanding, Mari became a great help to project managers with scheduling tasks across teams. Her way of seeing and constructing new possibilities led to more successful projects.

> "You learn a lot things in all of your classes, but for me the biggest benefit of going to college is networking, it's the people I meet with every day. You have people you can bounce ideas off of, people you can ask questions, people you can go to and say 'hey, this is broken, please help me'. That is a really amazing thing that happens here."[7]

Within months of graduating with a Digital Art and Animation degree, Mari started work on an undisclosed project at Apple. When asked about the new position, she would only say it does not involve her technical skills as much as understanding the value of the project itself. "I feel so fortunate to be working at Apple. The work we are doing has the potential to change how people see and interact with the world."

Higher Education as an Unfolding Process of Exploration, Not a Place or Destination

The cases provided by these outstanding students exemplify how widely variable and personal higher education outcomes can be. A course, in a given discipline, might actually serve to enable a student to explore and eventually excel in a completely unrelated area. In a remarkable Youtube video[8] respected UC Berkeley professor Marian Diamond mentioned that among her many Integrative Biology 131 students, many went on to study biology and related fields, while others took up a myriad of other paths. One student even used her course as inspiration for a human anatomy coloring book which has sold several million copies.

We are at a point where technologies mark when students engage with or turn away from the generic outcomes prescribed by their courses. At the same time, we can also become more aware of the multitude of personally meaningful and useful outcomes students discover as a result of their own explorations. These outcomes might well be the best measure of the success of their higher education experience.

College courses, by their very nature, require students to try knew things willingly. They require students to imagine, explore, adapt and develop themselves as a person in order to serve the requirements of the course, which they often do based on influences outside the classroom and even the college. Mixing students so they interact, work cooperatively and learn from each other, whether in study groups, project teams or through meet-ups and internships with professionals, promises to yield dramatically different results than isolating students to work through material on their own. The adaptive mindsets that are developed in team settings deserve careful consideration and further research. The complex achievements and outcomes developed through such forms of open-ended exploration deserve greater recognition and appreciation.

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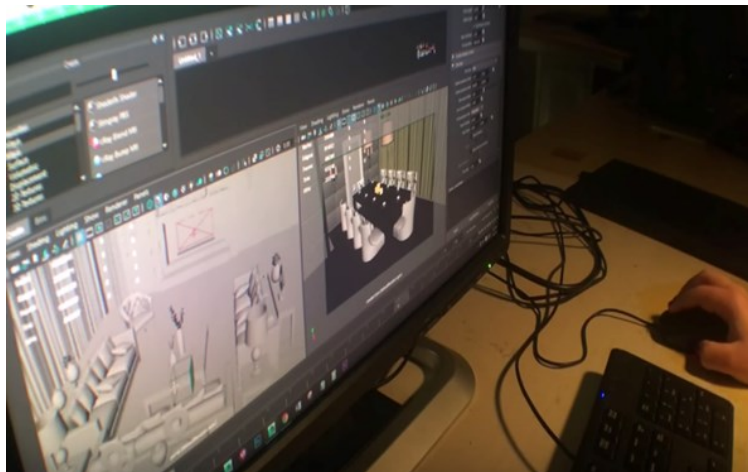
HELPING STUDENTS TO EXPLORE THEIR POSSIBLE FUTURES

Sarah Jeffries-Watts & Richard Newman

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"The PSA allows me to reflect on the activity [sic] that I've done in these few years and encouraged me to try different activities that I haven't tried before." **(PSA completer, 2016)**

The Personal Skills Award (PSA) is the University of Birmingham's skills award (also known as an employability award, a co-curricular award, or a graduate award[1]. It is a structured programme designed for students to develop their skills; to understand and recognise the skills they've gained from their experiences; and to teach students how to articulate their skills and experiences for the benefit of the graduate recruitment process and/or application for further study.

Skills awards help students explore themselves and their lives to discover their purpose. At the heart of the majority of awards is self-reflection. This is crucial in terms of a student's employability: self-reflection acts as a vehicle for developing and realising a student's capabilities from their engagement in extra-curricular activities[2] and within all areas of their life, in preparation for living a productive and fulfilled life in a complex and ever-changing world[3].

The Personal Skills Award aims to build a bridge between self-reflection and encourage students to recognise, explore and engage in the opportunities around them, which in turn enhances their student experience at Birmingham.

> *"Encouraged me to engage with the University a lot more."* (PSA Completer A, 2016)

The PSA formally recognises over 230 on-campus extra-curricular activities from peer mentoring to developing a mobile app, to student group and committee involvement to engaging with a careers mentor and everything in-between. These opportunities open up the development of new skills, new networks and personal interactions, as well as learning experiences for the students.

Sitting alongside the extra-curricular activities are taught skills modules, short skill sessions, and online courses, providing opportunities for students to explore opportunities for using and developing skills in more depth. The compulsory element of the PSA, a workshop, assimilates their engagement in the classroom and in activities and teaches them the principles of self-reflection; additionally it teaches them the 'language' of skills into further study.

> *"It's helped me gain awareness of extra-curricular activities on campus and how the skills gained from activities are transferrable skills."* (PSA Completer B, 2016)

Our evaluation has demonstrated the impact that engagement with the PSA has on providing students with the possibility to explore their interests **more than they would have previously considered**, which is the crucial factor. The PSA provides a gateway into these development opportunities, highlighting activities that would have previously remained unknown to the students:

- "As a result of engaging in the PSA I became aware of one or more activities on campus that I was not previously aware of" – 81% said 'yes'.

- "As a result of engaging in the PSA I have engaged in one or more activities that I had not previously considered" – 67% said 'yes'.

Highlighting the wealth of opportunities available to students is particularly powerful in terms of career management. The design of the award encourages curiosity and in terms of career theory encourages planned happenstance; that is to transform unplanned events into opportunities for learning[4]. The PSA provides the structure and the environment for a student to be open to the possibility of new opportunities, but they need to be able to immerse themselves fully into the experiences and seize the opportunities afforded to them in those activities.

For students on the PSA that would like additional support specifically in the area of career planning, we offer a module called 'Planning Your Career'.

The Planning Your Career module is one of the taught modules for the University of Birmingham Personal Skills Award. The module is delivered through four two-hour workshops on Wednesday afternoons, in the Spring term, starting in January. The workshops are delivered over four weeks with an assignment deadline in March. Around 30 undergraduate students enrol on this module which includes:

- Decision making process and style
- Self-assessment tools
- Occupational information and labour market information
- Reviewing options and making choices
- Action planning

The self-assessment tools include the *Profiling For Success* personality Type Dynamics Indicator and *Prospects* Career Planner. The students who enrol on the Planning Your Career module are usually studying Arts and Social Sciences subjects and are aiming to identify a career or sector they would be suited to and are enthusiastic towards using self-assessment tools to help them identify a career.

The module is assessed through a portfolio (50%) and an essay or reflective account (50%). Students are expected to develop a portfolio with two pieces of evidence for each of the four learning outcomes with a self-reflective commentary.

Developing from this module we have delivered a new 'Deciding on a Career' workshop this Autumn term (2016) aimed at students who would like to find out more about the decision-making process, a reflective activity using strengths cards, self-assessment tools and sources of information and advice. In promoting the workshop to students we highlighted the following content:

- Look at where you are now
- How you make decisions
- Identify tools for self-assessment
- Graduate jobs market information
- Next steps/action planning

"Looking at other peoples' examples of good/not so good submissions so that I could compare and reflect on this". (Current PSA student A, 2016)

In preparation for the workshop we encouraged students to complete the Prospects Career Planner.

The first of these workshops was delivered in October 2016 and was attended by 22 students, including postgraduate and PhD students with positive feedback from the students.

Moving back to the full award: an alternate way that we have built in exploration is to introduce both formative and summative peer assessment in our online skills courses and our modules. This allows a student to explore assessment and experience what it means to assess and be assessed; this is an opportunity that may not typically be afforded to them.

The student in this example demonstrates how undertaking this exercise made them reflect on assessment. In the process of exploration, comparisons against others' feelings and outputs may be helpful for students:

Student C found the group discussion sections (which were compulsory to complete) useful and indicates that s/he had used it as an opportunity to explore their own experiences and feelings towards the application process. Enabling students to explore their feelings in the context of others' experiences could open new thought processes or developmental opportunities. As an example, when assessing another student's competency-based question, the student may be making a number of comparisons against a marking criterion as well as their own practices, which may influence their own exploration: the style of writing; the subject matter (is this an activity they had experienced or would like to experience?); the evidence of skills; and how the student resolved the situation.

"Peer reviewing has been a useful tool to gain/give feeback." (Current PSA student B, 2016)

"I would continue to use the group discussion sections, as it was helpful to review others' responses and feelings towards aspects of the application process." (Current PSA student C, 2016)

This exploration has the potential to go beyond preparing for graduate recruitment; the process of reading others' reflections and how they have dealt with situations has a lifewide influence. The challenge for the PSA team is how we embed this further and make this benefit more explicit to students.

The PSA sits within Careers Network, which is where we work with students to facilitate the more explicit 1:1 exploration of their careers. Like the majority of other University careers services we have a team of careers advice professionals. This 1:1 careers advice does not take place on the Personal Skills Award; students are referred to see a careers guidance professional for 1:1 advice.

As an example: in the College of Engineering and Physical Sciences students often have a specific occupation or career identified and preferences for the industry or sector they would like to work in. In a one to one discussion between a Careers Adviser and a student, the adviser would initially establish a rapport with the client, identify what advice the student is looking for and allow them to explore their future career options through discussing their degree programme, previous work experience (if any), projects and interests. The Careers Adviser would identify the student's career plans and discuss possible routes in to these occupations. Many of the students focus on opportunities available in specific careers and industry sectors. Some will use self-assessment tools to help identify career ideas.

Our one to one Advice Desk appointments are 20 minutes in length and students primarily ask for CV advice/feedback, personal statements for their application for a postgraduate or PhD programme, have questions related to upcoming interviews (telephone, video and in person), or advice on assessment centres (group exercises, case studies and presentations).

Careers Advisers will support students to explore their ideas and motivation. Advisers will use skills including active listening, challenging clients and summarising during the guidance process. Advisers will often use techniques developed from Egan's *Skilled Helper*[5] to support the guidance interaction.

Engineering and Science students can have very specific ideas of what type of career or sector they are interested in: many plan to work in the automotive sector, aerospace sector, or energy sector and have an expectation that the adviser has knowledge of these sectors. The Careers Adviser might also ask some direct questions related to whether the student has a geographical preference as to where they work, many students would like to stay in Birmingham and would work in the West Midlands, others want to go back to the parental home and some will prefer to work in London or other cities.

An example of a student who needed advice and guidance is a PhD student in the School of Metallurgy and Materials who had a job offer with a large manufacturing employer in Derby but wanted to work closer to the family home in Birmingham. We discussed options, preferences and opportunities, one of which included a career working within an engineering consultancy firm based in Solihull. The student approached the employer and secured an offer of employment based on his experience gained during the PhD.

Overall, both within the Personal Skills Award and Careers Network, we work to ensure that students are encouraged to explore what is available to them as a student of the University, how that might shape them and their career aspirations, and what that means for their possible future.

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> ***Editor:*** *Lifewide Magazine #9 published in March 2014 provided many examples of co- and extra-curricular skills awards in UK Higher Education http://www.lifewideeducation.uk/magazine.html*
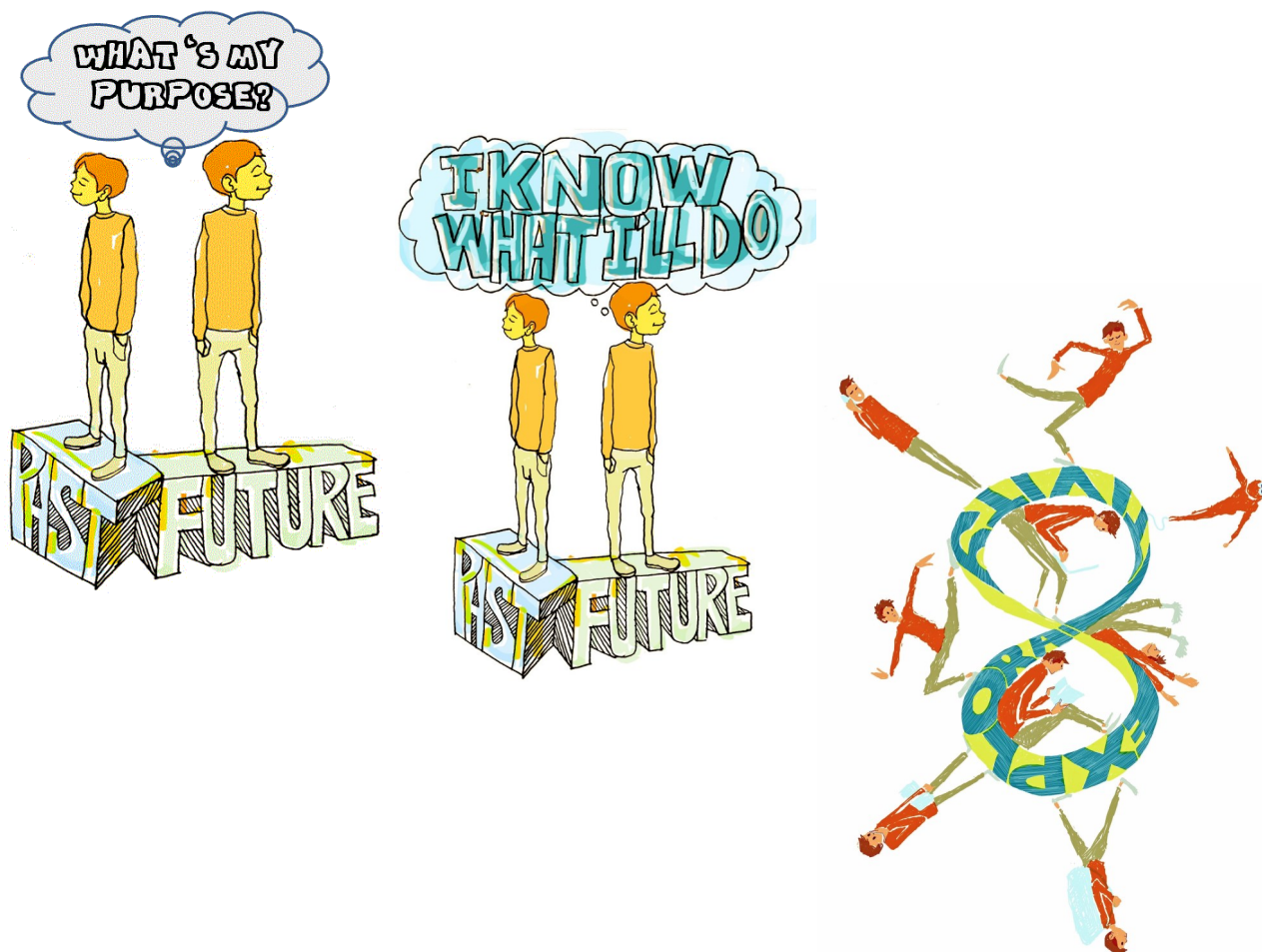
Editor: It's not quite the same experience as going somewhere to explore in person but sometimes it's just not feasible to travel to the moon - especially if you are a teacher with 30 children in her class. Films and TV provide an alternative means of travelling to faraway places but Google have come up with a new technology to enable students to participate in virtual expeditions to some amazing places.

VIRTUAL EXPEDITIONS: STUDENTS CAN TAKE VIRTUAL FIELD TRIPS TO PLACES ACROSS THE GLOBE

Heather Hansman

Students in classrooms across the United States and parts of Europe [can now] go on field trips to Buckingham Palace, Machu Picchu and the Great Barrier Reef, but they'll be doing it through virtual reality. Google recently announced that it is expanding its Expeditions Pioneer Program, which brings virtual reality field trips to classrooms using Google's cheap, smart phone-based VR viewer, Cardboard. The goal is to expose students to places they wouldn't be able to see otherwise.

The idea for Expeditions came from a hackathon in Google's education department. Given 36 hours to create a tool that would boost student engagement, Jen Holland, then a product manager at Google Apps for Education, drew on existing Google assets—the recently launched Card-board, some teaching apps in development and a huge archive of 3D maps and photographs. She combined the three to make interactive virtual reality lessons, which she calls "experiences."

"It's a really practical application of VR and a way to use cutting edge tech for schools," says Holland, now the Expeditions product manager. "We're not just taking old tech and throwing it over the fence. We thought a lot about how this would be helpful."

Students can use Cardboard—an inexpensive pair of VR goggles made from a cardboard cutout, magnets, an Android phone and an app—to move through an experience that their teacher controls from a tablet. The Expeditions program has distributed the equipment to classrooms and worked with teachers to figure out lesson plans, but now, Holland says, they're opening it up, so any teacher with a tablet and access to VR viewers (Cardboard costs about $20) can use it. With lessons loaded on the tablets, teachers and students don't need to have internet access, which is important for low-resource classrooms.

Once students put on the VR headsets, they're immersed in a 3D version of Machu Picchu or the Smithsonian's National Museum of Natural History. They can look around, and the teacher can share information about things they're seeing. Google built a Great Wall of China experience for a fifth grade math class, to give the students a more tactile lesson about multiplication. The same experience has been the topic of conversation in a 10th grade Chinese language class, and it provided physical context for students in a 12th grade history class and an anthropology lecture at a Brazilian university.

"The imagery is the same, what changes is the particular engagement of the teacher," Holland says. "We wanted it to be super flexible."

Teachers have the flexibility to make the field trips fit with what they're teaching.(Google)

Monica Burns, a fifth grade teacher and EdTech and curriculum consultant based in New York, focuses on bringing technology to classrooms. "I think it is so important that teachers are making sure that the learning activities they design with virtual reality are thoughtfully connected to learning objectives," she says. When it's executed properly, and not just used for fun, VR can be incredibly powerful.

Google is currently providing teachers with a baseline of content they can work with that's still flexible enough that they can mold it to their curriculum objectives. One of their newest lessons, a look at the Great Barrier Reef with English naturalist Sir David Attenborough, can be used to talk about the reef's ecosystem, on a base level, or climate change and coral bleaching, if that fits with the curriculum.

