Group 6 - The Height Achievers

Our Group journey:

Our group dynamic proved to be very interesting and followed Tuckman’s (1965) theory of team development:

Forming
Storming
Norming
Performing

Only after a face-to-face meeting was it possible to get the bare bones of an infographic:

![Infographic Diagram]

Still we realised that although we were clear about what the problem was – the infographic needed to make this clear also. As yet we were missing some essential information to place on the various
parts of our infographic. We each did research and we each had some interesting ideas and examples that did not make it into the infographic. Most of our contact was by email because we could relate our independent research and then give immediate or frequent feedback. Some of the ideas were amalgations of various ideas suggested by individual members of the group. Another breakthrough was the use of the following venn-diagram (which idea could have served as the entire infographic design). This visually clarified the idea that although there are differences to aspects of logical and creative thinking there are areas of commonality. We saw this area as critical thinking:

![Venn Diagram of Logical Thinking and Creative Thinking](image)

Finally we met and discussed what our question was, who our target audience should be and what our solution to the question should be. We decided on these and then we decided on the layout of the infographic and then finally what information we wanted to place and where. There was a sense of excitement, encouragement and group unity and we saw we had a visually interesting way of addressing and, indeed, answering the question that this infographic raises.

Then we had our penultimate infographic draft:
The following represent some of the important references that influenced our thinking and our talking as a group. We submit them along with short commentary merely to show the level of our individual and collective engagement with the literature.
Various ideas looked at (with some bare references)

1. About creativity:

Pope (2011) suggested the following historical trajectory of creativity:

<table>
<thead>
<tr>
<th>CREATION (divine)</th>
<th>(special) artistic</th>
<th>(general) human creativity</th>
<th>Artificial machine creativity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ancient (13th C)</td>
<td>Romantic (late 18th C on)</td>
<td>Modern (early 20th C on)</td>
<td>Contemporary (late 20th/early 21st C)</td>
</tr>
</tbody>
</table>

Beghetto & Kaufman (2007, 2009) present a Four C model of creativity:

<table>
<thead>
<tr>
<th>Mini-c →</th>
<th>little-c or</th>
<th>pro-c possibly →</th>
<th>Big-C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal or individual creativity inherent in learning process</td>
<td>Everyday</td>
<td>Professional-level Expertise – Mostly Domain specific</td>
<td>Eminent Domain-Specific</td>
</tr>
<tr>
<td>A ‘little-c’ for the little c!</td>
<td>Both General &amp; Domain-Specific</td>
<td>Domain-specific</td>
<td></td>
</tr>
</tbody>
</table>

Possible quote for teachability of creativity:

‘The view of creativity as a decision suggests that creativity can be developed.’

(Sternberg, 2006, p.90)

Possible 10 steps or stages (Later he advocates 12 creative choices):

1. Problem redefinition.
2. Problem and idea analysis.
3. Selling their solution.
4. Recognizing how knowledge can both help and hinder creative thinking.
5. Willingness to take sensible risks.
6. Willingness to surmount obstacles.
7. Belief in one’s ability to accomplish the task at hand. (Self-efficacy)

8. Willingness to tolerate ambiguity.

9. Willingness to find extrinsic rewards for the things one is intrinsically motivated to do.

10. Continuing to grow intellectually rather than to stagnate.

(Sternberg, 2007, p. 36)

Sternberg (2005) also asserted that there are “different potential models for multiple creativities” which “are complementary rather than mutually exclusive” – which is a reason to have interconnections between the various stages, steps or activities of creativity.

Hirshberg (as cited in Leonard & Swap, 1999, p. 20) advocates ‘creative abrasion’ which is to have as diverse a group as possible (within the limits of manageability, obviously) to produce or generate as many ideas as possible. Dissenters have a fundamental role in this group dynamic.

Herbert (2010) raises the question about whether in dreaming we come close to understanding the concept of the muse of creation. After all, who is the character-writer, narrator and stage (or scene) setter in our dreams?

2: Examples

Combining logical & creative thinking as critical thinking - Some examples from philosophers (of pro-c?):

Maxwell (2012) advocates refocusing or revolving education on ‘wisdom’ rather than just ‘knowledge’ – He thinks education should be specifically (primarily) about how to ‘create’ a better world. For a funny way of highlighting the difference consider this:

<table>
<thead>
<tr>
<th>Knowledge</th>
<th>A tomato is a fruit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wisdom</td>
<td>A tomato does not belong in a fruit salad</td>
</tr>
</tbody>
</table>

Interesting, Sternberg also advocates the move from educating for knowledge to educating for wisdom. (See Hall, 2010, pp. 243-248)

Putnam (1973, 1975) used the twin earth thought experiment to explore whether meanings are in the mind while Searle (1980) used the Chinese room experiment to argue that machines cannot think. Both these thought experiments synthesise logical (analytic) thinking and creative (imaginative) thinking in a way that stimulates and embodies critical thinking.

