

**THE DE BONO LAMS SEQUENCE SERIES:  
TEMPLATE DESIGNS AS KNOWLEDGE-MOBILISING STRATEGY  
FOR 21<sup>ST</sup> CENTURY HIGHER EDUCATION**

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**Abstract**

In this paper, the five interlocking de Bono LAMS sequences are introduced as a new form of generic template designs. This transdisciplinary knowledge-mobilising strategy is based on Edward de Bono's attention-directing ideas and thinking skills, commonly known as the CoRT tools. The development of the de Bono LAMS sequence series is an important milestone, signifying the current paradigmatic shift in higher education from a student-consumer paradigm to a student-producer paradigm. Surpassing surface and shallow knowledge stages requires the use of multidisciplinary and generic knowledge in new and unfamiliar situations. The LAMS templates as 'knowledge-in-practice' models assist disciplinary specialists generate learning designs that make apparent to students that knowledge is always partial, incomplete and coloured by epistemological beliefs and cultural practices.

**Keywords:** de Bono LAMS sequence series, student-producers, deep learning.

**Introduction**

Capturing the current 'Zeitgeist' in higher education in the Asia Pacific region and elsewhere is not easy. However, certain trends are clearly visible. One example is the shift in teaching and learning modes, which is fuelled and infused by technology and a globally accepted need for modified qualification demands of the future workforce. The structural changes and increased heterogeneity in teaching and learning approaches are clear signs of individual and collective determination. They are fuelled by a perceived and urgent need to break free from rigid structures of formal teacher-centric educational practices (Metcalf & Fenwick, 2009). The traditional practices of the past were based on Eurocentric ideas and ideals of fixed, stable and objective knowledge that can easily be passed on from experts (teachers) to novices (students) largely through monotonous content-driven lectures (Phillips, 2005; Sheely, 2006). As Phillips (2005) noted, the practice of 'lecturing' is still well established in higher education:

An often unstated assumption of the traditional teaching approach ... is that lectures are the core of the educational process ... [which] focus on transmission of content. ... Laurillard (2002: 93) claims that the traditional lecture approach is 'legitimised only by 800 years of tradition' (p. 4)

Despite the long-standing tradition of classical knowledge-transmission approaches in higher education delivered face-to-face through lecture-style oration in front of a large number of students showing varying degrees of interest, demands that higher education institutions (HEI) produce lifelong learners and 'e-ready citizens' are slowly but steadily changing pedagogical practices in HEI and elsewhere. The recently released report of the social impact of information communication technologies (ICTs) commissioned by the European Union (EU) coupled with the Education Services Australia (ESA) report highlights the need to recognise that Rusch's (2008) conception of the 'ICTisation' of people's lives is becoming a fast approaching reality (EU, 2010; ESA, 2010). Unsurprisingly, the increased ICTisation of all aspects of people's lives, from tele-Government, tele-Health to tele-Learning (commonly referred to as eLearning), has contributed to the view that education reform is urgently needed. This is leading to the acceptance of technology-mediated education as the norm rather than the exception, because, in part, "individuals who can navigate, comprehend, and utilise new knowledge sources will have a competitive advantage in the 21<sup>st</sup> Century" (Elrod & Somerville, 2007, p. 684). Therefore, the central aim of this paper is to provide an illustration of new developments in the field of learning design. The collaborative development of the de Bono LAMS sequences as generic learning and teaching templates provide, so I argue, an important milestone in the current paradigmatic shifts in higher education, including global efforts to move from a student-consumer paradigm to a student-producer paradigm.

Hence, the next section outlines what I mean by 'knowledge-centric' and 'transdisciplinary' education and how I distinguish these concepts from traditional HE teaching and learning modes, which are mainly lecture-based and infused with tokenistic group-discussions. I refer to the new HE learning and teaching as the student-producer paradigm, which I resolutely differentiate from the classical student-customer paradigm. This is followed by an exploration of what I perceive to be the value-added nature of open education resources (OERs), of which LAMS is a formidable example where students become producers of deep and integrated knowledge. Next, I discuss the collaborative construction of the de Bono LAMS sequences and introduce them individually. Finally, I close with a remark

on the need for more pedagogical connections and methodological boundary crossings as we engage in the development of a new HE learning paradigm where student-producers are the norm rather than the exception (Dillon, 2008).