The Expeditions program levels the playing field for students who might not be able to travel due to economic or physical limitations, but Holland says Google is trying to break down other barriers too. She thinks the value of VR goes far beyond history lessons and that it's a tool for egalitarianism. "Accessibility is a really important thing for us," she says. Google is planning to offer VR college tours and day-in-the-life experiences at a range of different jobs, to help students who might not have access to college counsellors or internships learn about options for their future. They're also going to dive into complicated social and environmental issues. Google has partnered with the UK's Department for International Development, for example, to build an experience about the eradication of Ebola. "You can't take a school into infections disease labs, but we should be talking about it," she says.

Holland is most excited about the chance, in the long term, to use VR as a platform for social justice, and to expose people, from school-aged kids on up, to large-scale, global issues that are hard to grasp if they can't see them for themselves. "VR is a really powerful empathy tool," she says.

Source: Original Post 03/02/16
http://www.smithsonianmag.com/innovation/how-can-schools-use-virtual-reality-180957974/

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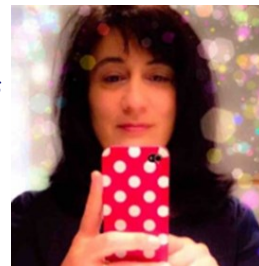
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Editor: I bought my 9 year old grandson VR goggles for Christmas and he loved the experience of 3D immersion. Perhaps there are uses in higher education. As a geologist I can imagine all sorts of uses like virtual field trips. It would be very interesting to find out if HE teachers are already using this technology to encourage virtual explorations.

PHD JOURNEYS OF A SCHOLASTIC EXPLORER

Chrissi Nerantzi

Chrissi is an experimenter, open practitioner, academic developer and PhD student. She works in the Centre for Excellence in Learning and Teaching at Manchester Metropolitan University in the United Kingdom. She has had a varied life and career path so far across three countries and cultures. She has seeded many open professional development projects such as the TLC, FDOL, BYOD4L, #LTHEchat, FOS, #creativeHE, #101creativeideas and turned them into collaborative and community-driven initiatives that enable them to grow and aim to bring diverse people and ideas together.

Chrissi is a member of the Lifewide Education team and co-founder of Creative Academic. She was awarded a National Teaching Fellowship by the HEA in 2015, was one of the five finalists of the Open Education Europa Teacher Contest by the EC in 2015 and the runner-up ALT Learning Technologist of the Year in 2016. Visit Chrissi's blog at https://chrissinerantzi.wordpress.com/ to find out more about her work.

> "The journey not the arrival matters"
> T.S. Eliot

The quotation above is written on a piece of wood that has been hanging above the inside of my front door for past six years. It is a great reminder for all of us to appreciate and enjoy an exploration in the moment and celebrate the little achievements we are making in our lives without constantly focusing too much on the end, the destination...

As a professional educator life is a constant journey of exploration as we continually update our knowledge and skills, try out new ideas, approaches and new technologies and tools. And we learn so much with and from others, through sharing, discussion, creation, research and debate. This process of exploration fills me with enormous excitement and gives me wings to experiment and play with what is novel and nobody else has tried before. In this article I want to share one area of my life in which I have undertaken many creative explorations namely my PhD journeys. And yes, it is a plural, which is perhaps less common…

Both explorations described in this article are driven by my curiosity to learn and discover something new that will be valuable for others and my own practice and bring new insights for anyone who is interested. I hope that the discoveries I make will tickle imaginations to actively experiment and take our understandings in specific areas to new levels and enable us to be bold and creative. My drive to create new paths where others haven't been before using imagination, resourcefulness and playfulness is a cocktail that boosts my determination to enjoy the journey and continue my quest to discover the gems on my journey of exploration.

My PhD quests have offered me new opportunities to discover and connect, ideas and people in an area that hasn't been explored before. Going into the unknown awakens my whole body and mind and makes me come more alive.

It all started in 1996. While working for publishers and enjoying translating mainly children's literature, I was encouraged by a former tutor at the Ionian University of Corfu where I did my undergraduate degree to start a full-time PhD in the area I was translating… children's literature. This was such a great opportunity and too good to say no. I continued translating books throughout my studies and therefore combining research and practice, and actually my practice was constantly informed by my research and the little discoveries I was making.

This PhD journey was smooth and took me through three scholarships to work and research at Johannes Gutenberg-Universität Mainz (Germersheim) and Johann Wolfgang Goethe-Universität Frankfurt am Main (Frankfurt) in Germany and the Internationales Institut für Kinder- und Jugendliteratur und Leseforschung (Vienna) in Austria. I learnt so much and worked systematically on my research during those stays. I also had the opportunity to teach translation at one of the biggest
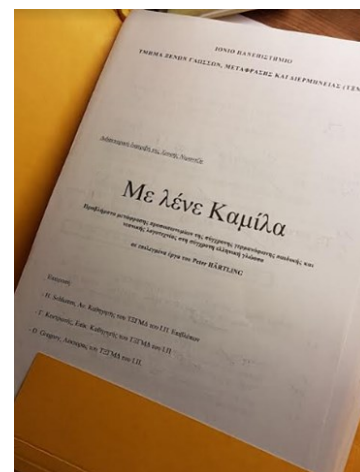
Translation Institutes and meet fellow researchers. During these studies, I continued translating books and met the author I was studying, Peter Härtling.

But, inspite of my research investigations, I never reached my destination. The 80,000 words I have written about the research I carried out are still in a bright yellow folder under my bed. While I was preparing my thesis for submission, I moved from Greece to the UK and my hopes for bringing this work to fruition evaporated.

However, I feel that these years and my efforts to explore were not wasted. I grew so much as a translator and adopted a research-informed approach to translation, which meant that the quality of my work improved as this research progressed and I got more and more contracts with publishers. One cannot underestimate the importance of new relationships that form through scholastic exploration. Through one of these relationships I was entrusted to translate a book by Herman Hesse (Nobel Prize Winner for Literature) which was such an enlightening experience and I am grateful to the publisher for this opportunity.

Despite the above incomplete PhD studies, this wasn't the end for me. In the contrary, my scholastic explorations continued fuelled by my desire to learn, grow and discover. When I had my own little family, I wanted to do something exciting with my life in a new country. After completing two Masters qualifications in the UK and teaching languages, later becoming a teacher trainer and then an academic developer, I was again encouraged to pursue a PhD. The incomplete PhD was in my mind… the destination of achieving a PhD did after all mean something to me. I was determined to complete a doctoral exploration and I had the mental strength to start again… from scratch. I was ready to give it another go. Now, of course, I was faced with an additional challenge… to express myself in a foreign language and do this at doctoral level. But this was also a tremendous opportunity for learning and development and one I embraced.

As my professional explorations had moved away from translation after arriving in the UK to the field of educational practice, my research interests also looked very different... During my second Masters I became excited about open education. I experimented and implemented a number of projects, and increasingly started seeing open education as a great opportunity in the context of my work as an academic developer to bring practitioners together from different institutions to develop their teaching practices further. I know that when we experience something first hand and with others, this helps us reflect on our practice and gives our imagination wings to implement changes to our own practice. This was important to me, as I wanted to create the conditions for academic staff to experience something different and consider this in their own practice. To open-up and connect their classrooms where they saw appropriate and enrich and extend the opportunities for learning for their students and themselves in diverse settings that bring together new perspectives and turn challenges into opportunities for learning. Thus at the heart of my new explorations lay the moral purpose of making a difference to the lives of professional colleagues and through them the improvement of student experiences.

This area became the basis of my new part-time doctoral research. All these years, I was and still am working full-time as an academic developer and continued working with great passion and drive into applying to my practice what I was learning through my research. This means that I brought to life a series of open initiatives that are inspired by my PhD research. This helped introduce many others to open education practices as I have collaborated on these with many others who were new to it at the time (FDOL, BYOD4L, #LTHEchat, FOS, #creativeHE to name a few). Some of them created their own open initiatives inspired by our collaborations, which is truly wonderful.

My reflections as an open practitioner and open researcher are captured in my blog using a range of media (among them are often many pictures), as well as offline in an annual journal and a reflective diary that has been added to the thesis. Today, four years later, after many explorations of the literature and my own practical experiments and related open practice, I have a title, an abstract and the research completed, the whole thesis written, including a prologue and an epilogue. At the time of writing this

26 Sep, tables are cool and solve space-related problems too...
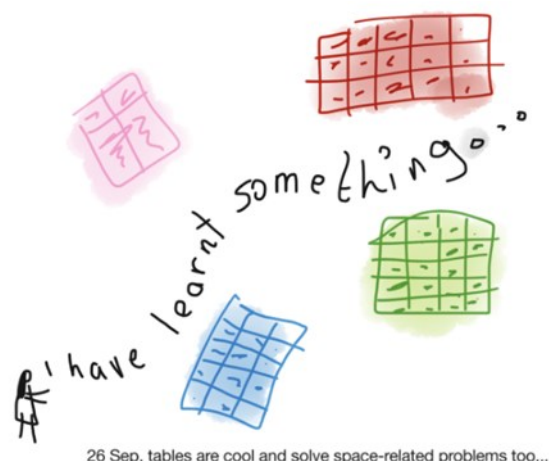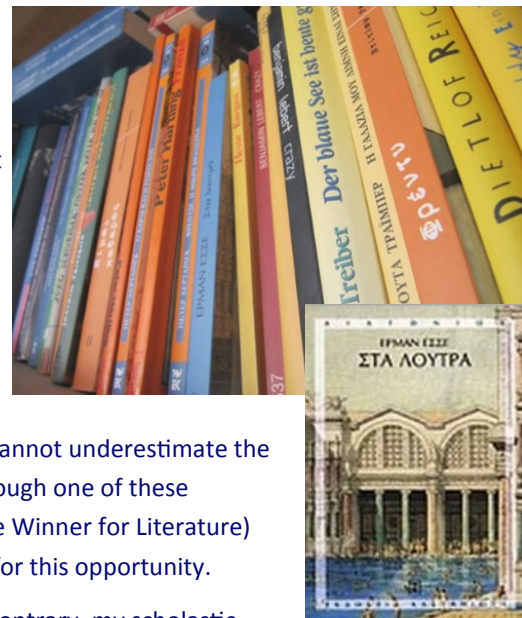
this little reflective article, I am at the stage of finishing reviewing the second full draft. Looking back at the journey and the associated explorations, I can see that I have come a long way. Below, I have captured visually my emotional rollercoaster during the last four years, which is probably not unique to such an undertaking. Stopping for a moment to reflect on my explorations so far, I feel a sense of achievement and the journey has been worthwhile. I have made new discoveries in an area that excites me… and despite the lows… I feel stronger as a researcher and learner… determined to bring this to completion and reach my destination with excitement and determination.
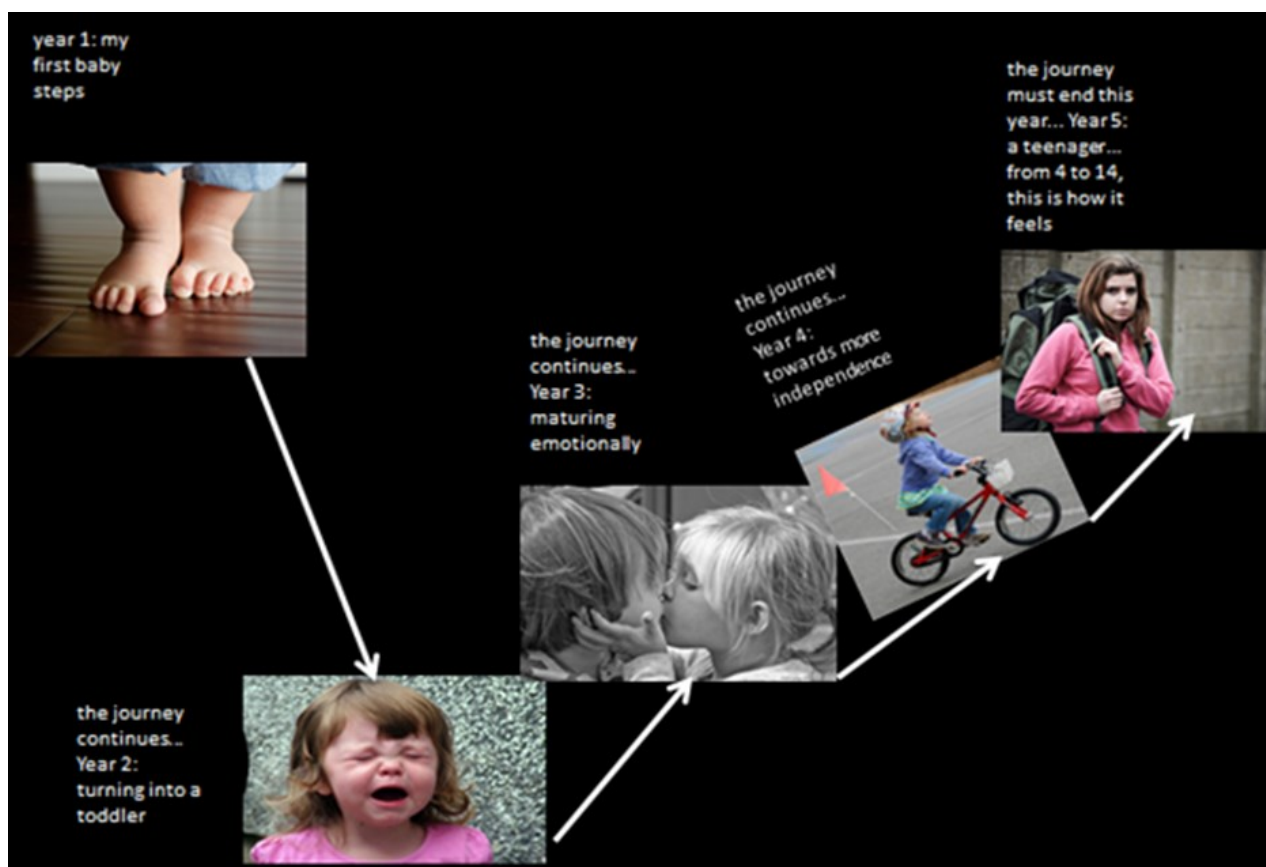
The last four years have been a rollercoaster as you can see above... BTW, I also applied for a PhD by publication. My proposal was rejected. This fuelled my determination further. The Global OER Graduate Network or short GO-GN (http://go-gn.net/) that brings together PhD researchers in open education from around the world, made me feel part of a global network and helped me believe in myself as an open researcher and recognise that what I was doing is worthwhile.

And while I could, according to the regulations, complete this part-time PhD in eight years, I don't intend to. If I count the first three years of my first incomplete PhD I am nearly doing it for that long anyway. And if we count the years from 1996 when my quest for a PhD began, it is now 20 years!!! How many explorations did I do in all these years? All these experiences and research-informed practices in translation and academic development made me who I am today, the open practitioner and researcher I have come to be.

The research for my second PhD study has been completed. It has been written up and revised multiple times. One of the key outputs of this phenomenographic study is the development of an openly licenced cross-boundary collaborative open learning framework for cross-institutional academic development.

There will be some further changes I will need to make, I am sure. However, the research is getting close to be shared, I feel. Research that is locked away is not really useful for anybody and waiting too long is not the answer either. Of course wine, whiskey and cheese for example get better with age, but bread gets mouldy when it is just sitting there and it is thrown away… wasted…

I have been revising the first full draft since September 2016. The thesis is coming together and I am more confident in stating what I have discovered, and what my contribution to knowledge and practice actually is.

And while, I have yet to reach the end of this exploration, I have learnt the following:

Don't give up! Every journey, every exploration, every path is an opportunity for learning and discovery. Don't give up! We need to find our inner strength and move forward, one step at the time.

Remain focused and set milestones! Focus is needed to stay on course. Dreaming big is great but everyday little dreams we can work towards and make reality on the journey are equally important. They become our milestones and are opportunities to celebrate our little successes along the way.

Trust what is unfolding! Be prepared that there will be surprises along the way. Nobody knows what the future will bring. While remaining focused is important, at times feeling lost can do wonders and lead to exciting discoveries. Discoveries, you couldn't imagine from the outset.

Seek to connect! While the PhD exploration is a single person undertaking, it doesn't need to be a lonely journey. Belonging has powerful effects on learning and sustaining commitment. We become stronger within a network, a community. Exploration provides opportunities for new relationships through which new knowledge can be grown and support can be given.

Combine research with practice! The application of what we learn through research and while we are engaged in this research strengthens and refines our understanding and enables us to experiment and play with ideas. Creating opportunities to apply what we learn from our research along the way is invaluable and will deepen our understanding as we are testing it in the world.

Yes, there are conventions! Just exploring is not enough. We have to present our discoveries in a form that can be recognised by the gatekeepers in the field. Stick to the established conventions. Immersing ourselves into the world of ontologies, epistemologies, methodologies and methods will help us make sense of it all and apply what is appropriate to our own study and ultimately help us gain acceptance for our ideas and discoveries.

Create a narrative of your journey by keeping a diary! It is so important to capture what we go through, our darker moments and eureka moments. It is our little companion that we can keep for ourselves or share with others. Using a format that helps us express when words fail us will make it a source for inspiration and help us connect our inner self with our research and the world around us. Specifically capturing your thinking during the analysis phase of your research will add depth and make it more trustworthy. Consider including this as an appendix in your thesis to give others insights into how you have arrived at your destination

There is life after the PhD! One day, this exploration will be over. What follows is up to us! How will we use the knowledge we have created? How will our new reality look like? What further exploration will our curiosity steer us towards? The future will be full of excitements, I am sure. However, in order to appreciate it, we also need to enjoy the present, the journey to get there, to our life after these studies.

My PhD journey is still bumpy but so what? Isn't there a saying…

<div align="center">

Nothing worth having comes easy.

</div>

How close am I getting to the end of this exploratory tale, how close am I to my destination to submit and defend my thesis? To reach my destination does not only depend on my own efforts, I must consider the views and opinions of my supervisors and satisfy their concerns and criticisms. But I am optimistic that it will be possible to agree a submission deadline soon after the second full draft has been read by the supervisory team.

Reaching the end of the PhD journey is only a milestone, my destination is to travel, to explore, discover, to learn and I will keep going. In this sense, the journey does matter and is a celebration of life and the many special moments we experience.

Commissioning Editor: One of the great joys of being Commissioning Editor is discovering, through my explorations, people who I didn't know about, who not only inspire through the work they do but who are generous in the way they share what they do. Meg Lowman is one of these people and it has been a joy to discover the way she has utilised her passion for her scientific work to encourage young people to engage in scientific exploration and adventure for themselves.