We did not use these examples because we wanted to focus on the bare question and give the best answer. Any particular example would dilute the force of the general application of the union of logical and creative thinking in any particular educational discipline.
Bibliography:


It is a clear message about how to teach students to think critically and to be able to distinguish a good argument from a bad one. The book contains a helpful Glossary.


An interesting selection of some famous psychologists like Robert Sternberg, Beth A. Hennessey, etc. A recipe of how to develop creativity in children at school.


The book is full of historical, everyday life examples of creativity that show how a habit of lateral thinking can be encouraged and new ideas can be generated.

Intelligence (Jordan, 2008)

Excellent chapter in seeking to address the concept of intelligence. Prepares the way for a more in-depth investigation of intelligence and thinking. We know that being intelligent is important. However, what is it and how can we get some. Many theories have developed with regards to both questions but as yet no unifying theory has emerged. It is, indeed, this complexity that has caused
great confusion and hence permits anyone to come up with their own definitions and proposals in relation to these. Very often these represent polar opposites, and permit the development of strategies that are completely contradictory. Flavours can arise that are somewhat extreme and do not take into consideration other perspectives.

Thinking, Fast and Slow (Kahneman, 2011)

A tour de force across the domain of thinking, judgment and choice. People often believe they know what goes on in their mind and believe that this consists of one conscious thought leading in an orderly way to another. But that is not the only way the mind works, nor indeed is that the typical way. Most impressions and thoughts arise in one’s conscious experience without one knowing how they got there. Much of the discussion in the book is about biases of intuition. The text explores and seeks to identify and understand errors of judgement and choice.

Strategic Thinking (DE WIT, 2010)

This issue focuses on the strategist. The question is how managers should organise their thinking to achieve a successful strategic reasoning process? An important question for an educationalist dealing with our future business leaders who may wish to develop thinking that enables successful business strategies to develop. Understanding what goes in the minds of managers during strategy processes is essential for understanding their choices and behaviours. This chapter explores in great depths this issue, through drawing a dichotomy between logical and creative thinking and then seeking to reconcile these apparent opposite approaches to thinking.

The Mind of the Strategist (Ohmae, 1982)

In this text Ohmae argues that the mind of the strategist is not dominated by linear, logical thinking. On the contrary, a strategist’s thought processes are ‘basically creative and intuitive rather than rational’. He does not dismiss logic as unnecessary, but notes that it is insufficient for arriving at innovative strategies. He observes that in many big companies, creative thinking is being pushed to the sidelines in favour of rational, by-the-numbers strategic and financial planners.

Decision-Making: It’s Not What You Think (Mintzberg, Vol.42, No. 3.)

Mintzberg and Wesley look at different styles of strategising. It summarises the strengths and weaknesses of starting the strategic reasoning process at different stages. – either starting at problem identification and diagnosis (which the authors call ‘thinking first’) or with solution conception (called ‘seeing first’), or with solution realisation (called ‘doing first’). The authors conclude that ‘no organisation can do without any one approach’ and therefore the three forms should be combined.

Approaches to Creativity (Carlile, 2012)

An excellent text, and very timely in its publication by allowing debate to be generated in this important area. For too long, much confusion has existed with regards to what is understood by creativity. There has, in general, been a too narrow focus on creativity as being associated primarily with artistic expression, particularly in the arts. This has done great harm to the concept as it tended to focus on the ‘creative muse’ while not addressing the broader concept of creative thinking. It is only through creative approaches to thinking that many of the ‘wicked problems’/complex issues of today’s world can be effectively addressed. Comprehensive in scope, this text will generative much greater insights into this important concept. A book that will also be very beneficial to the teaching profession in general.
Higher Cognitive Learning: Critical Thinking & Problem Solving (Donnelly, 2013)

Excellent set of material that allows one to reflect on the many facets of critical thinking. As a source document it provide good background material when seeking to align critical thinking with logical and creative thinking. The model that was developed for the project used a number of these ideas to find the reconciliation between critical, logical, and creative thinking.