### **Knowledge-centric and transdisciplinary learning and teaching a departure from student consumerism**

Following Bennet & Bennet (2008), I define knowledge as “the ability (potential or actual) to take effective action” (p. 412). As we are moving into the new HE learning and teaching paradigm, there is a general acceptance that deep learning experiences need to be enabled where students can develop and extend their ability to think, discuss, reflect and solve problems collaboratively. Students need access to rich resources that are mirroring real-life context, in the sense that they are often partial, contradictory and based on certain assumptions and beliefs (Giannikis & Daskalopulu, 2009). Knowledge-centric learning design highlights the importance of the multiplicity of resources and ways of knowing. This realisation demands that teachers refrain from easy compartmentalisation and ‘bite-size’ provisions of information to be digested in unison under the careful supervision of the teacher. Knowledge-building is messy, and tentative, demanding persistence and resilience of students and teachers who resist the urge to ‘teach’. Rather than reducing the multiplicity of perspectives, views and voices to a simplified consumable version pre-digested by the teacher, knowledge-centric and transdisciplinary learning design is concerned with providing a problem, idea or issue to be dissected, explored and if possible solved in collaboration, using various resources and solution paths (Dobozy, 2011).

The new HE learning and teaching paradigm demands the interdependence of knowledge and action or action planning (thinking), using knowledge mobilisation activities (such as the ones described below) leading to knowledge exchange among students as a signifier of deep learning engagement. The ‘knowledge-in-practice’ (Boyd, 2006) model introduced here makes apparent that knowledge is always partial and incomplete. Moreover, the interrelationship between discipline-specific technical knowledge and generic, transdisciplinary knowledge in the production of new understandings and ideas is powerfully depicted (Tress, Tress & Fry, 2005). As Figure 1 shows, the production of technical knowledge can be quite simple, whereas the production of deep and integrated knowledge requires that the producer draws on a multitude of experiences and information, which represent an interplay between disciplinary and generic knowledge. Surpassing surface and

shallow knowledge stages requires the use of multidisciplinary and generic knowledge in new and unfamiliar situations.

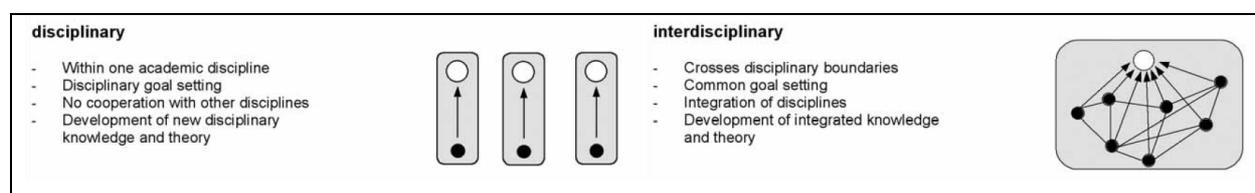


Figure 1: Development of deep (integrated) knowledge (Tress, Tress, & Fry, 2005, p. 16).

The de Bono LAMS sequences and other knowledge-centric learning tools enable HE students to develop deep, integrated knowledge. Using the introduced de Bono thinking tools, they are carefully guided to become resourceful critical thinkers and to solve problems in discipline-specific contexts. The thinking strategies used and introduced are content independent. Hence the content is easily exchangeable and adaptable.

### **The student customer paradigm vs. the student producer paradigm**

Whereas in the past HE students more often than not relied on the lecturers as experts to sift through the scholarly literature and present relevant ‘just-in-time’ information (Philips, 2005), the new HE learning and teaching paradigm demands of students to navigate and evaluate information sources and actively link the information to current understandings in the active sense-making process, and therewith “effectively use knowledge to generate further knowledge” (Elrod & Somerville, 2007, p. 685). Moreover, Costa & Silva (2010) note:

Expanding traditional definitions of literacy and learning methods into “immersion-centric” experiences of interaction with information and on-line communities is essential to prepare ourselves to participate in post-industrial society”. (p. 403)

In previous work (Dobozy, 2011), I have noted that the distinguishing factor between student-consumer and student-producer positions is the depth of knowledge generated. Building on Bennet & Bennet’s (2008) conceptualisation of the three levels of knowledge and action (surface, shallow and deep), I argue that deep knowledge creation demands the learners’ effortful engagement with information as they create knowledge products or outputs, in the form of discussion items or arguments, leading to position-taking based on the evidence at

hand. As Table 1 shows, there is a clear relationship between Bloom's (1956) and Bennet & Bennet's (2008) levels of learning and engagement.