EXPLORING EXPLORATION: A FIELD SCIENTIST'S PERSPECTIVE

Meg Lowman

Meg is Director of Global Initiatives and Lindsay Chair in Botany, California Academy of Sciences. Her life long passion involves exploring the canopies of rain forests which she describes in her award-winning book, Life in the Treetops, and also It's a Jungle Up There, which she co-authored with her 2 boys, Eddie and James, to document their family exploration. Meg shares her passion for exploration with young people through her summer schools where kids also get the chance to climb into the tree canopy.

Twenty years from now you will be more disappointed by the things you didn't do than the ones you did do. So throw off the bowlines. Sail away from safe harbor. Catch the trade winds in your sails. EXPLORE, DREAM, DISCOVER. Mark Twain

Men wanted for hazardous journey. Small wages, bitter cold, long months of complete darkness, constant danger, safe return doubtful. Honor and recognition in case of success. Ernest Shackleton

As a child, I collected wild flowers along the road side. My friends called me a "geek" or "nerd" because of my love for nature, which was not considered "cool" in the 1960s. Most kids collected Beatle record albums, while I was collecting beetles from the nearby forests. But that love for nature cultivated my powers of observation, and led to a strong exploration passion that has driven my entire career. The following quote reflects my adulthood career – discovering new species in tropical rain forest canopies, and working tirelessly to conserve these depleted habitats around the planet.

> *"I could hardly believe the damage – all of the leaves throughout the tree were riddled with holes, a result of some unknown insect's jaws that had tunneled throughout the delicate green foliage. What voracious pest had left this destruction? Dangling precariously from my rope at 80 feet in the crown of an Antarctic beech tree, leaning over a cliff in the rain forests of Australia, I was hardly in a position to local and identify insects. The swaying of my rope and the seemingly vast space that separated me from the ground below created an uneasy feeling in the pit of my stom ach. But canopy observation was my mission, and it is also my lifetime vocation: to work for rain forest conservation.*

> *Fortunately, in this particular case, I was able to solve the mystery. After several seasons of searching, I managed to find the hungry insect. It was a major pest (also called herbivore, meaning plant-feeder) on a very important rain forest tree, the Antarctic beech, that dominates the higher elevation rain forests of Australia and New Zealand. Its caterpillar was nondescript, and required patient rearing in homemade plastic cages, back in the confines of my small student living room, in order to undergo its metamorphosis and emerge as an adult beetle. As I suspected, it was a new species – and also a new genus (a new group of species), previously unknown to science. The task of finding, classifying, and publishing its identity to the world took approximately two years – a very slow process."* [1]

In this day and age where computers and models can predict just about anything, we still need more explorers. We need parents to inspire their kids with the curiosity to explore and teachers to encourage their pupils and develop their capability to find things out for themselves.

What's left to explore?

In the age when all we need to do is ask google, what's left to explore? This was the theme of the 102nd annual dinner of The Explorers Club held over a decade ago in New York City. The answer to this important scientific question was and still is, "just about everything". The world of outer space remains virtually unknown; the soils beneath our feet are referred to as a "black box" by biologists; and even the microbes living inside our digestive system (now numbering in the trillions) are virtual strangers that are increasingly recognized as critical to our health. Our very own planet Earth boasts enormous unexplored

expanses including forest canopies, ocean floors, polar icecaps, and local environments such as the watersheds of many local rivers. Uncharted global phenomena continue to expose new regions for exploration: the tectonic shifts of Earth's crust, the movement of glaciers, global climate change, and the evolution of organisms form a constantly changing smorgasbord of new discovery. And perhaps most important, new technologies provide improved tools for the detection of previously hidden worlds.

How many parents encourage their kids to avoid mud, squish insects, and stay indoors where they view trees on a two-dimensional computer screen, not as an immersive 3D climbing challenge? We are inadvertently crushing their sense of exploration when we encourage children to live indoors, with an antiseptic outlook on the natural world. When baby boomers think back to their childhoods, we can probably recall a tree house, a boy/girl scout camping trip, family picnics, or a passion for fishing, hunting, or horse-riding. Most of us had an occasional appetite for dirt, and maybe even a few delicious bugs here and there, as we explored backyards and nearby vacant lots in our childhood. As a baby boomer myself, I enthusiastically encourage other boomer parents and grand parents to bring back that halcyon childhood pastime of letting your kids (and grandkids) get muddy once in a while.

> "Good explorers need 3 things: passion, curiosity, and effective use of your 5 senses.
>
> Teachers, parents, grandparents and other adults who are involved with young people should teach them to use all of their senses..
>
> So, for any young readers or teachers, parents or grandparents that is my recipe for the "secret sauce" of exploration!"

Studies indicate that they will grow up healthier and happier because of their direct connection to nature. Kids need to explore, and inspire their curiosity. They do not need a major expedition to Antarctica; there are vast uncharted regions of exploration in their own back yards. Even the mold in a refrigerator offers a young person the chance to make discoveries. And wild flowers along the roadside are full of pollinators, predators, leaf miners, and all the drama that even the best Pokemon games can offer.

The mission of my workplace, the California Academy of Sciences, is "explore, explain and sustain life" on Earth. This is a kids' dream in many ways. But parents do not need a museum or school curricula to inspire exploration. All they need is a sense of adventure. Explore your basement on a rainy day, and see if camel crickets live in the cobwebs. How did they get there, traveling from basement to basement around the country? Take a walk along a dirt road – how many spittlebugs are living within their impenetrable blob of spit on roadside stems? And how many different colors of flies can be captured in a simple net for close-up examination? Even more

amazing – if you have a stream within an hour's drive, take off your shoes and wade into that incredible unknown aquatic adventureland.

As Mark Twain so aptly claimed, "explore, dream, discover." Those three words will turn an ordinary child into the next Charles Darwin or Ernest Shackleton. The world urgently needs a new generation of explorers, not just to scale mountains or travel into outer space, but also to explore the interstices of our cells and the anomalies of our climate. And who knows, but you may also be invited to join The Explorers Club in the process!

So how do I practise what I preach?

It is heartening to recognize that there are still amazing frontiers of exploration for young people, that we can inspire them to become detectives-of-the-planet in so many ways. Some of the new components of my "modern" toolkit provide tools that are useful for engaging students to become field biologists like myself. These include:

1. Combining real and virtual nature – I have a website http://canopymeg.com/ which receives millions of hits because young people are curious to know more about the rain forest, the canopy, and the solutions for saving forests. I try to include lots of videos and photos so that my virtual users want to see the real thing. I also use Twitter and YouTube and other social media, in order to reach diverse audiences.

2.   Citizen science expeditions – Every summer, I lead a citizen science trip to the Amazon rain forest canopy. We live in amazing thatched huts and work on the world's longest canopy walkway (almost a quarter mile long!). It is awesome, and everyone collects data to help us learn about the mysteries of this complex tropical forest canopy. The itineraries are posted on my website: www.canopymeg.com.

An Opportunity for Students with Ambulatory Disability

Designed for 4 students with ambulatory disability and 4 without, this research is based on the idea that wheelchair dependency is not a limit to good field biology. In the canopy we climb ropes, not trees, and in the lab we use computers, microscopes, and minds that have no boundaries. Students will be employed for the summer (stipend, housing, & travel). They will collaborate with the PIs to prepare their data for presentation and publication. They will also meet and network with the scientists and students at the *California Academy of Sciences, Harvard Forest LTER, KONZA Prairie LTER* and the *KU Field Station*. Students may attend a regional meeting to present their results.

3.	Children's books authored in different languages – I write a kids' book about the value of trees for human health, using a young Ethiopian girl as the proponent of saving her local forests[2]. The more important "hook" for getting kids engaged is that I translated this book into Amharic (Ethiopian language) with my colleague, Worku Mulat. This means that Ethiopian kids can learn about their own trees in their own language. We have a proposed book for Malaysian children next year. And my first book, Life in the Treetops, was published in about 5 languages, which has given girls in many countries a sense that they too can grow up and become a science explorer.

Editor : this article is a great example of Meg saying YES.

4.	Saying YES – My final means of reaching young people and inspiring them is to keep a dogged schedule of speaking engagements. From skypes to rural schools to technical conferences to inspirational talks about forest conservation to corporate executives, I have tried very hard to develop science communication that is effective to different ages and different stakeholders. As I tell my students, most politicians need language in science that is equivalent to seventh grade audience. So why not!!

5.	Canopy walkways – I am advising on several international canopy walkway construction projects. This research tool is now providing a unique ecotourism opportunity. The notion of local people making money by SAVING their trees, not logging them, is proving to be an innovative conservation tool. You can read more about these on my foundation website where I fund-raise for these walkways: www.treefoundation.org.

Sources

1 Lowman, M. D. (1999) Life in the Treetops, Yale University Press

2 Lowman, M. D, and Mulat, W. (2014) Beza Peppertree Press (children's book), both English and Amharic versions.

Image credit: https://alchemyofecology.files.wordpress.com/2012/06/kids-exploring-nature.jpg

Editor: You can find out more about Meg's amazing explorations, conservation projects and educational work at http://canopymeg.com/

I also recommend Meg's inspiring TEDx talk 'Climb Up' How to raise a girl scientist.

ttps://www.youtube.com/watch?v=PdnfW-_mXMM

EXPLORATION IN THE FASHION WORLD

Bette Bondo

Bette is the founder of The Fashion Crowd; a blog with news and tips for fashion students and young designers. After five years as Visiting Lecturer and one year as Programme Leader at Istituto Marangoni in London, Milan and Shanghai, she's currently teaching an online MA course in Fashion Design with AAU in San Francisco, while being based in Copenhagen. She has a PG Cert in Academic Practice (Distinction) from Manchester Metropolitan University. Bette is a contributor to Lifewide Magazine and Creative Academic Magazine .

There is infinite possibility in the idea of exploration

Exploration is a fantastic word. It engages our cultural imagination to think about courageous historical figures like Marco Polo and Ernest Shackleton, who set out to discover new territories, and who – most likely – had a more adventurous every-day life than most of us with 'normal' jobs. The very idea of exploring the unknown is full of potential for mystery, excitement, rewards and a place in history - assuming that you didn't die on the journey.

Exploration is closely linked to journeys into the unknown in other fields, which are called different things. In creative contexts, and the fashion world where I work, we more often speak about creativity, design and design thinking. In a business context, the buzz word would probably be innovation, but just like in past times, when/where a successful explorer received worldwide recognition, so do the successful explorers and inventors of today: Uber and Tesla provide good examples. Exploring the unknown to discover new things is still cool and admirable because it requires different skills and attitudes to those needed when trying to improve what already exists.

As a fashion designer, I learnt to systematically go about the creative process to search for possible solutions to a given brief. With experience, I became used to and confident about the exploration process, where you set out not knowing what you are looking for, where your ideas will come from or what the final product is going to look like. The word we use for this process of exploration is Design Thinking, which is a creative thought process: a journey which isn't necessarily logical or linear but rather imaginative and product-oriented.

Currently, I'm in my 6th year of teaching fashion and in the past week, I recently had a conversation with an MA student about the anxiety, she felt, over transitioning from research and into the design process. Research comes very easy to her (which is great, as it can be hard to teach people to make something strong, consistent, fresh and full of value, as it's more of a talent than a skill that can be taught), but she finds it difficult to implement the research into her fashion collection and design vision. The conversation that we had around this anxiety, which isn't a very pleasant feeling or enhancing for creativity, was exactly that of becoming confident with the fact that it's an unknown journey. Ultimately, this is a fact, you need to accept as a creative person and also enjoy, rather than being fearful of the feelings this process engenders. With practice you become confident about your way of working and the end result that you will eventually get to, as well as knowing roughly how long it will take you. So exploration is a never ending process of becoming to achieve results that you cannot imagine at the beginning of the journey.

This is perhaps the main reason, why I find creative education so engaging and useful. Becoming confident with the fact that we can't always know, where we're heading, is really valuable, as life is ultimately unknown. If you have accepted and appreciated it in your area of profession, I think, you will be more likely to do the same in your personal life. It can be overly annoying, indeed (!), not to know, when you will find a solution to your career strategy, discover your inner passion, or meeting your life partner. The only thing to do, though, is to persevere, ask critical questions, listen to your inner voice and try to create opportunities for yourself. Be open to possibilities, try to see the affordance in situations and people and be willing to act on what you see.

You need confidence & agility - not a rigid master plan to explore

When I was younger, I thought things could be planned more in detail and that I would just have to follow my big, fat Master Plan, but I now know it's not like that, and that it's more of a general direction, where I will just have to see, how it all pans out. I need to be agile to change direction rather than persist dogmatically with what I thought was the right way, when I started.

In order to foster this confidence and agility in students, I find that two points are especially essential. The first one is to trust and believe in yourself; you have to believe that you have something interesting/ cool/beautiful/ useful, or whatever the criteria is, to contribute to the world. It's not linked to one's practice as a designer. Rather, these feelings exist on a deeper, psychological level. In creative fields, where there's no one right answer, you need to believe that the solution you put forward is valuable. If you're not convinced and passionate about your ideas, no one else will be.

The other essential point is a sense of freedom and liberation. Whatever direction you feel is right for your project should be a legitimate and right direction to pursue. This is something I discovered during my first years of teaching at Marangoni, London. It's a university with students from 92 different countries, and this international environment somehow fostered a very free and non-judgemental learning environment. With so many different people, there were no unwritten codices of right and wrong – no cultural constraints of what's within normal boundaries. It created a climate where students were encouraged to explore based on their own visions as 'outlaws' in vibrant London. This sense of liberty combined with self-belief is to me very enhancing for creativity.

In learning environments with a more homogeneous student body, this non-judgemental culture can still be fostered and encouraged, and the main challenge will probably be a dominant culture that is judgemental, which can be hard to fight and break free of, if someone has different views. When I think about prêt-à-porter fashion in Italy or furniture design in Denmark, it's hard to design as if from a blank sheet of paper with a novel vision, when we have heritages that are so celebrated and almost viewed as 'perfect'. We are brought up to think that wood and wool are the best materials, and they are preferably worked in a balance of minimalism and detail, but with such a manifesto, how do you create something that is significantly different? How do you explore, which means looking for new solutions and more importantly, challenging assumptions?

A designer's perspective on exploration

The actual process of exploration is probably two-phased: first opening up to any possible solutions (Creative thoughts), and then narrowing the possibilities down due to various constraints (Design Process):

• Creativity – ability to imagine and see something new. In this part of the process we explore ideas.

• Design - a process of coming up with a solution (material or immaterial) to a given brief or problem. It's in this part of our work process where we explore and balance ideas, materials, textures, colours, costs and more against the specifications of the brief we have been given.

These are my loose definitions - how I would explain the concepts most clearly myself.

While there's a lot of creativity in a successful Design Process, coming up with a new solution starts with being able to imagine it, there's not necessarily Design in Creativity, as Design and Design Processes are the more systematic steps of getting to a certain solution/outcome. Being able to solve complex situations is what businesses are increasingly going to need – and therefore the work force must learn and develop in order to satisfy business and industry requirements. Realising – and being comfortable with the simple fact that the future is complex and unknown, and that this is the only thing that is for sure, gives entrepreneurs, employers and employees the ability to navigate this landscape with confidence.

The world is always going to need visionary people. People who are able to "[see] the world afresh" (John Seely Brown, Chief of Confusion), "Thinking in New Boxes" (Luc De Brabandere and Alan Iny, Senior Advisors at Boston Consulting Group) and "Others have seen what is and asked why. I have seen what could be and asked why not." (Pablo Picasso, Painter). New problems emerge all the time

In a fast changing world new problems, challenges and opportunities emerge all the time. We all need our creativity to deal with the problems, challenges and opportunities that we encounter in our daily life and we all need to be able to explore to find the best solutions to the particular circumstances in our life.

TO BE AN ARTIST YOU MUST BE AN EXPLORER

Kiboko Hachiyon

Professional artist Kiboko is a member of the Lifewide core team and has illustrated many of our editions of Lifewide Magazine using his distinctive artistic style. In this article, he reflects on his own exploration through art.

I have been a practising artist for as long as I can remember. However, If I were to academically cite a timeline as to when I feel that I recognised myself as being an artist, then it would be at some point in 1995. This is my earliest memory of actually creating a body of work, within an academic setting, for a purpose; in this case a competition and receiving reward for it, a certificate recognising my efforts. The certificate, written proof of me being recognised as an artist internationally at that time, is long lost but the memory resounds. Not so much the memory of being in school, or with my peers or in a particular setting, but more so the memory of creating and to a lesser degree, my creation being appreciated.

This was also the onset of a longstanding conflict that I continue to battle with to this very day and hopefully at some point will find a resolution.

I drew because I wanted to, I was interested in what is now referred to as creation, image making, creative process and realisation. I used anything I could get my hands on. I would wile the day away in my own imaginary world, frustrated as I tried to recreate what I saw in my mind's eye on whatever canvas or surface was available to me at that given moment. I did not even stop to think that what I was doing had a name or a title, that I was creating, that I was an artist, I was immersed in the experience of trying to express myself by making something, and by learning about the making, I was learning about myself and pushing myself to see what more I could do and achieve. Thankfully some things have not yet changed, when I get into that frame of mind, I do not think, I just do.


4 NIPPLE NUDES WELCOME TO WOMANHOOD 2013
Mixed media on canvas. POA, Photography by Ambra Vernuccio

The concept of formal education, especially in the arts, used to puzzle me. Creativity to me has always been intrinsic and I struggled with the idea that it can be taught wholly. I stress wholly, because I believe there needs to be an interest, passion, dedication, inclination, curiosity, a willingness to try new things. A willingness to explore and be involved in exploration without necessarily knowing where it will take you but trusting that in the process of exploring I will learn the things I need to know.

There has to be a catalyst that sets you onto that path and a drive to realise whatever it is you intended to do. But each individual has to figure this out for themselves first, the answer I feel truly lies within. There is a creativity in this realisation that inevitably leads one to want to do more, within and outside of the creative spectrum.