Unlocking Creativity – A Strategy for Development (Groups)

I am particularly taken by the quote: “Creative and cultural education are not alternatives to literacy and numeracy. High standards of literacy and numeracy are important in themselves. They can also enhance creative abilities: equally creative teaching and learning can enhance literacy and numeracy. These are complementary abilities, not opposing objectives.” (All Our Futures). Faced with a rapidly changing external environment (PESTIL); the need to resolve major complex issues such as those pertaining to sustainability, ecology, economic; and with no obvious solutions available; then it is necessary to stand outside the box and view these issues in a very different way from traditional approaches. While this report addresses this in the context of Northern Ireland, it nevertheless puts on the agenda the need for all countries to address this issue. It’s Mission Statement: “to promote the social, cultural and economic prosperity of Northern Ireland through developing the capacities of all our people for creativity and innovation”. This is in fact a wake-up call for societies to rethink all aspects of their organisation to allow a new vision of what is possible. Excellent thinking.


The intention of the paper is to open up discussion of the concept of threshold concepts as an important factor in developing learning environments within disciplines. It introduces the concept of a threshold knowledge as a way of distinguishing in learning outcomes the idea of ‘seeing things in a new way’. A threshold concept is akin to a portal, opening up a new and previously inaccessible way of thinking about something. It represents a transformed way of understanding, or interpreting, or viewing something without which the learner cannot progress. The paper does however address the view that such threshold concepts within curricula, because of their transformative effects, can prove troublesome for students.

Encouraging Student Creativity in Higher Education. (Barrett, 2008)

Excellent chapter in seeking to get readers to think about creativity and what it really means. Very important to let it emerge from the very narrow perspective of creativity as being solely represented by artistic expression. I like Robinson’s definition of Creativity as “imaginative processes with outcomes that are original and of value”. Of course, the challenge for educationalists is to develop and implement strategies that will build creative competencies in our students. This will be where the difficulty lies. Continuing the debate on Creativity and the means through which it can continue to be developed and augmented is vitally important. This chapter continues in this tradition of raising the right questions.

Bibliography


Steinbergs 10-12 steps
"Creative people habitually (a) look for ways to see problems that other people don’t look for, (b) take risks that other people are afraid to take, (c) have the courage to defy the crowd and to stand up for their own beliefs, and (d) seek to overcome obstacles and challenges to their views that other people give in to, among other things."


"The systematic study of validity is the concern of logic. Logicians are concerned to devise perfectly reliable procedures for detecting validity, or the lack of it…” p 55

This book addresses logical thinking from the perspective of sound and rational argument formation and analysis such as deductive validity and inductive force and understanding various aspects of rhetoric. The authors define logic as “the systematic study of arguments, especially deductive validity and inductive force”. (p 267) and a logician as being "only with relations between propositions, not their truth-values." (p 55). The importance of validity to the logical thinker;

Our project was looking at logical thinking from a behavioral point of view ie. how do logical thinkers think and is there a model for the mental steps they take? What are the traits of logical thinkers? This book did not provide those sorts of insights in a very concise manner that lent itself to an infographic. Infographics only allow for a limited amount of information to be communicated. As such I found myself looking for very concise analyses of logical, creative and critical thinking so that they could be incorporated into the infographic.

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Maurice Merleau-Ponty's concept of Chiasm (p.58) relates to the tension of the internal and external voices or dialogue that result in creativity. The external voice is the idea as it gradually revealing itself. The inner voice is the individual piecing the idea together intuitively. The creative thinker is as Mihaly Csikszentmihalyi (p.60) describes it, in a creative "flow" in which their perception of time changes and they are fully absorbed in their thinking process and feel a profound feeling of elation. How do we capture this chasm visually in an infographic or portray the joy experienced when in the current of creative flow? These were phenomenon that I struggled to incorporate into our project but which I found interesting and beneficial to my overall understanding of creativity.


This chapter discusses different ways of measuring or characterizing creativity. I was looking for a model of creativity that would represent our groups thoughts and attitudes towards creativity as borne out by our online and face to face discussions. Below is a list of characteristics of creative people from this chapter (p.68.).

Characteristics of creative individuals:
Fluency
Flexibility
originality
Elaboration
Openness
Risk-taking
Curiosity
Complexity
Imagination
Independence
Tolerance of ambiguity
Preference for complexity
Rely on own judgements
Playful with ideas
Making connections between seemingly unconnected things

In the final infographic we primarily relied on Strenberg's 12 characteristics of creativity as a means, in conjunction with logical thinking, of fostering genuine critical thinking.
Don't label yourself, enable yourself!

Logical Thinking
- Identify
- Diagnose
- Conceptualise
- Implement

Creative Thinking
- Identify
- Diagnose
- Conceptualise
- Implement

Critical Thinking
- Logical
- Analytical
- Deductive
- Vertical
- Strategic
- Sequential
- Structured

Redefine problems
- Analyze your ideas
- Selling your ideas
- Acknowledging how knowledge can both help and hinder creativity
- Encourage idea generation
- Overcome obstacles
- Encourage sensible risk-taking
- Tolerate ambiguity
- Believe in yourself
- Do what you love