Table 1: Depth of Knowledge and action.

| <i>Level of learning and engagement</i> |                     | <i>Learning activity</i>                                                          | <i>Student action</i>                                                 |
|-----------------------------------------|---------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------|
| <b>Bennet/Bennet (2008)</b>             | <b>Bloom (1956)</b> |                                                                                   |                                                                       |
| Surface                                 | 1-2                 | Memorising                                                                        | Remembering, Acting                                                   |
| Shallow                                 | 2-3                 | Meaning-making, simple problem-solving                                            | Explaining, Acting, Applying knowledge                                |
| Deep                                    | 4-6                 | Effortful problem-solving, meaning-making of contradictory information, immersive | Position taking using evidence, purposeful decision-making and acting |

Hence, for the development of deep knowledge, it is important for lecturers to refrain from 'lecturing' in the sense of information transmission, because there is now ample evidence that delivery of content through traditional lecture-based approaches does generally not lead to the generation of deep knowledge and action (Phillips, 2005).

### **The value-added nature of OERs**

As a direct reaction to the closed, fixed system of conventional teaching and learning, the digitally available open education resources OERs are generating much interest and should gradually becoming part of current discourses at all levels of education (Kanwar, Kodhandaraman & Umar, 2010). OERs are also often referred to as Learning Objects (LOs) or even Open Learning Resources (OLRs). For the purposes of this presentation, I use the term 'OERs', but follow Stephen Downes's (2004) lead and define OERs as digital resources that are modular, interoperable, reusable, free and easily detectable.

Despite OERs' popularity in certain educational circles, they have not yet achieved conventional wide-spread usage among university lecturers (Wiley, 2007). To increase the usage of these learning tools, they need to become more widespread and user-friendly. Moreover, their value-added nature will need to be made more explicit to lecturers and students. In what follows, I provide a list of six often-cited advantages of OERs, adapted from Kanwar et al (2010). OERs have the potential to:

- save course authoring time and money,

- foster exchange of global knowledge,
- forge linkage between nations and regions,
- support capacity building and bridging of ‘the digital divide’,
- foster cultural understanding among individuals and communities,
- raise the currency and quality of education provision.

Now, in exploring the potential of the Learning Activity Management System (LAMS) developed by Macquarie University, I contend, at the outset, that LAMS fulfils most, if not all, the criteria outlined above.

### The de Bono LAMS series

Since its launch in Australia and the UK almost a decade ago, LAMS has gained international recognition as an innovative software program and learning design platform. LAMS is versatile, allowing university lecturers and school teachers to design and deliver knowledge-centric, collaborative learning activities. Moreover, the sophisticated monitoring systems in LAMS allow teaching staff access to rich and up-to-date student engagement data. LAMS has been recognised as having the potential to transform education at various levels (from school education, to higher and further education and also corporate education – Laurillard, 2008).

As a teacher educator searching for pragmatic ways to engage students in deep thinking and knowledge-centric activities as the basis for theory-guided problem-solving, I introduced students in my educational psychology and social studies classes to elements of Edward de Bono’s (2009) CoRT Tool Kit. CoRT stands for Cognitive Research Trust, but “can also be regarded as being short for *cortex* where all thinking takes place in the brain” (de Bono, 2009, p. 3). My teacher education students’ introduction to the de Bono CoRT lessons consisted of the following five attention-directing ideas or thinking skills activities, which are a selection of the ten CoRT lessons described by de Bono (2009):

Table 2: The de Bono CoRT Tool Kit.

| Attention-directing Idea                                            | Visual Icon                                                                         | Description                                                                                                                                             |
|---------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| PMI:<br>Plus/Minus/Interesting<br>( <i>The treatment of ideas</i> ) |  | Instead of simply judging an idea as ‘good’ or ‘bad’ it is more fruitful to use the PMI approach, ‘pushing’ students gently to think ‘outside the box’. |

|                                                                                          |                                                                                   |                                                                                                                                                                                                                                                     |
|------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CAF:<br>Consider all factors<br>( <i>The prime information input tool</i> )              |  | Instead of simply choosing randomly, when there are multiple options presented, it is of advantage to think carefully about the options and their possibilities and constraints.                                                                    |
| C&S:<br>Consequence and Sequel<br>( <i>A prediction and evaluation tool</i> )            |  | Instead of simply choosing the nearest option that presents itself, it is of advantage to think about an action and its possible short, medium and long-term consequences.                                                                          |
| APC:<br>Alternatives/<br>Possibilities/<br>Choices<br>( <i>The tool for creativity</i> ) |  | Instead of simply making a decision or taking an action, it is of advantage to look for multiple ways of approaching the decision-making process. Searching for the 'not so obvious', will provide a more complete picture.                         |
| 5: OPV<br>Other People's Views<br>( <i>An exploration tool to broaden perspectives</i> ) |  | Instead of simply making a decision based on the nearest experience, it is important to 'put oneself into the shoes of another person'. Seeing things from another person's perspective is an important skill that needs development and nurturing. |