I paid a hefty price trying to go against the grain that is convention. I was constantly reminded that I needed a bit more "taught time", that coming from a different culture, I would struggle to "convert from one system of education to another" , that I always "did my own thing".
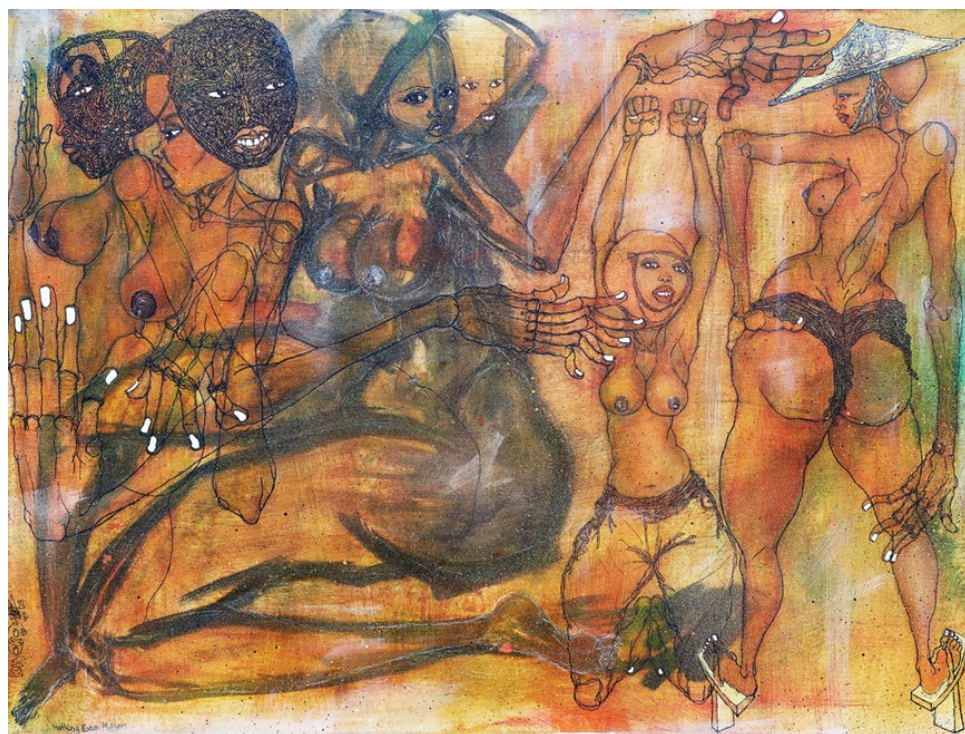
HEAR HEAVEN 2013
Mixed media on canvas.
24 inches by 18 inches.
Photography by Ambra Vernuccio

It was my tenacity and self belief, cultivated through years of experimentation, exploration and my own development as an artist that helped me turn the tide and prove many academics and other would be doubters wrong. I appeared and came across as a maverick, but I had simply invested the time and energy and was open to new experiences. I was learning without fear and most importantly, without needing to be acknowledged, because whatever I did, I did it for me and because I wanted to.

To think a day would come when I would be anything other than sombre being nestled by a title. I fought against being called an "illustrator" insisting I just drew, and if that made me an illustrator then maybe that was okay. I did paint, but that did not necessarily make me a painter. I have dabbled my hand in writing, it does not necessarily make me a writer.

I have produced collections of my artwork and curated shows, do I have the right to call myself a curator - a "custodian of culture". There was this fear of being institutionalised, that being given a name, would take away from my creative process, from the making and the experience of making, that it had to have a name and make sense to anyone other than myself. That I had to be one thing and not many things, that I could not be many things, I had to focus on one. I had to muster the courage to do it my way.

Eventually it dawned on me that the titles hinted at a multiplicity that should be welcomed, a myriad of new platforms awaited to explore and experiment with and grow creatively and as a person. With the same appetite and tenacity that I set out learning and mastering the use of pencil, pen, marker, spray can, paint, paper, wall, wood, I mimicked and set out to explore and learn how to become a curator, painter, illustrator, writer, blogger and maybe a critic.

My mantra, master the rules and break them. But first, master the rules. You have to explore in order to discover and under-stand something, then make it your own by adding your voice. Maybe then you can help or inspire others to find their own voice, and if nothing else, hear yourself a bit more clearly. My life journey remains an exercise of experimentation, a mixture of unearthing hidden delights and fine tuning talents, whilst navigating life's landscape that remains riddled with new challenges. When the call comes, to present myself, my experiences and my findings, eventually I will answer, and the response will be experimental, very much like this piece of writing.

Painting Portfolio: i-paint-too.tumblr.com Illustration Portfolio: kibokohachiyon.tumblr.com Blog: 84thdreamchild.wordpress.com

KEYS TO SYSTEMATIC EXPLORATION—A PIANIST'S PERSPECTIVE

Christina Kobb

Norwegian pianist Christina Kobb studied piano and pedagogy at the Norwegian Academy of Music (NMH) before she shifted her focus to historical performance practices. After further studies in Germany, the Netherlands and the US, her doctoral research at NMH on 19th century piano playing was featured in the New York Times in 2015. She has also presented her work at the Ira F. Brilliant Center for Beethoven Studies in California and at Harvard University. In 2013, Christina was appointed Head of Theory at Barratt Due Institute of Music in Oslo, but left the position to pursue performance and research. Currently, she teaches occasionally at the Norwegian Academy of Music and is co-founder and editor of the Open Access journal Music + Practice (www.musicandpractice.org)

Piano playing is my practice. As with many artistic practices, it is supposed to be creative, intuitive, touching, virtuosic and mind-blowing. Nevertheless, routine, boredom, frustration and lack of initiative may threaten musical practices, too. That is, if we forget to explore.

The explorative state

I love the explorative state of mind! I regard exploration in any practice as integral both to continued development and continued excitement. I like to think of a practice as an ecology of many constituents or actions; on the physical, mental and emotional level respectively. As I am highly motivated to improve my performance, I work regularly on developing all three levels *plus* the interaction between them. I actually practise aligning these levels to each other, actively conditioning myself for an explorative state of mind and being.

On each level, "renewal of cells" is part of the process, just like everything in nature is in constant growth and adaptation. Have you noticed how even dead branches block the sun? Similarly, removing that which is already dead, redundant or even toxic is vital to secure growth in a practice. And steady growth is, in turn, achieved by channeling all of our efforts – physically, mentally and emotionally – in the same direction.

I would argue that exploration requires planning and conscious decisions. You may stumble on an idea of how to explore something, but once you decide to pursue it, a strategy is vital. The physical level of a practice is usually the best place to start, as it is relatively easy to inspect and adjust. The constituents of the mental condition (cognitive activity) may be a little harder to grasp and that of the emotional level even less tangible. Nevertheless, I keep exploring and will share some of my experience here.

> **I like to think of a practice as an ecology of many constituents or actions; on the physical, mental and emotional level respectively. When they are all engaged in purposeful exploration we are in an explorative state of being.**

Understanding your own practice

Paradoxically, we may possess a great skill, yet be unaware of how to explain it. When deeply ingrained in our habits, we can perform complex tasks without conscious knowledge of which body part does what, and why. We just *know*, we don't know *how*! But if you are to teach well, you must really know your practice. And if you are to teach yourself a new path, you should know which one you are already on.
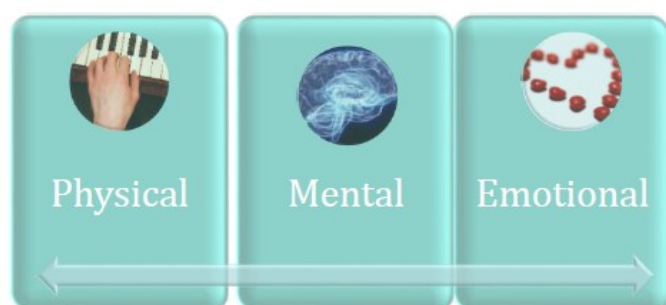
Reduced to its most basic element, the core question of piano playing is: How should the keys be pressed down to the best effect? And, further: How can I improve my physical, mental and emotional "key pressing skills"?

Figure 1: The practice of piano playing depends, like most practices, on the physical, mental and emotional level.

My approach was a historical exploration, attempting to reconstruct the piano technique of the early 19th century. I identified all the elements of piano playing described in 200 years old German and Viennese treatises, taught myself the approach and studied the changes in the music. During this process, I developed a strategy for systematic exploration (see below), which may be useful also in other areas.

In this video, you will get a sense of how I worked to relearn piano playing: https://www.youtube.com/watch?v=INh84SP6DiA

Hummel: Grandes Etudes, op. 125

Improvement potential and interdependency

Activities that depend on physical execution, like any sport or playing any musical instrument does, consist of a number of coordinated movements. I regard these as a "set of actions".[1] There are many possible combinations of arm, hand, leg and foot movements, but at the same time, our physical body sets limitations. For instance, when operating a piano (or any machine), not any hand motion is possible, or expedient, in combination with any arm motion; the actions have a high degree of interdependence.[2] Hence, the number of basic actions – and combinations of actions – are manageable. Despite the seeming "magic" of a great pianist or sports champion, the complexity of the physical actions is not beyond comprehension; the execution relies on a basic "set of interdependent actions".

We need to understand how the interdependence of actions affects the learning process: Firstly, since we usually learn a skill as a whole, it is often hard to pin down specific weak spots. If it works "just fine" as it is, it could be hard for some to find the motivation to take it from "fine" to "excellent" by looking for actions to improve. Further, since you can hardly change one action without upsetting the system, more adjustments are usually required if one element is altered. Conversely, the inter-dependency may cover up some less than ideal actions – and thus conceal the improvement potential.
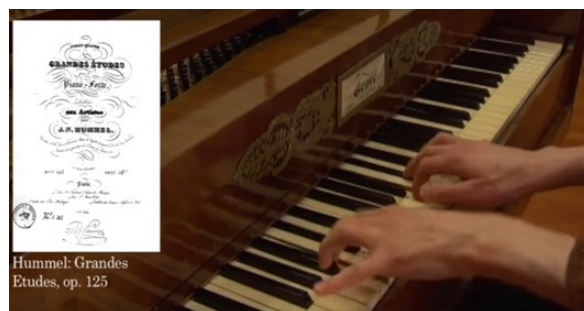

Figure 2: Imagine the "set of interdependent actions" like cogwheels of your practice.

Strategy for systematic exploration

I like to define the "set of interdependent actions" (or constituents) on the physical, mental and emotional level respectively. Then, I inspect each action, gain an understanding of its overall function, and explore its *improvement potential* in enhancing the practice as a whole. I construct different exercises to practise better ways of executing each action, constituent, transition or sequence. This approach gives me insight about *why* something – big or small – works or does not work. Hence, it allows me to improve my performance, instead of just "hoping I will get better with time".

My motivation for changing anything at all was that I was simply not happy with the way I played the piano. I figured that to change the sound that was coming out of the piano, I would have to change the sound-creating impulses going into the piano. Here are the various steps, in detail, and some advice for your own exploration:

> **Editor**: Is Christina's approach to systematic exploration for improved performance applicable to other practices where perfection in performance is being sought?

- Create a beneficial environment for the exploration process (set aside the time and resources you are willing to invest)
- Break down the matter (the system of operation) into its smallest possible constituents or actions. You may start with the larger actions and become more detailed as you work.
- Isolate and inspect them one by one. Understand the function of each part and how they work together (like you would if taking any motor or apparatus apart).
- Explore the *improvement potential* of each constituent/action, with the goal of enhancing overall performance. Do *not* attempt altering one constituent/action without having understood its function in the whole.
- As you work on *one* constituent/action at a time, observe how various changes affect the system. In fact, a change usually brings an imbalance in the system, which needs to be absorbed by some other action. This may make things worse, or better!
- Explore, experiment, immerse yourself in the various options, considering the operation of the whole from the angle of each constituent/action systematically.

- Explore as many possible combinations as possible (good *and* bad ones), as this will deepen your understanding of how the system operates as a whole. Besides, you might stumble on some good combinations your logic would not have foreseen.
- Be willing to refuse an idea!! A new idea is not always a good idea – run a relevant test and use your good judgement. Do not change without purpose.
- Pay attention to and develop the more promising combinations, exploring the various options on relevant material.
- To change may mean to add something or to subtract something. Keep both options in mind when it comes to optimizing your practice.

About halfway into the process, you are ready to set a clear goal for your work. At this point, you know more about the options, and how to make good choices, than at the beginning of the exploration.

Keep in mind that when you change something, your body and mind may resist even excellent changes at first, simply because you are not used to them. If you consider making a change that feels odd, just give it a test period, and keep track of how it develops for a few days or weeks before you decide. Sometimes, there is more than one feasible solution. If so, study how each of them affects the outcome – and decide which outcome you find more desirable. In the proofing, also make sure that the option you choose does not come with any unwanted side-effects.

- Don't mess up more than you're willing to tidy up. Any phase of the exploration process should end with an (intermediate) decision; the three main outcomes being 1) accept 2) decline 3) continue exploration. You may also need the category 'alternative option' (i.e. define the action as not a part of your default system, but useful on certain occasions).
- When you have decided on any new/improved actions or constituents in your system, isolate them once more and construct several exercises for yourself to practice the new elements – and any transitions between old and new elements – specifically. Isolation will keep the "autopilot" from your old system from kicking in.
- Decide on a "proto type" for your system and run tests on relevant material! Adjust where needed. Going back and forth between the actions in your system and the material on which they should operate, is a vital part of creating a successful system. Return to earlier steps whenever necessary.
- Endure the initial discomfort and vulnerability of establishing new habits.
- Keep the overall goal in mind.
- Allow yourself some time to solidify your new/renewed "set of interdependent actions" without excessive strain.

A successful exploration process should result in a "default manner of operation" which is stable, reliable, satisfactory, well-functioning. Yet, the "refinement" period afterwards may be endless (at least in my practice), in perfecting the execution in all situations. For instance, I still work on sitting upright like a baby, keeping my neck straight and body relaxed.

Perhaps you find this strategy too rigid, but the force of rigidity is needed to confront our intuitive reaction, and challenge our current thought and perception. But rigidity may not last forever. Much like you use exact measures of butter, milk and flour to make a dough, and rigid baking molds to keep the goodies in shape in the oven, afterwards, it stays in shape without braces!

Figure 3: Frédéric Chopin at the piano. Silhouette by F. Phillip.

Exploring improvement potential on the mental level

The increased awareness on the physical level gave me some hope that I might be able to increase my performance on the mental level, too. Without going into too much musical detail, here is an outline of how I work on the mental level.

DEVELOP A CLEAR VISION: I practise the various "tracks" of representation in my mind; I see, hear, feel and touch the music without touching the piano. I envision how my hands move perfectly while I "listen" to the sound of the music as I "see" my fingers press down the keys. Often, I add a track of intellectual information, like chord progressions or patterns in various parts, and formal development. I create a unity of the auditory, visual, kinaesthetic faculties in my mind. Any discrepancy between them must be sorted out. When I do this, mistakes are usually ruled out before they solidify in my memory or even reach my fingers.[4] I practise feeling at ease – and feeling whatever emotion the music contains – as soon as the basic cognitive work is fine. I do all of this over and over with each piece of music, systematically adding "tracks" and layers to the complete picture. I deliberately design the desired result in my explorative state of mind until it becomes my state of being when I perform the music.

Exploring improvement potential on the emotional level

Despite all this talk about technicalities and systematic exploration of piano playing, my honest opinion is that music, first and foremost, is about transmitting and sharing human experience on the emotional level. For this reason, I explore how I better can connect with both the emotional content of the music and with the audience. In the old days, people said that music was the language of the heart. Nowadays, classical music has sadly become more sterile, perhaps due to the recording industry and the many competitions for young musicians. Emanuel Bach, one of the sons of Johann Sebastian, wrote a gem of a piece of advice in his piano treatise of 1753:

> *A musician cannot move others unless he too is moved. He must of necessity feel all of the affects that he hopes to arouse in his audience, for the revealing of his own humour will stimulate a like humour in the listener.* [5]

I think the most important way to advance the emotional state of being while playing is to *actually feel* the music – first in the practice room and then by daring to share the feelings with the audience. I take Emanuel Bach's advice and actively practise feeling the various emotions in the music. When practising a happy piece, I practise feeling happy until I laugh! In a dark piece, I sometimes practise feeling the heaviness until I actually cry while playing through the piece at home, all by my-self. In my experience, this embeds the emotions deeply in a piece and makes it easier to portray it confidently and convincingly when on stage.

On a side note, I have one great tip for any hint of performance anxiety (the topic as such must wait for another time): Stay happy. Do whatever you need to keep your mood up. I ignored this fact for way too long. It is very hard to be happy and scared at the same time. Make happiness win!!

Foto: FREDRIK SOLSTAD /NYT

Overcoming doubt

Emotional threats may indeed be the hardest to overcome once you reach the point where you have settled on changes to be made. Doubt, fear and discomfort are likely to hit hard during a process of change. All of a sudden, it feels tempting to return to "business as usual" and forget about your potential. Despite all the exploration work, it just feels more comforta-ble where you used to be!

This is especially true if the change includes a major goal which, potentially, may bring you to a new level. I am in this position now, as I unexpectedly got the chance of presenting a solo recital at Carnegie Hall, New York, demonstrating to the world how my favourite music sounds when applying my reconstructed 19th-century technique. Honestly, although I have always wanted to play the piano, I never even dreamed of anything like this!

How do I prepare? I figured that I needed to practise feeling comfortable in my *new realm of ambition*, both physically, mentally and emotionally. On the physical level, I deliberately practise feeling at ease with my "new" technique at all times. Further, I work as I described above (Develop a Clear Vision). Still, I did not trust that this would be quite enough to get me where I needed to be. I felt too hesitant, too doubtful and too careful to tackle the positive changes in my life! How could I teach myself to embrace the new opportunities and throw myself into the unknown? I explored a parallel orbit.

ESTABLISH A PARALLEL ORBIT: I decided to challenge my weaknesses of hesitancy and doubt in a completely different environment than music. It had to be an area that was not likely to affect my piano performance if I failed. Personally, I love the sea and I live close by, so I went for open water swimming. The downsides were that I was in bad shape, I get cold very easily and I had no one to partner with. I felt only half competent and half motivated. My analytic brain was shouting loud about the obstacles, and forgot about potential payoffs. In other words, it was indeed quite a perfect parallel orbit.

How my parallel orbit worked out

I started swimming on 8 June and kept going at an average of 5 times a week until mid-October. The temperature fluctuated between ca 13 and 21˚C.[6] I would usually dread to go, and perhaps postpone my swim for a few hours before I finally confronted the waves and endured the initial cold. Then, I LOVED it, no matter the weather conditions. At first, I would just go for a dip, but when my shape improved, I enjoyed longer swims. And I really enjoyed being in the water! Why had I been hesitant?! After swimming for 20 min in 13˚C I felt like a crocodile!! (That is, until my teeth started chattering a little later…). In the back of my mind, the thought of the all-levels open water swim race of in the end of August kept playing. Could I make it? 10 days prior to the 2500 m race, I had still not been able to swim 1000 m without having to rest. But *one week before*, I found the 'flow'! I had adjusted my technique and I was finally in shape to swim several stretches of 1000 m during the final week. I felt comfortable and strong in the water. On the evening of the race, I went to the island in Oslo on my own, without telling anyone…so no one but strangers would notice if I failed. The weather was less than ideal; 18˚C in the air, 18˚C in the water, and quite windy. Here is a photo from the race:

It felt like forever to swim around that island!! Towards the end, the waves got bigger and forced salty water down my throat as I battled against them with every stroke. But despite being cold and tired, I actually had the strength to finish! I had swum 2500 m in one stretch for the first time in my life – without drowning or freezing to death! It took a good 1h18min to finish fourth to last, but I would do it again. And I clicked "save" on my mental hard disk for the feeling of flow and resilience.

Conclusions

In the process of exploring improvement potential of all aspects of my practice, the illustration I presented in Figure 1 now seems much too simple and orderly. The fascinating complexity is perhaps better imagined like this:

Figure 3 Multiple, partially overlapping orbits on the physical, mental and emotional levels.

Both our physical habits and thought patterns become firmly established over time, by many repetitions. I explore to improve my learning strategies and deepen my understanding of my own practice. I explore to enhance creativity and productivity, to stay curious and refine my performance. I like to think of all sorts of habits and patterns as orbits around a core idea like the planets orbit a star. When our thoughts, actions and emotions gravitate around an idea, we accept certain elements and decline others - consciously or less so. It is like a constant "ecology of

orbits", where a repeat of action maintains an existing orbit, but more force is needed to create a new one. As is well-know, our tendency is to gravitate towards familiar patterns. But to explore unknown territory, we have to leave the well-known! To create new orbits physically, mentally and emotionally, we must dare to disrupt the gravitational balance and command our-selves to change the course. This is the reason we need some rigidity, and also the willpower and discipline to follow through. But how can you be sure that the unknown territory is in fact better than the well-known? Or that new orbits will is better? You cannot. You have to accept the risk. However, there is nothing wrong with carefully considering whether a major change is worth the risk, time and effort involved. If you find yourself in a place where doubt and discomfort threaten to drag you back to your ordinary orbit after you have decided to make a change, the resistance you feel may decrease if you approach it simply as an allowance to explore an alternative route rather than allowing your mind to be scared of the future.

To summarize, here are my keys to systematic exploration:

- An explorative state of mind, leading to an explorative state of being
- Motivation and willingness to change or improve
- Time and resources according to the ambition of the work ahead
- A clear image of the "set of interdependent actions" of your practice
- A plan for strategic and systematic exploration of your improvement potential
- Immersion in exploration for a period of time, followed by (tentative) decisions
- A clear image of the desired outcome (see, hear and feel inside)
- A "parallel orbit" to attack your weaknesses from a different angle
- Permission from yourself to explore new orbits
- Discipline to carry through (To stay motivated, keep track of how far you have come and keep your goal in mind! And do stay happy!)
- Patience! A seed takes time to grow. Keep "watering" and watch your improved practice unfold from your new state of being!
- Share your experience! This is helpful for yourself and inspiring to others.

I would be fascinated to know if the strategy I have shared in my own practice is used by others in their contexts for practice. Please let me know - Happy exploring!

Postscript

The swim race was truly something out of my ordinary orbits. You see, not even my one and baby sister, who knows me very well, believed my swim story before I proved it with photos and official lists! Oh, well. Now I use the swimming experience to support my new found piano ambitions. Maybe it is sort of banal, but my body, mind and emotions now know how to conquer new territory and thrive in new orbits. Will I be thinking of swimming during my Carnegie Hall recital? I will have to tell you later!

Editor : You can find out more about Christina, her research and her playing by visiting her website http://www.fortepiano.no/en/welcome/

Image sources
Figure 2: http://www.imcberlin.de/fileadmin/Public/Downloads/Application_notes/Zahnraeder_01.jpg
Figure 3: «Orbits» by BrotherNumsi, manipulated and reworked by Christina Kobb.

End Notes
I share Theodore Schatzki's postulate that "a practice is, first, a *set of actions*". (Schatzki: 'Practice mind-ed order', in Theodore R. Schatzki, Karin Knorr Cetina and Eike von Savigny (ed.): *The practice turn in Contemporary Theory* (Routledge, 2001), p. 48). However, my focus is in more minute than his, as I like to dissect each activity of a practice into their respective set of actions, whereas Schatzki's take is more general; he looks at the establishing of social order, or by seeing practices as consisting of mane general actions: "A practice is, first, a *set of actions*. For instance, farming practices comprise such actions as build-ing fences, harvesting grain, herding sheep, judging weather and paying for supplies". (ibid.)
2 One example is elbow position vs. angle of the hand and, consequently, fingering, discussed in my video above.
3 A physical activity is the easiest, but you may also explore a cognitive task, or even a production process in a similar way. Or what about exploring improve-ment potential for family gatherings…? The purpose is to consider the various elements of the activity, process or interaction involved, and make a conscious effort to improve crucial points; thereby increasing the odds for a better outcome.
4 There are many promoters of various forms of mental practising, yet I have never come across what I propose here: The conscious combination of the aural, visual and kinaesthetic faculties in mental training, including comparison of these three representations/blueprints of the same material. I have just improved my earlier approaches to this. It is quite advanced and I do not yet master it fully, but it seems promising indeed.
5 C. P. E. Bach: *Versuch über die wahre Art, das Clavier zu spielen* (1753). Cited from Essay on the *True Art of playing Keyboard Instruments*, trans. and ed. William J. Mitchell. New York, 1947.
6 Lower temperatures than ca. 13˚C make my hands freezing cold so quickly that I do not risk it because of my piano playing.

WHAT EXPLORATION MEANS TO FOUR RECENT GRADUATES
Yalda Tomlinson
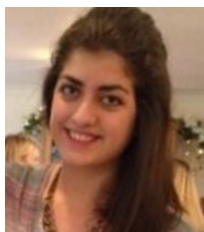
Yalda is a member of the Lifewide Education community and a team member. After graduating from the University of Nottingham with a Politics degree she gained an MSc Psychology from Kingston University and is now working as an Honorary Assistant Psychologist and Community Support Worker Intensive Support Team at the Surrey & Borders Partnership.

University provides enormous opportunity for students to explore and develop their own potential and opportunities in their life. For example, through working as a reporter at the University Newspaper, and broadcasting on and off campus I was given the opportunity to explore a potential career in political broadcasting. However, university also provides you with a very clear main purpose: to gain a degree. Following graduation many students, myself included, are at a loss of what career path to follow and how to create a new purpose for yourself within a post-university world. As a result leaving university can often be a key time of self-exploration where you have to determine a new path for yourself. I thought it would be interesting to explore with a few of my contemporaries how they were applying the concept of exploration in the year and a half after they had graduated.

The aim of this study was to gain a better understanding of how the concept of exploration has been applied by four individuals who had recently graduated and begin the journey of finding and forming a career. The individuals were interviewed, using a semiformal approach, and their responses transcribed. From the transcripts a number of common themes or differences among these individuals were identified. The following points were seen as significant:

Exploration means a different thing to the different individuals.

One of the most significant findings of this study was that each of the participants defined exploration in their own unique way. For some of the participants, exploration was closely associated with "self discovery".

> when I think about exploration, I think about exploring myself as a person, who I am, what are my aims in life, what am I determined to do and, obviously, it has changed, especially in terms of my career.

A good example of this can be seen in the quote below, when following graduation the participant recognised the need to choose a path for themselves, but they were unsure as to how to find this path. As a result they engaged in exploration to identify their own internal motivation, in the quote below this individual discusses how exploring skills and hobbies she enjoyed as a child helped her determine her next steps.

> My grandma taught me how to draw and it was going much more back to my roots that made me realize that I need to do something creative with my life.

> I enjoyed that creating something, being very hands on and that's was what kind of swung me towards doing something like interior designing rather than say becoming a palates instructor which I looked up… I started drawing pictures of my pets, I started drawing pictures of other people's pets and I started making my own Christmas cards.

However, for some participants who are embarking on further study, exploration was not centred in a sense of self-discovery but tied within their academic discipline. Although this is still a personal experience, this exploration is a more structured and formal process. Another difference between the experiences of these two participants was the role of other people in their explorative processes. As can be seen in the quote below, for this individual exploration was shared with many other individuals working within this field. However, for the previous participant exploration was a journey they felt the need to take alone.

> Having just started a new job in research, exploration is at the heart of everything I do. I am currently working on a way to quantify the exchange rates of amide protein transfer and macromolecules which contribute to the magnetisation transfer signal, which could help us image tumours or identify diseases such as MS, as well as countless other uses.

Despite these obvious differences, there were similarities across the conceptions of and contexts for exploration. For example, all of the participants described exploration as an "active" process of searching. In other words, the individual is always engaged in the process and they are trying to achieve something, even if the outcome is not clear the motivation is always to look for and learn something new.

Tools that people use to aid exploration

One of the most important findings was that many different tools were identified as aids to exploration. For some participants, the tools were embedded within them e.g. skills and attitudes that they already possess, whilst for others tools are an external resource, such as technology.

> *I love that my job is on the forefront of technology, allowing us to explore new techniques and methods everyday.*

For another of the participants, the external resource was a book related to the subject.

> *So, I like to read a lot, and some of the books I read were psychology-based. And I really enjoyed them and I thought actually I would happily like to do this as more than just a casual thing. The exploration I've done in my free time has inspired me to pursue this as more of a career rather than just a hobby.*

I believe this finding is very closely related with the earlier assertion that exploration is a personal process. Just as the concept of exploration meant something unique to each participant, the tools that assisted the individuals were also personal to that person.

Another important finding is that explorative tools can be found through other people. For the individual below, working with new people forced them into a new environment which they had to learn to work within. Therefore, exploration is not always a process we are aware off, but something that we automatically engage in.

> *With starting a new job, exploration comes in another sense. I have met lots of new people and have got to know a lot of people very quickly. I have also discovered a new working environment, and am learning about how the world of research works.*

Exploration takes place in stages - it's different at different stages of life

> *I definitely think [Exploration] comes in stages, you identify what it is that you want to do and you do it, then once it's done, a new stage of exploration will start… Once that period of my life is over, then I'll have to start doing different things to get myself to where I want be. I think that'll be a different exploration.*

The quote above describes exploration as a sort of continuous process, where you are constantly learning and then exploring new concepts/ideas around self. However, for a different participant, exploration was seen as more of a dichotomous process involving either success or failure.

> *To put it simplistically, you either find what you expect, or you don't, and similarly, you either find what you're looking for, or you don't. These two things may or may not be the same thing. Whether you're looking for happiness, fulfilment, entertainment, or relaxation, the way to do this (if you don't have a way that works for you already) is to try new methods which you think might work.*

But perhaps this is the essence of all exploration. Exploring may help you to confirm something you suspected (e.g. this is something I might like to do) but it is also the means of identifying things that we don't want to do, and the means of discovering something completely different that takes us along a completely different trajectory in life. Knowing that we don't want to pursue something after we have explored it is as important as knowing we do want to explore something further.

Conclusion

I believe the main outcome of this small scale survey is that the discipline or other context that the individual inhabits shapes their perspective on what exploration means. For individuals within a science discipline exploration is about developing new knowledge and harnessing technology to learn about the discipline, and create new knowledge for the discipline, it is a formalised process with lots of rules about the methods that must be used. However, for individuals who explore as part of their creative process, it is tied in with their sense of self. Overall, I believe this shows how even before embarking on their career you can see differences in the way that graduates perceive exploration according to the field they have chosen to pursue.

Source:

1 Issue 8 Lifewide Magazine http://www.lifewidemagazine.co.uk/uploads/1/0/8/4/10842717/magazine_december_2013.pdf

MY PERSONAL PERSPECTIVES ON EXPLORATION

Andra Ilie

Andra is a founding member of the Lifewide Education community.

Since completing my BSc in Business Management at Surrey back in 2012, I have been out there in the wide world learning about how challenging real life is. It makes you use skills you never thought you had back at university, while wonderfully surprising you at every step. Be it work or personal experience, I have since grown into the professional that I am today, able to deal with complex business issues while building up my experience at every step. And it is all so rewarding.

> *"So I find words I never thought to speak*
> *In streets I never thought I should revisit*
> *When I left my body on a distant shore."*
> — **T.S. Eliot**

Every time I think about trying something new this quote comes to my mind – *"I think, therefore I am"*. This is by far one of my favourite phrases and it was coined by a great mind, the father of modern western philosophy – René Descartes. The reason these words resonate with me so much is because I think they somehow justify, on a deeper level, why I act the way I do, and why sometimes I make what others would call, the strangest decisions. We are here to reason and reason means doubt and doubt encourages and leads to exploration.

Why should we explore?

Exploring applies as much to our inner world as it does to our outer world and the border between the two is lost somewhere in the process. Different reasons make one think differently at other times. While I believe exploration is triggered from within, it is also very much circumstantial, as I will explain throughout this article.

My life experience so far indicates that although people are unsure of how to tackle an impasse, it actually boils down to two simple options: you can either maintain the *status quo*, or you can change. While I appreciate that this is a very reductionist view of the world, I live by it and I find it very helpful when in doubt. Accepting that these are the only options forces one to make a choice. Having said that changing may be by choice or it might be forced on you by circumstances.

Significant change always involves exploration, trying out new things and discovering new realms (regardless of whether they are physical or metaphysical and closer to the cognitive and perhaps even the emotional side). It can be anything from the colour of your hair to changing your views on social matters; nonetheless, the triggers are he same.

What I find very interesting is how the concept of exploration is omnipresent. I would say most people are reluctant to change, however in this day and age it is paramount to be adaptable and ready to move on to the next challenge. Change doesn't wait up on anyone and without the risk of boring you with too many quotes, another wise man said that the only constant in nature is change. How very true!

We live in an era where boredom settles in even before we get used to the next thing; our attention span has lessened and this is not least because of the information overflow that we are exposed to in our daily lives. And then you need to do something to adapt and then you get bored again, and then you change.

I noticed the other day as I was coming out of the tube station that my Internet connection wasn't working properly and I could not check my train times on the mobile app. It took a full 10 seconds for my phone to update! Imagine the frustration. And then I started to wonder (yes, after my app loaded and I was happy with the train times)…what is it that made me feel like that? What caused the unnecessary annoyance over a 10 second delay? But then it hit me: time is so limited that you have the feeling that if it's spent on something as trivial as an app update, you are lost and this is the opportunity cost of doing something and not trying out something else or doing something enjoyable, like spending time with loved ones.

What drives us to explore the potential in our life?

While there is nothing more beautiful than an inquisitive mind (my dad used to say this all the time), as I said before, a lot of us actually fear change, because life is more comfortable and predictable without change. This begs the question though – if we dislike it so much, what makes us try something new? something different and unfamiliar? There are different reasons that trigger distinct types of exploration. It could also be the same element coupled with different emotions that makes you want to explore. To use a real life example, let's turn to a job situation.

I used to be in a very rewarding job where I knew and liked the team and the work was constantly challenging. And then it happened – after a few years it became rather predictable and I thought I needed a change, and decided to change my job completely and follow my childhood dreams. I handed in my resignation to work for the company of my dreams, doing a job that I wasn't fully sure about, but hey, it was something else. *Thinking - life's too short to be in the same job for too long.*

And when I started my new job I discovered that I did not fit in with the team at all, the job was nothing like I had imagined and I just felt completely out of place. I decided to move on and look for something else. *Thinking - life's too short to be in the wrong job.*

The same variable, but different triggers and this is why I believe that everything is a combination of who we are and who we want to become and the circumstances of our lives which continually lead us to make decisions about whether to change or not to change.

This then made me realise that maybe I didn't really know what I wanted in the first place. It's nice to be enamoured with an imagined idea about who you want to become, and to want to follow your dreams, which you paint with the most wonderful colours, but until you try it you can never know if this pathway is indeed for you. A lot of the times, we don't really know what we want and we cannot find the answer from others. We need to look for possible answers ourselves, it's a process of trying, sometimes failing and trying again until we succeed. So exploration serves a valuable purpose. It helps us discover our purposes in life, it helps us discover what we are good at and what we like doing and also what we are not so good at and don't like doing. As romantic as the idea of learning from other people's mistakes may be, it simply does not work. It is a bit like your mum telling you not to touch the stove because it's hot and you touching it nonetheless. But will you touch it again next time? You'd hope not - you have learnt through your own experience and the pain reinforced that learning.

"Have the **courage** to follow your **heart and intuition**. They somehow already know **what you truly want to be.**"

STEVE JOBS

I personally don't like change! Dare I say, I really dislike it and it makes me very uncomfortable; but I feel like everything that you end up liking, you must first go through the exploration phase and in most cases, hate it at first. The magic only happens later.

How would you ever know whether you like strawberries if you don't try them first? How do you know you dislike pears if you don't try them – yes, the experience isn't a great one, but there you go, if you don't try, you don't know. Ironically, looking into the etymology of the word "exploration", it comes from the Latin *ex*- "out" + *plorare* "to weep, cry". So touching the stove will make you cry, but next time, you will know not to do it, right?

University as a site for exploration

Luckily enough, there are also safe harbours for exploration, such as universities. For example, I honestly believe that Surrey was my launch pad for everything that I have achieved in the past few years and it really isn't an exaggeration.

Having moved to the UK from Greece and started my degree in Guildford, I was absolutely gobsmacked by the array of opportunities that became available to me all of a sudden. I cannot stress how important it is at a young age to take advantage of the opportunities available and try them out. Explore! Nothing wrong can come out of it, but what if you actually discover your vocation? I cannot stress how easy it was for me to first secure a placement year and then a graduate role based on all of those extracurricular activities that equipped me with the soft skills that employers are so keen on and demonstrate that I am the sort of person who gets involved.

Plus, I met some of the most incredible and inspiring people during my time at Surrey who always encouraged me to do more, to get involved and make a good use of my time; and that will stay with me forever. It's simple things that get you started and for me, it was a meeting at SCEPTrE to understand about their Enterprise Academy; and then there was the Cultural Academy, and the Social Academy all of which gave me valuable experiences of learning to achieve in the real world outside formal education. The rest is history and great memories. It is just unbelievable how much I achieved and tried out in the space of a few years and how much that formed me and helped me make decisions about my life.

A recent example of exploration in my own life

Let's turn to another example to illustrate exploration - *travel* - especially when we explore and experience and discover new places.

Last year was the first time I visited Asia. I had mixed feelings and wasn't exactly sure if I would like the unforgiveable heat coupled with the strange food and undecipherable hieroglyphs on the roads. It started more as a joke with a group of friends telling me about an impromptu trip they had just booked to Thailand and asking me to join in. And so I did! And oh how happy I am about my bravery.

Needless to say that since that trip 18 months ago, I have been to 4 different Asian countries, all of which I absolutely adored (and yes, I am now planning my next trips). So wonderfully different, so special and offering so much to learn. I can't even believe how scared I was about trying new food and then I came back with a batch of Khmer spices. My experience was all about exploring and the effect of exposing myself to entirely new cultures, landscapes and novel experiences was to open my mind and to improve my confidence to experience even more. I believe that exploring uncharted experiential territory builds our confidence to explore even more.

We learn to explore through our parents

When we are growing up our parents have an important role to play in encouraging us to explore or be explorative! I already mentioned my dad's favourite saying. When I was back in secondary school, a Chinese restaurant opened in my hometown. It was one of the first Chinese restaurants in my country and it was really unheard of in those times. On my first visit I looked at the menu and did not have a clue what to order. My mum then kindly offered to make the decision for me – '*I will find you some chicken*' she said. She ordered, we all ate and the food was delicious.

Years have gone by and we made a tradition of going to this very nice restaurant every time there was a special occasion for our family. A few years later, we went again but when the waitress came to take the order I had to do it myself. So I confidently ordered the dish with a funny name. The waitress hadn't understood and asked me, '*You mean the frogs' legs*?' At which point, I felt like my universe collapsed – '*Frogs' legs? I thought it was chicken*!' She smiled just as if she knew. I never would have tried it if I had known…and so I never would have found one of my favourite dishes. You can see the irony the situation.

Well they look a bit like chicken don't they?

The more we try, the more we find, the more we discover and the more we expand our minds and the more we learn about the world we share with others. We live in times where there is so much opportunity and it's up to us to see it and grab it. We are informed, astute decision makers ready to take charge of our lives and lay a foundation for greatness. And remember what they say (these will be the last words of wisdom), the best things are yet to be invented they are just waiting to be discovered by someone who takes the trouble to explore!

'TRAVEL': A CATALYST FOR EXPLORATION & LEARNING

An Autobiographical Narrative

Jenny Willis

Jenny's career has involved many dimensions of teaching, educational management and research. She has a PhD in socio-linguistics and first worked with Norman on aspects of professional and personal development, creativity and lifewide learning at the Surrey Centre for Excellence in Teaching and Learning. She is a founder member of Lifewide Learning, conducts research and writes for its publications. She edits Lifewide Magazine and is also executive editor for Creative Academic Magazine. Jenny is a Fellow of the Royal Society of Arts. For more information about her go to http://no2stigma.weebly.com.

'Sell me travel!'

Nearly 30 years ago, in my final interview for the deputy headship of a comprehensive school, the aggressive councillor on the appointment panel sat back in his chair, threw up his arms and announced, "I'm bored with all this education stuff. Sell me travel - in one minute." Realising that this was a test of my personality, I dropped my usual shyness and gave the performance he was looking for: I reeled off the places I had visited, the learning this had led to, the opportunities to explore new cultures and cuisines, my linguistic development ... I was animated, reliving the excitement of discovering new pastures. I did not know it at the time, but I was actually demonstrating the very rewards of explorativity described by Russ Law[1] in this magazine.

This thematic issue of Lifewide Magazine is devoted to exploring the idea of exploration. In his complexity perspective article Jackson[2] draws attention to the idea that some contexts and situations provide more affordance for exploration than others. The commonest of these is when we travel into places that are unfamiliar or seem strange to us because we have not experienced anything like it before. In this article I want to share my thoughts on the way I have been encouraged to explore new places, people and cultures as a result of travelling. The act of journeying into new places is a catalyst for exploring, and the benefits for learning and development are greatly enhanced if we have an inquisitive disposition that encourages us to explore and we are open to the possibilities for new experiences and learning in the places and situations in which we find ourselves. Here I use my own autobiographical narrative to illustrate how travel provides purpose/reason, context, affordance and circumstances in which exploration and the learning that derives from it can flourish.

Nomadic roots

In fact, explorativity through travel has been an integral, if unnamed, part of my life since I was born into a military family. I entered the world in post-WW2 Singapore, and believe strongly that my attachment to oriental climates and linguistic rhythms derives from these origins. My unconscious learning gained through experiencing and exploring unfamiliar places therefore began as a result of my parents' travel, and would later be inspired by that of my grandparents' having lived in India. This inherited explorative disposition to travel and explore other countries and cultures and spiral of learning being passed from one person's experience to a new generation is something to which I will return later.

I did not know much about it at the time but I first set off on my own travels at the age of 18 months, when my parents and I came 'back' to England from Singapore. The month-long sea passage taught me my sea legs, as I ran up and down the deck in synchrony with the rolling ship, oblivious to the sickness of most around me.

Until I went to university, my life has been one of perpetual upheaval. Sometimes we had only 6 months in a place, at most we had 2 years. In addition to the formal and informal learning travel has engendered, I have inherited my parents' skill for packing!

Whilst I would not advocate such a peripatetic existence from the perspective of emotional attachment (or more accurately, detachment), I cannot deny the richness it afforded me in terms of learning, and being open to alternative values and practices found in the places we lived.

Who could fail to appreciate living in the Middle East, starting school in Iraq and visiting Jerusalem and other biblical places before I was even 6 years old? Even the disruption of evacuation at the time of the Suez Crisis in 1956 has embedded memories which enable me to empathise with those in far more dangerous conflicts.

Me as a 4-year old paddling in the River Jordan

Of course, many of our postings were in the UK, but each offered opportunities to explore a new place and learn through the process: the beautiful East Anglian stone walls contrasted so vividly with the rural villages of Hampshire, that I learnt to appreciate architecture and the reasons for local differences; the Yorkshire accent was followed by that of Brummy Warwickshire, Bedfordshire, Shropshire and more, inspiring me with the love of languages that would be my career path. Although a lifelong vegetarian, I encountered foods that were widely unknown in that pre-populist-tourist travel era.

Returning to the job interview, though, the irony was that, since holding middle and senior management teaching roles, I had travelled little! As Deputy Head, I could never be away in the summer as I always had examination results to analyse, to be available if an urgent press release was needed or another burglary had occurred …

Marrying into another culture

But I made up for this after leaving the school sector: since then, I have visited all continents except Russia (another irony, given that I read Russian as my second language!) This is partly the result of being in a mixed-race union, something which I am sure would not have happened but for travel. My parents always thought I would marry a Frenchman, French being my first foreign language and the country's culture being second nature to me. They could not have foreseen that it would be a Sri Lankan Tamil who would win my affections! I believe my lack of racial prejudice is a direct result of my early experiences of travel, and I am fortunate that my parents shared this. I make the point here that you don't have to travel to explore another culture if we marry or enter into a deep relationship with someone from another culture and are able to embrace more than one cultural identity.

Attending a family wedding in Malaysia

Inevitably, I was now caught up in the consequences of the Tamil diaspora, which has seen these learned, devout people flung to the corners of the globe as they have fled ethnic violence and persecution. My extended family is based in Canada and Australia, so these are regular destinations for me now. Anyone who knows Tamils from Sri Lanka will know that everyone is somehow related to someone else, hence we travel to many countires and enjoy their hospitality. Through friends and relatives, I have been fortunate enough to visit such places as Egypt, South Africa, India and Malaysia and experience life not as a tourist but as a resident of the country. This exposes me to the perspectives, behaviours, customs and rituals of people who live in that country, to traditional cultures and cuisine, not the sanitised versions dished up for assumed Western palates. I have learned about and participated in Hindu rituals from birth to death, and come to know the erudite, classical literature from which these derive.

I recognise that an important element of my love of travel is my own intellectual curiosity, but is this a chicken and egg situation? Whilst my ability may be innate, how I choose to use it is surely conditioned by my childhood experiences and the affordances I have in my life for utilising my curiosity. Would I have become a linguist if I had not internalised the sounds, smells, and colours of alternative cultures? Or did my interest in language and culture derive from my success in such subjects at school? It is a conundrum I cannot hope to solve, so let me focus rather on what this disposition has led to.

As a classicist, my curiosity stretched to the ancient Roman and Greek empires. From their literature, political and historical interests sprang. Visiting today's countries exposes me to the architectural and religious dimensions of their old and current cultures; I can picture in my mind the sights I have seen and the minutiae of life in these countries: the cigarette smoke that still hangs heavily against the pure blue skies of Athens, the juxtaposition of ancient remains and 21st century consumerism.

But whilst not having the arrogance of claiming to be a polymath, I do claim to have poly-interests. One experience triggers a new line of enquiry: I may research the culture of a place I am about to visit, or I may reverse the process and research the place I have just been to. I am voracious and delve into the language, geography, history, philosophy and so on. This at times may seem to be a superficial fluttering from one theme to another, and was certainly apparent in my doctoral thesis which started out as linguistic, technological and pedagogical, but put out tentacles in philosophy, politics, history, and so much more. My lifelong and lifewide learning is integral to who I am, and is intricately bound up with travel.

So how does the whole process work? As I write, I have just returned from my second visit to South Africa, which provides a typical example of how travel stimulates the exploration of a new environment and all the experiences I encounter in that novel environment.

My South African experience

I have mentioned chain effects and plural interests. One of my passions is mental health. I see this from both sides, having a psychiatrist husband while also having grown up with mental illness in my immediate family, then personally. This is one of the down-sides of travel: insecurity, inability to take risks or venture out, absence of close relationships with the people around me - too much dislocation may lead to breakdown. The key is to turn breakdown into a breakthrough and use the experience positively, to be open to experience and aware of what is happening. We have to pay attention to what emerges from our exploration, or we do not learn.

Consequently, my husband and I have been contributing actively to the destigmatisation of mental illness for many years. We are advisors for a mental health charity and take part in international conferences on mental illness. This brings me back to the theme of travel. In 2015, we spoke as part of a team from our charity at a world conference in Mexico, and this led to our being invited to take part in the World Psychiatry Association international conference in Cape Town in 2016. With over 2000 participants from around the world, this was an incredible opportunity for us to learn about other people and their lives. This is a different sort of learning: face-to-face, interactive and exploratory.

Planning the visit required investigation and learning long before we travelled. We had visited Cape Town and Johannesburg five years ago, so decided to travel elsewhere in the country and experience something different this time. Unsurprisingly, we settled on the Kruger Park and the wildlife of that region. After hours of research on line, we planned and booked our itinerary. As always, I checked out weather conditions, time differences and other essentials. I learnt that November is the rainy season in the region!

When the day of departure arrives, my travel learning begins before reaching the airport: taxi drivers are rich seams for mining and almost invariably heave from foreign lands! Then came the plane: the cheerful captain of this SA airline was quite different from the more reserved captains to whom we are used. He spoke amusingly and kept us informed in his jovial manner through the long flight. I shy away from stereotypes but we were learning something important about the temperament of the South African people: they are generally friendly and helpful.
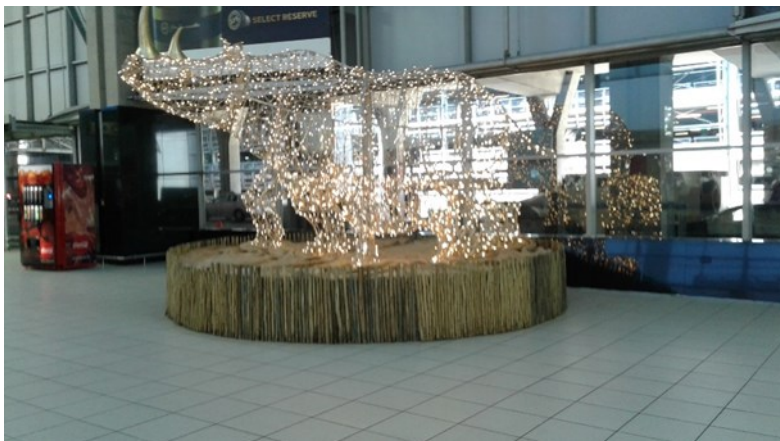
Local creativity at Johannesburg airport

On arrival and transfer at Johannesburg, I was reminded of the creativity that pervades the country. The local use of wire and beads to make jewellery and artefacts had been cleverly extended to include electric lights in the form of a huge mother rhinoceros and her baby, which greeted us as we passed through the terminal concourse. Even the base had been made to look authentic. In this instance and on the plane, my learning relied on observation, perhaps another quality developed over years of travelling.

Interaction with local people is crucial to delving below the surface of observation, and another taxi driver told us of the demographic expansion that Cape Town has seen since our previous visit. And here is another lesson for travellers: do not expect things to remain frozen in time. The indigenous artists we had met five years ago had now been replaced by slick, middle-class, retail outlets which sold some of the same crafts but without the charismatic atmosphere of the past. Our nostalgic bubble was pricked.

Sometimes the outer appearance is deceptive, and it is only by speaking with people that you get a glimpse of the real situation. You might expect a conference organised by professionals with a common interest to be harmonious, but I learned, with sadness, that racial divides still exist, though now it is the White groups who are deemed inferior. Not that this would have been overt, even though the spectacular opening ceremony focused solely on the history of Black persecution: the dancers writhed and stomped about in gumboots, recalling their ancestors' roles as cleaners of white men's debris; a local poet narrated her work on the

Local dance and music, opening ceremony, Cape Town

fragmentation and integration of previous generations of her people, against a background of haunting music played on instruments both familiar and novel.

If we can learn much even through travel to a cosmopolitan city, how much more can we acquire in the provinces. My next destination was Nelspruit, which entailed some formal learning just to locate it on a map. Once there, I again discovered the generosity and openness of people: we arrived at this rural airport at 7 p.m., the last flight of the day. The airport was closing, and all taxis had gone, but a sole worker in the tourist office thought nothing of offering to drive us the 10 dark miles to our hotel. This turned out to be a learning experience for him, too, as we were off the beaten track in a place unknown to him.

Another thing I found at the airport was the ubiquity of African creativity. This small airport must surely be the most beautiful one I have seen on my world-wide travels. The adjacent pictures show the craftsmanship with which local resources have been used to produce some truly wonderful buildings and architecture.

Nelspruit airport

It is often the case that it is from local people that we can learn the most. Members of the hotel staff came in from the local township, and yet showed no sign of malice or envy at the contrast between our accommodation and that to which they must return. They were gentle people, ever anxious to oblige, and, I soon discovered, highly capable. I learnt that Mpulalanga province, where we were staying, has 11 native languages. All of the staff were multi-lingual and in a few cases, were able to communicate in all of those languages as well as English. I was ashamed to think of myself as a linguist.


Hotel sights, Nelspruit

On arranging a safari to the Kruger Park, we found ourselves talking to the owner of the transport company that would take us there. It turned out that he is a social scientist who had studied in California, but has now taken a new career path. He was keen to know about my own research on wellbeing!

Whilst relaxing in the extensive hotel grounds, I was able to observe the local workmen and soon learnt that everything moved at a different pace from my norm. At breakfast on the first day, a 'builder' was laying bricks. He did not appear to know that cement could go between as well as on top of and under a brick. A few hour later, he had deconstructed and reconstructed the same three or four bricks a number of times. Amazingly, by the time we left, four levels had been built and capped by a wooden framework, ready to form a walkway between buildings. Countless workmen all seemed to have a role and the impression was created of an easy-going society where labour must be cheap and everyone was accommodated.

The highlight of our visit was the day safari. We had previously been on a small safari in Pilansberg and, on that occasion, were lucky enough to see lions and all the major animals, except the other big cats. This safari, though, was on a different scale. It required a pre-dawn start, difficult enough without the cold and rain that greeted us. I shivered in a blanket in our bespoke jeep. My spirits were raised though, when, through the murky drizzle, I spotted this lovely animal from afar.
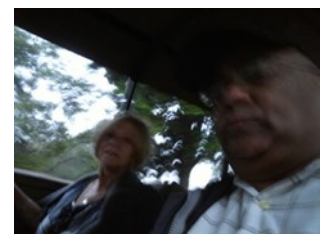
En route to the Kruger Park

Our driver/guide was programmed to spring into speech whenever we came across an animal, and instantly regurgitated the patter he had memorised: 'The elephant has 10 sets of teeth…..' Nevertheless, I enjoyed some formal learning in the course of this chanting, and shut my ears when I had absorbed the information. Some of our sights are shown below.

Kruger Park November 2016

By 2 p.m., our driver was itching to go back to the hotel. Then, another of those acts of generosity so frequent during our trip, occurred: a motorist coming in the opposite direction hailed us down and called out that there was a leopard in a nearby track. We immediately sped off, and soon located the spot due to a gaggle of jeeps parked silently, their occupants training lenses on the nearby scrub. We imitated them and were rewarded with the highlight of our safari: an enormous, sleeping leopard, not far from the track, and quite out in the open. It was so well camouflaged, though, that I would not have spotted it (forgive the pun!). It was enormous. I had no idea just how big these creatures are. In a nearby tree, we spied a carcass: the leopard had deposited its prey in this safe place, allowing it to take a nap. We saw it stir, raise its head, and check that no thieving vultures were around, then resume its nap.

Leopard and its prey

So, during this relatively short period of travel in South Africa, I experienced both formal and informal learning. I discovered languages, people, flora, fauna, history, geography, politics, culture, creativity … the list is too long to enumerate. Some of the learning derived from observation, some was speculative; some was serendipitous, some intentional; some took place before we travelled, some during our travels, and some continues after them. For the experience does not end there.

The learning goes on

Just as I learnt indirectly as a result of my parents' and grandparents' travels, so I am passing on my own learning. I always create an album after my trip, in which I keep images, information, pressed flowers, shells, stones and anything else that has struck me. This builds an archive both for me and potentially for future generations.

But now I am able to pass on learning in a more formal way, too. Since returning, I have resumed my teaching in a privately run Korean/Chinese school. Most of my multi-ethnic students are preparing for competitive entry exams (7+, 11+), or are taking additional lessons to improve their literacy skills. I always tell them when I will be away and where I am going, as I believe this is both important to our mutual trust, and it is an opportunity for me to teach them what I have learnt. For two groups of 7 – 9 year olds, I put together a slide and video show, and wrote a work-sheet to complement it. My introduction includes geography, history, cultural references and so on, and together we write captions and sentences about the pictures. Homework requires a piece of creative writing based on the leopard and prey images.

I have to record the excitement with which the children viewed the live animals. I felt the kind of joy that teachers experience when they know they have had an impact. I look forward to reading the stories they have created, but must admit that I would not have wanted to try and calm them down for a lesson after ours!

And so travel and the learning it inspires reverberates through both the individual and those around them. It transcends time and, for me, is one of the greatest pleasures in life.

PS

Berlin, stand by! You are our destination in 2017!
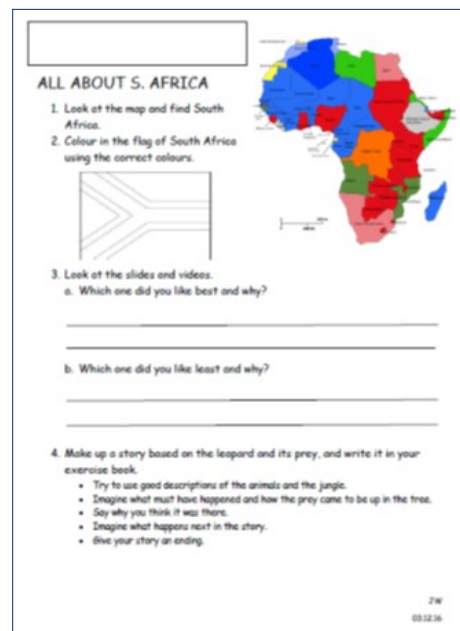
Towards a synthesis of exploration and learning related to travel

So what can I deduce about learning related to travel? My simple impression would be that travel, particularly to unfamiliar places, provides an opportunity for us to be more open and tolerant, but as I have observed, there is something of a chicken and egg situation here: do we travel because we are open to difference, or do we learn tolerance as a consequence of travel? Let me return to the notion of explorativity.

Essentially, this denotes personal characteristics: the willingness to venture into the unknown; an interest in learning and experiencing new things; a disposition to change and to accept different values and practices. In other words, it has to be self-directed, though, as I showed through my parents and grandparents, it can be nurtured. But this requires individual openness to the notion of travel.

I can illustrate the point by returning to my own family. I am the eldest of three children and consider myself a dedicated explorer, with a never-ending thirst for learning. My siblings do not share this: my brother is happy to lounge on a cruiser, cocooned from the cultures he is sailing through; my sister ventures no further than the Mediterranean, and its now familiarity to her. All three of us had the same nurturing (though, admittedly, as the eldest, I had longer exposure, which may be pertinent), yet only I am truly explorative. The reasons for this are highly complex and almost impossible to disentangle: they hark back to intellectual curiosity and ability, to nature or nurture. Nevertheless, education and learning are central to our different pathways: they have led to different professional status and levels of remuneration, which have in turn influenced my siblings' choices and lifestyles.

I wanted to try and capture the essence of my narrative and decided to examine it scientifically in order to produce a generic model. I began by analysing the recollections I have recounted above, and found that they fell into 3 natural groups:

- Factual learning
- Dispositions and attitudes
- Processes

I then allocated each dimension to the appropriate group. This resulted in the analysis shown in Figure 1.

Figure 1: Analysis of my learning through travel

FACTUAL LEARNING	DISPOSITIONS/ATTITUDES	PROCESSES
Knowledge: geography, history, religion, culture, language, cuisine, politics, sociology: plurality Insights: relationships, lifestyle, cultural and religious practices Skills: linguistic, technological, photographic, spatial	Inquisitive, enquiring Tolerance, openness to ideas and alternative values and Seek and explore new opportunities Able to deal with change Take risks	Observation and inference Interaction with local people Research and directed learning Formal and informal learning Serendipitous learning Learning from known others Passing on learning to others Applying learning in new contexts Emotional response

When viewed in this way, there are clear reminiscences of Bloom's taxonomy of learning, although I had not consciously aligned myself with the model. My account relies on REMEMBERING events, which I ANALYSE and EVALUATE in order to UNDERSTAND. I then APPLY that learning through CREATIVITY, to both preserve the memories and learning and encourage forward learning. In fact, as we see in John Cowan's[3] article for this edition of Lifewide Magazine, Max Heer's developed model of learning is an even better match with my own interpretation.

Nevertheless, I am not happy with my one dimensional analysis. Where is the sense of movement that is implicit in the notion of 'travel'? What has happened to the line we may cross from rising to the challenge of novelty to falling into dislocation if overwhelmed by excessive change? Figure 2 attempts to build in this intrinsic movement and the two-way processes as learning and travel spiral into new levels. It also allows for the potential breakdown as a result of overload.

Figure 2: A dynamic model of travel and learning
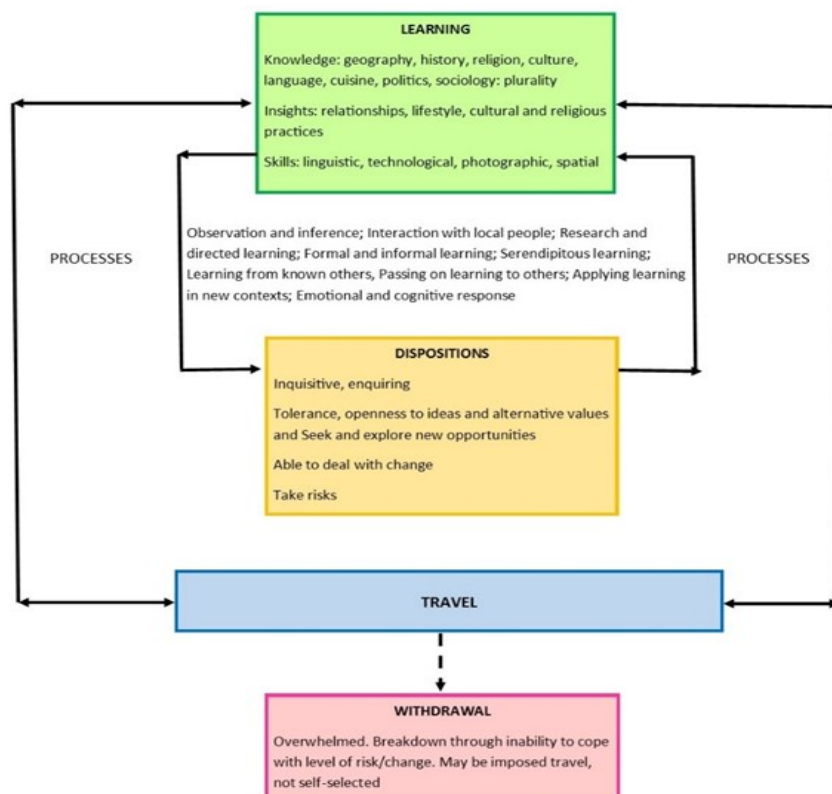
I felt this was getting nearer to what I wanted to convey, but was disappointed to find that others did not share my view. So, I reverted to Norman's ecological model and, rather than produce a generic model, focused only on this one instance of exploration through travel (figure 3).

Figure 3: An ecological perspective on exploration through travel

CONTEXT: attending conference in Cape Town, then on to Mpulalanga province for vacation

SPACES: creative mind; home research, my study; travel to Johannesburg, Cape Town and Kruger Park. After travel: creative mind and study; classrooms

FUTURE: creation of album; production and delivery of teaching resources — transmission of knowledge and inspiration of students' inquiry

RELATIONSHIPS: with my husband and our charity; international mental health colleagues; taxi drivers; hotel staff; local people

ECOLOGY OF EXPLORATION THROUGH TRAVEL

South Africa

November 2016

RESOURCES: my imagination; IT skills; computer & scanner technology; internet link; photographs; taxis, planes; school facilities

PAST: parents', grandparents' and my own experience of living abroad; previous travel experiences ; personal interest in mental health

PROCESSES: plan and book itinerary; write abstracts then presentations; liaise with colleagues/friends attending conference; interact with international colleagues and local people; send postcards to share experiences; take safari; buy mementos and gifts for students; observe surroundings and customs. On return: sort and select photos etc; create album; devise slide show and worksheets for teaching; children write creative story based on material; photos and examples of their work fed into next newsletter for parents

AFFORDANCES: desire to use opportunity of presenting in S Africa to explore unknown regions and learn about wild life

Whilst being simpler to comprehend and utilising a now-established model, even this conceptualisation fails to convey the sheer panic one can feel when in an unfamiliar country, surrounded by a language one can neither read nor comprehend, as happened when I visited China. I was totally disenfranchised, reliant upon guides or anyone who could communicate in a European language. The models do not explain why I did not then slip into the mode of withdrawal, but I suspect the answer lies in my motivation: I had put myself in this situation. I wanted to learn. I had a subconscious awareness that I could cope with this discomfort and benefit from the experience. And this opens yet another fascinating chapter on travel and learning, which will have to wait for another day.

Sources

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2 Jackson N. .J (2017). A complexity perspective on exploring Lifewide Magazine #18.

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AIMLESS WANDERING: THE POWER OF THE MEDICINE WALK

David Moskowitz

David works as a biologist, photographer, and outdoor educator. He is the author of two books, Wildlife of the Pacific Northwest and Wolves in the Land of Salmon. He has contributed his technical expertise to a wide variety of wildlife studies in the Canadian and U.S. Rocky mountains, focusing on using tracking and other non-invasive methods to study wildlife   ecology and promote conservation. He helped establish the Cascade Citizen Wildlife Monitoring Project, a citizen science effort to search for and monitor rare and sensitive wildlife in the Cascades and other Northwest wildlands. David's extensive experience as an outdoor educator includes training mountaineering instructors for Outward Bound, leading wilderness expeditions throughout the western United States and in Alaska, teaching natural history seminars, and as the lead instructor for wildlife tracking programs at Wilderness Awareness School.

When I was a teenager I learned something very valuable about learning: that it doesn't just happen in a classroom. One of the things I learned outside of the classroom was the value of solitary time in nature. Time spent alone outside teaches us many things, especially about oneself. Over the evolution of human cultures this has been recognized again and again. Given half a chance, many children stumble across these same lessons on their own. How many of us have memories of special "secret spots" that we would visit in order to escape adults, or just to be there for its own right?

What is a medicine walk?

Different cultures have rituals and traditions which draw on the powerful educational, therapeutic, and spiritual power of solitary time in the natural world. Solitary time in nature is a vital component of all Journeys' rite of passage programs. The medicine walk is one of the activities we use to help participants prepare for and process the lessons of a vision fast. It is also used in its own right to encourage them to explore their personal relationship with the natural world, learn to listen to their instincts, gain self confidence, promote curiosity, and explore and challenge their fears.

> **The term "Medicine Walk" is commonly used in Wilderness work. I first saw the term in print in Steven Foster & Meredith Little, The Book of the Vision Quest, Prentice-Hall Press, New York, 1988, p 34.**

> **'in its simplest form, I like to think of it as "aimless wandering". The goal of the walk is to be without a goal'**

There are many variations to the medicine walk, but in its simplest form, I like to think of it as "aimless wandering". The goal of the walk is to be without a goal. Watches get left at home or in camp. Participants are encouraged to go wherever they want (within reason, see safety precautions below), to wander off trails, through the brush, along streams, where ever seems interesting. They are encouraged to let go of the worries and concerns of daily life and to focus on the present moment--each moment. Wandering slowly across the landscape, exploring interesting trees, taking a moment to reflect on a stream, following a deer trail through the brush, students become engulfed in the world around them, losing themselves in the stream of the present moment. The experience can be incredibly joyous and relaxing.

Where does the insight and learning come from?

Humans learn experientially. The learning that comes out of a medicine walk might come from physical experiences that the student has during their walk such as getting lost for a time, watching fish feed along the edge of a stream, discovering the tracks of a bobcat, or watching the sun move through the sky as the day progresses. Students learn about the physical world around them, learn about their own physical and mental abilities, and learn to be more acute observers. The human mind and psyche seem to work in mysterious ways. Often insight and awareness are preceded by a "letting go" of the problem or concern. Shutting down our rational mind, while at the same time flooding our senses with the beauty of nature might be a catalyst for innovative insights into deep seated concerns a person might have. Many people talk about experiencing things on a medicine walk and then realizing that the experience was a metaphor for an issue in their life. This realization often leads to new insight about how to approach this issue.

Is wandering around alone in nature safe?

The medicine walk can be a very powerful experience. Its power stems in part from its simplicity. However, it should not be approached without preparation and awareness. There are no set rules about the "right way" or the "safest way" to facilitate a medicine walk, there are areas that one should take into consideration. As a guide, responsible for the safety and well being of program participants, there are several things that I pay very close attention to:

- The skills and capabilities of the participants (how I set up a medicine walk for a group of adults with experience in the outdoors, is very different from how I set it up for children).

- The physical hazards of the landscape in which the walk will occur (Is the area a safe one for this activity to be run? Some places are not).

- My own skills and capabilities to deal with problems which might arise from the activity (such as a student turning an ankle and needing help to get back to camp).

Some things which I often do in order to ensure a safe experience for participants include:

- Require walkers to wear a whistle and making sure that their whistle will be heard by others wherever they might end up during their walk.

- Set clear boundaries for where participants can and cannot go so as to ensure I know where to look for them should they not show up at the predetermined meeting spot.

- Choose an area which will not pose difficulties they will not be able to deal with in a safe way

- Make the meeting destination obvious and large enough to people to get to with ease (a dirt road often works well: "Down hill to the road, down stream to the camp").
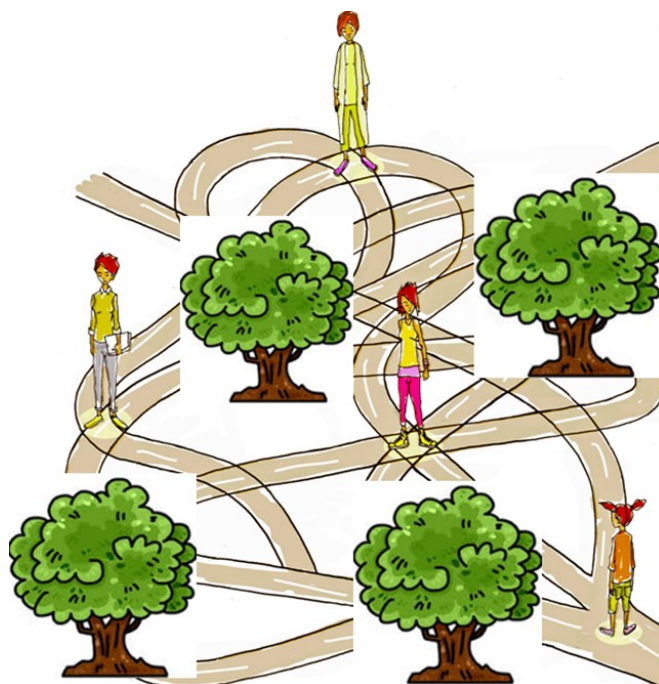
This is by no means an exhaustive list of safety concerns or precautions. It is up to the guide to assess each situation, landscape, and participant in order to determine a safe method to facilitate the experience.

Why are we doing this? Framing and debriefing a medicine walk experience.

Before I send participants off to wander, I want them to understand what the experience is about. I might choose a guiding theme that sets the stage for the walk. With a group of youth on a coming of age program who are preparing for a solo vision fast experience I might pose a question relating to family relationships or upcoming changes in their lives. As a group we will discuss their thoughts on the subject. This sets a context for their walk and their interpretation of their experiences of it. I try to bring students together in a way which will allow us a smooth transition from being alone to being together as a whole group again, as opposed to straggling in and beginning to discuss their experiences informally before everyone has returned. Once together, we discuss people's experiences, starting with interesting stories of animals they saw, or an exceptionally beautiful flower or a tranquil grove of trees. I then might guide the conversation to how they felt out there: free, scared, bored, etc.? Eventually I try to bring participants to focus on insights they might have had, or to bring meaning to their feelings and experiences through reflection and personal interpretation. It is not uncommon for one person in a group to have an incredibly moving experience and for someone else to claim that it was totally boring and uneventful. As a guide I try to help them find meaning in both of these cases. "Why was it so boring for you?" "Why do you think you didn't notice anything "interesting"?"
Since I first discovered the art of aimless wandering as a teenager, I have done hundreds of informal and formal medicine walks in many different places and in many contexts. Each experience is different and insightful in a new way, whether it is the discovery of a plant I have never seen before, insight into why I have been so frustrated at home lately, or just a breather from the daily grind. For me, and many others, wandering aimlessly in nature really is good medicine for the soul!

A COMPLEXITY PERSPECTIVE ON EXPLORING

Norman Jackson

It seems obvious from the articles on exploration in this magazine, that we explore for different reasons and purposes, but ultimately it's to gain new knowledge, perspectives and insights to satisfy a need, for example our curiosity or to solve a problem. In the process we may need to develop new skills and capability, and discover new affordances that enable us to achieve whatever we are setting out to do. Exploring is an active process, it involves us experiencing the results or effects of our actions in the world and we often have to use all our senses during our exploration.

But the nature of an exploration (what someone does when they are exploring in a particular context) has different meanings and characteristics according to what is being explored and how it is being explored. The nature and characteristics of exploring a scientific problem in a laboratory is different to the nature and characteristics of exploring a rain forest or the Martian landscape. In this article I want to explore the relationship between exploration and the complexity of the problems, challenges and situations that are being explored. It develops a theme that I initially developed in the context of creativity[1]

Complexity in the unfamiliar

Unfamiliarity, is one aspect of complexity and situations can be categorised according to whether the context, problem, challenge or opportunity is familiar or unfamiliar. John Stevenson[2] developed a simple 2x2 matrix (Figure1) to explain how we utilise our capability within these conceptual spaces.

Much of our life is spent in familiar situations where we don't have to pay too much attention to what we are doing and we can respond as we interact with the world around us, without really thinking deeply about our actions. We understand our environment and the people and things in it and there is little need for exploration in order to understand it in order to do what we have to do.

We can, if we choose, adopt and perform the routines we have learnt in these situations with little or no need to be creative or inventive. Our personal creativity in this domain is not focused on mastering new contexts and difficult problems, rather the challenge is to use our creativity to transform the ordinary into something which has extraordinary meaning for ourselves and possibly others. Artists and photographers are particularly good at doing this and this is one context in which exploration occurs in environments with which we are familiar. It's an exploration to find the extraordinary in the ordinary as we perceive it as the unique individuals we are and exploration here is often linked to our desire to be creative.

Figure 1 *Stephenson's conceptual framework for imagining the challenge and affordances of different conceptual spaces.*

Moving to the other domains we can appreciate that if we are confronted with a problem, challenge or opportunity, or we enter a context that is unfamiliar, (for example involving a change of culture) we have to develop new contextual understandings and / or invent and try out new practices and ways of behaving. Regardless of whether we consciously use the idea of exploration - the way we develop such understanding is via an explorative process. We must be open to new experiences and explore the environment and the things in it, the people and the way they behave, and the challenges that confront us. Through this process we are creating new understandings and new ways of performing or producing. These are the situations in which we develop new knowledge and capability. These are the contexts that require us to explore.
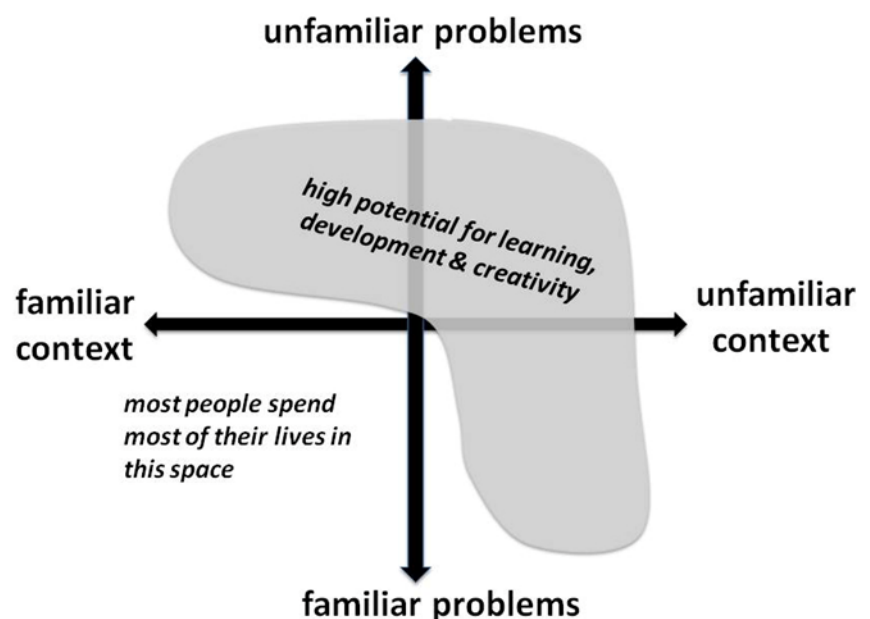
Several of the articles in this issue of the magazine show how unfamiliarity encourages or demands exploration. Jenny Willis shows how travelling, and putting yourself into unfamiliar places and cultures stimulates personal interests and curiosity and encourages exploration. Similarly, professional explorer Justin Miles puts himself into places that are not known or not well known in order to discover what inhabits these spaces. Justin and the Exo-Mars project team also highlight how particular skills are necessary to explore.

Levels of complexity

We might visualise different levels of complexity in different situations using the Cynefin framework (Figure 2) developed by Dave Snowden [3,4] and described by Callaghan[5]. The framework was originally developed to aid understanding of situations and how to deal with them in organisations, but the concept can also be used to evaluate personal situations. There are four domains within the framework.

Figure 2 *The Cynefin tool to facilitate thinking about situations of differing complexity* [3,4, 5]

In the *simple* domain things have a simple cause and effect – you do X and you are very likely to get Y. The environment is familiar and understood. You will probably have had many similar experiences that can be directly related to the situation. You know that 'what you do' is likely to have a particular result. And if you do the same thing in a similar situation the same result will happen. There is little need to explore because we can predict what will happen.

At the other extreme is the *chaotic* domain where there is no perceivable relationship between cause and effect. If this situation happens in your life, you feel totally out of control and overwhelmed. In these situations your natural response is to act, sense what happens and then act again according to the feedback gained until you get yourself into a more understandable and comfortable situation. I am not at all sure what exploration means in this situation perhaps knowledge and understanding of the chaotic situation would accumulate as feedback is gained from lots of actions and interactions. In other words, the exploration is itself chaotic until patterns begin to emerge.

Between these two extremes there are two other types of situation.

Complicated situations are not single events but involve a stream of interconnected situations (many of which may be simple) linked to achieving a goal (like solving a difficult problem or bringing about a significant innovation or corporate performance). They can be difficult to understand: their cause-and-effect relationships might not be obvious but you have to put some effort into *exploring and working out* the relationships by gathering information about the situation and analysing it to see the patterns and look for possible explanations of what is happening. Exploration often involves breaking down the challenge or problem into smaller problems or challenges that can be tackled and then exploring with a view to discovering possible solutions usually guided by a working hypothesis underlain by reasoning e.g. if I do this iX s likely to happen. Engaging in these sorts of challenges is the way you become more expert in achieving difficult things and a lot of professional work is like this.

Complex problems and situations are the most difficult to understand and engage with (BREXIT is an excellent example). They are not single events but involve multiple streams of variably connected situations and activities with outcomes and interactions that are not predictable. In such situations the cause-and-effect relationships are so intertwined that things only make sense in hindsight and sometimes well after the events have taken place. In the complex space, it's all about the interconnectivity of phenomena, people and their evolving behaviours and patterns of participation that are being encouraged or nurtured through the actions of key agents. The results of action will be unique to the particular situation and cannot be directly repeated. In these situations relationships are not straightforward and things are unpredictable in detail. People involved may not know the cause of the change that they have been involved in or ascribe the source of change to something that is quite removed from the trigger for change. The way you make progress in understanding what is happening is to *explore the situation*, sense the interactions and patterns emerging and respond accordingly. You need to think ecologically i.e. anticipate that everything is in some way connected and if one thing is changed it will affect other things in the system.

A number of contributions to this magazine discuss exploration in the context of their own lives. While this might not seem like a complex problem it often is when we are faced with little experience and knowledge but little understanding of our own purposes and values, and a multitude of possibilities. Contributors like Yalda, Andra, Russ and Sarah all provide perspectives on these sorts of exploration that we conduct periodically throughout our lives. Complexity also features in the disciplinary or professional domain. Meg talks of working in the canopy of rain forests, Kiboko the way he explores as an artist, and Bette as a fashion designer. All these personal perspectives on the value of exploration and the need to be able to explore, accumulate to reveal that our education systems need to encourage and enable learners to develop the skills and dispositions necessary to be an independent explorer. Perhaps the time is right to explore our own pedagogic practices as individual teachers, and explore the pedagogic strategies used across a student's educational experience to identify how we are achieving this and then ask - what more can we do?

There is an old proverb 'give a man a fish and you feed him for a day; teach a man to fish and you feed him for a lifetime'. But if we show him how to use google he can teach himself to fish and how to prepare and cook it as well!

> **JUST ONE EXAMPLE OF A COMPLEX CHALLENGE FACING THE WORLD THAT WE CAN ALL RELATE TO**
>
> **How can we make healthcare fit for the future?[7]**
>
> Over the past few decades, the world has seen major advancements in health and largely as a result, people are generally living longer, healthier lives. However, serious challenges to global health remain, ranging from dealing with pandemics to the rise of non communicable diseases (NCDs) to the prohibitive costs of care, particularly in developing countries, to the increasing resistance of microbes to antibiotics. The number of people on the planet is set to rise to 9.7 billion by 2050 with 2 billion aged over 60. National and global health systems will need to adjust to this massive population growth, which will be concentrated in the poorest countries, and increasing numbers of elderly. This will mean shifting the current focus on treating sick people towards preventing illness and preserving the health of populations.
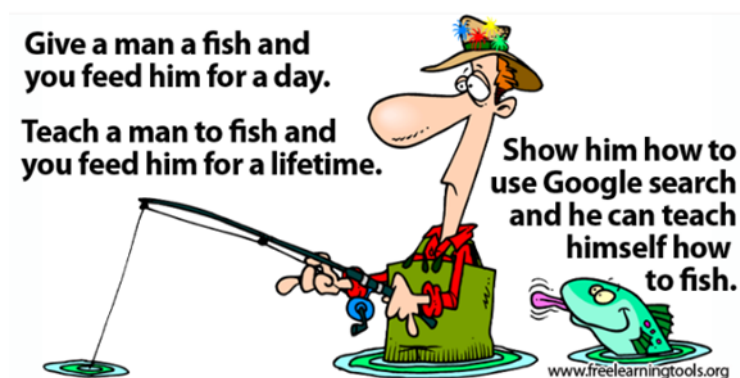
If we extend this way of thinking to exploration more generally by equipping students with the skills and attitudes to explore and the confidence on how to explore in different contexts we equip them for a lifetime of learning when they encounter unfamiliar places, and complex problems and circumstances.

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NEWS & EVENTS

INTERNATIONAL LIFEWIDE LEARNING CONFERENCE SINGAPORE 2016

Chris Picone

Chris is a Senior Manager in the Office of the Dean at the Australian College of Kuwait (ACK), Kuwait. He is deeply committed to the ideals and practices of lifewide education and has introduced an award to recognise students' lifewide development at ACK. Since 2010 he has organised a biennial International Conference On Learning And Community Enrichment (ICOLACE) to enable educators to meet to share their ideas and practices. Growing from this, in 2015 he set up the International Association for Lifewide Learning (IAFLL).

The 4th International Conference On Learning And Community Enrichment (ICOLACE) was held in Singapore in October 2016. Delegates travelled from England, Nepal, Pakistan, the Philippines, Kuwait, Indonesia and locally from Singapore. The theme for the 2016 conference was "Frameworks to encourage, support and recognise the lifewide formation of students."

Figure 1 Participants at the ICOLACE4 conference.

In his opening address, conference Chair, Chris Picone, reminded participants that the UNESCO International Commission on Education for the 21st Century identified four separate but closely linked areas of student formation to be addressed by educators in this new millennium- Learning to Live Together as a priority, followed by Learning to Know, Learning to Do and Learning to Be. If personal development in any of these areas is lacking then students will graduate without the overall foundational support needed to cope with the fast pace and constantly changing work and community environments associated with globalized lifestyles.

Keynote speaker, Professor Norman Jackson, spoke on the topic "Exploring the idea of learning ecologies, it's value and use in understanding students' lifewide learning, development and achievement." He invited delegates to consider formal education as part of a seamless blend of personal development which also requires informal and non-formal learning in structured and unstructured settings. Learning should therefore be viewed as an unfolding ecological process involving the learner, their purposes and their environment; learners are influenced by their environment but at the same time they are also contributing to and shaping their environment.

This model of learning ecologies was exemplified in a presentation by Arcie Mallari from the Philippines who founded the "Silid Aralan Learning Technology Education (SALTEd)". Arcie was an educator who dedicated part of his life teaching children and young people who lived and worked on rubbish dumps. He empowered them with basic knowledge and more importantly self confidence to establish their own small enterprises so they could aspire to an independent future. He showed videos of his former students who had indeed proceeded to become success stories and examples to others faced with similar challenges.

Figure 2 Arcie Mallori explaining his approach to lifewide learning

Figure 3 Principal of 'Our Lady of Good Counsel Primary School in Singapore' explaining her school's approach to lifewide learning.

A highlight on the second day of the conference was a visit to Our Lady of Good Counsel Primary School in Singapore, hosted by Principal Mrs Catherine Seah. Students at the school have been using the "Goals Action Program" or GAP since 2010 as a framework to set lifewide goals and then document subsequent progress during the semester. Some of the grade 6 students who have participated throughout the past six years spoke of their personal experiences and how the structured program enabled them to regularly consider their futures and what they must do to achieve their goals.

Mr Mohammad Sabbir Mansoor, Program Manager at Saurya International Higher Education School, spoke on behalf of the Nepalese delegation. They attended the conference to gather ideas to take back and use towards the lifewide development of their students. The 16 Nepalese delegates are part of the Private And Boarding Schools Organisation Nepal (PABSON) network of 600 schools throughout the country.

Figure 4 (left) Mohammad Sabbir Mansoor

Figure 5 (right) Chris Picone and Norman Jackson presenting a certificates to the participants the National President of PABSON.

At the conclusion of the conference, the Annual General Meeting of the umbrella International Association For Lifewide Learning (IAFLL) was held. Chris Picone was re-elected as President and Dr Paramita Atmodiwirjo as Secretary. Professor Norman Jackson was elected to the position of Deputy President. More information with regard to the Association is available from www.iafll.org and below.

Further information with regard to the International Association is available through contact to chris.picone@iafll.org

INTERNATIONAL ASSOCIATION FOR LIFEWIDE LEARNING (IAFLL)

The International Association For Lifewide Learning (IAFLL) promotes any form of learning and activity that nurtures the holistic development of students. In particular, the Association encourages students to set lifewide learning, development and achievement goals and then actively self-manage their own progress for achieving their goals.

IAFLL was founded by Chris Picone who is President of the Association. It fosters networking between educators with regard to lifewide learning and education practices, and organises regular International Conferences On Learning And Community Enrichment (ICOLACE).

IAFLL shares the same mission and values as Lifewide Education and we are active members of their community. There is no charge for membership and application forms are available online via http://www.iafll.org/how-to-join-2/

IAFLL has recently established a Google+ forum for discussion. The forum is open to anyone who is interested in lifewide education. https://plus.google.com/communities/101200912040191944552

To find out more about IAFLL visit http://www.iafll.org/

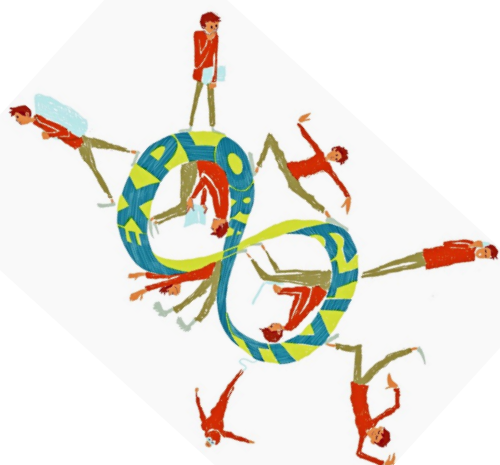**lifewide magazine**

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July 2017

We will continue our 'exploration of the idea and practice of exploration' which we began in LWM18, focusing on exploration in the disciplines. Each discipline develops its own tools and methodologies for conducting explorations and its own symbolic and conceptual language and traditions for communicating the results of exploration.

INVITATION

We welcome contributions from any disciplinary field. Articles may be formed around a personal experience of exploration in any disciplinary research or professional practice context including teaching. We are particularly interested in the ways that novice learners in a discipline or field of professional practice are encouraged and helped to develop their ability to explore.

If you would like to contribute an article please contact the Commissioning Editor, Professor Norman Jackson normanjjackson@btinternet.com

For more information on this topic, see next page

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Continuing the Conversation about Exploring & Exploration

Our hope is that readers will take the opportunity to share their own experiences, perspectives and insights and discuss the ideas and issues raised by our contributors. We also welcome contributions from educators on the ways that they encourage learners to explore in their own teaching and learning contexts.

We have set up a new Google+ Forum. Its easy to join just click the link below.
https://plus.google.com/communities/100364215733010324333
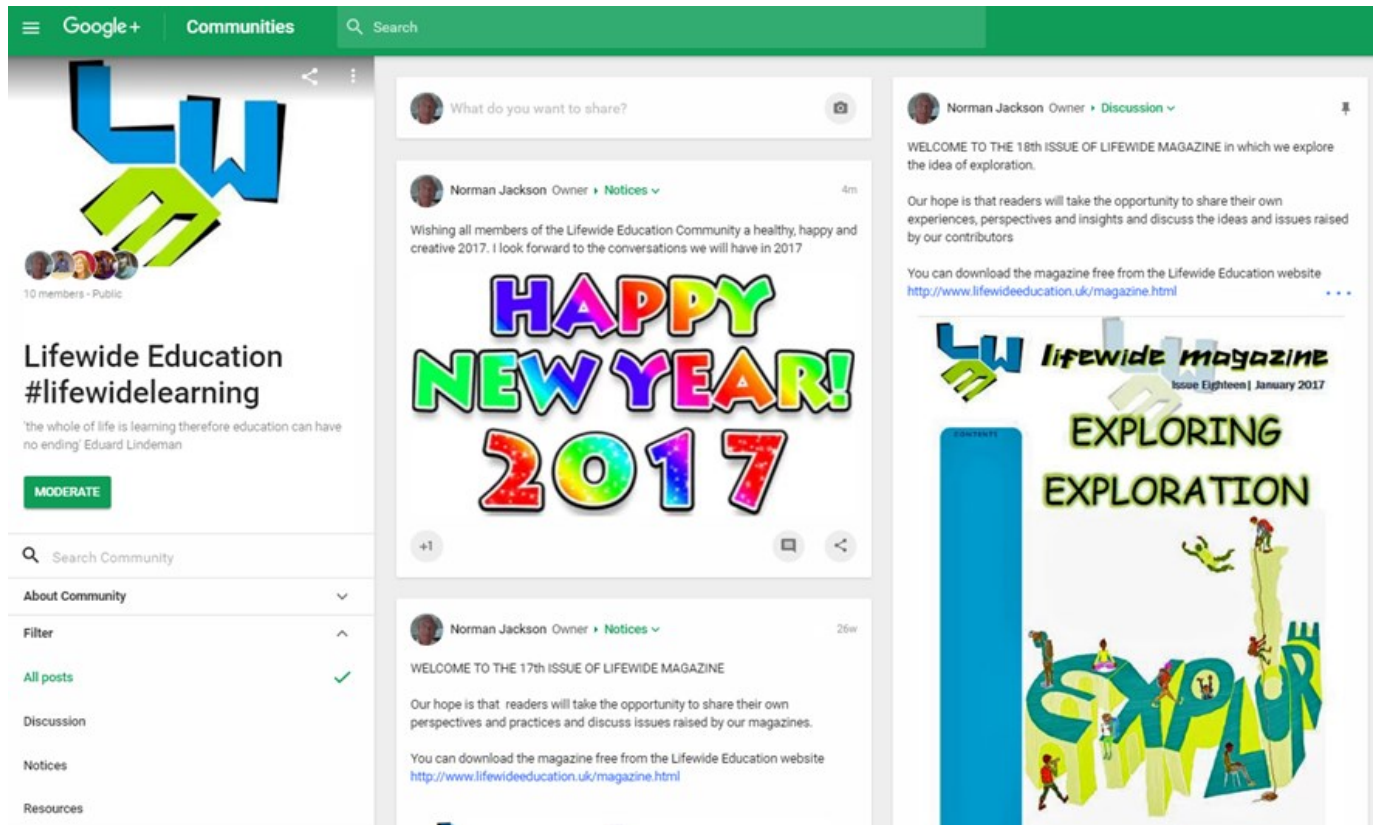
Wishing all members of the Lifewide Education Community a healthy, happy and fulfilling 2017.