Teacher education students are typically somewhat familiar with de Bono's work, especially the 'six-thinking-hats-method' (Knight & Collins, 2010), but they are less familiar with his other creative thinking works, such as the CoRT Tool Kit, the six values medals or the six action shoes. 'Thinking' is defined by de Bono (2009) as "the operational skill with which intelligence acts upon experience" (p. 4). Hence, de Bono's ideas seem to provide a natural fit for knowledge-centric activities based on new HE learning and teaching beliefs as outlined above.

In late 2010, I was invited to a LAMS PLANNER Symposium, where we were given the task to 'populate' the newly developed LAMS planner, an ALTC funded project (see Cameron, 2008) with some learning sequences. It seemed that the de Bono CoRT Tool Kit provided an ideal framework for this work as it adhered to the principle of simplicity and generability. We agreed that the short sequences could be used individually or in conjunction with each other and be easily adapted to various disciplinary contexts, from medicine to engineering, teacher education to school education. The project team crafted the first of the five de Bono LAMS sequences (see Figure 2 below) using universal instruction design principles for use in LESSONLAMS and the LAMS ACTIVITY PLANNER. The idea behind this design was that interested university lecturers, irrespective of their disciplinary affiliations, and school teachers can gain access to particular learning design sequences and populate them with their own material. In other words, a generic pedagogical structure is provided using a template model, but the content can be:

- adopted,
- adapted, or
- created anew.

Offering a generic tool for a new student-centric and immersive learning environment, this transdisciplinary approach to learning design makes explicit the interaction between knowledge and skills development (Park & Son, 2010). The first of de Bono's attention-directing ideas is commonly referred to as PMI. Figure 2 shows an author's view of the complete PMI sequence and the opening page of the student view.

### Attention-directing idea 1: PMI

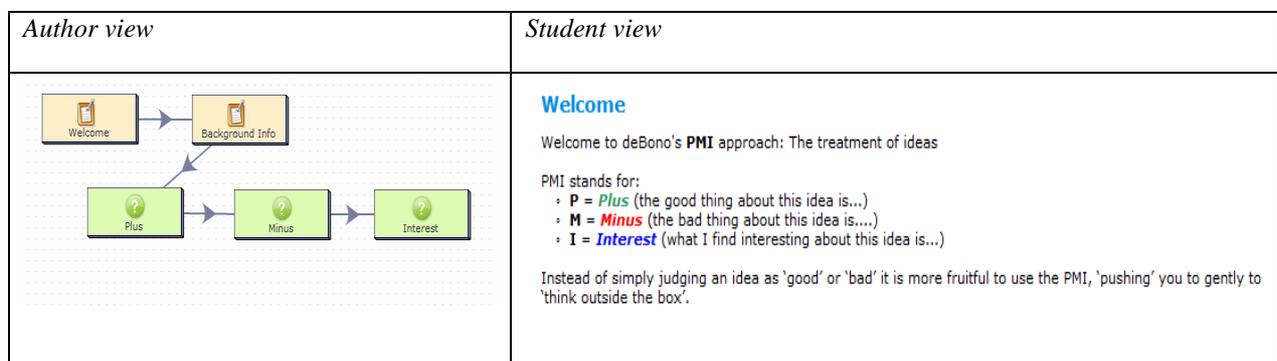


Figure 2: LAMS PMI sequence.

The learning activity (see Figure 2) is based around the principle of developing higher order thinking skills in students and is underpinned by a conversational framework around a given (and exchangeable topic), which focuses on the learner's meaning making process. As students grapple with ideas in the search for PMI (Plus/Minus/Interesting ideas) in the context of the given problem or topic, they are deeply engaged in the act of learning individually and collaboratively through the use of the LAMS Forum tools for asynchronous discussions. The structure of the LAMS sequences is deliberately kept simple so that it can easily be populated, adapted or extended to include different features. The generic example used introducing the PMI sequence in the LAMS ACIVITY PLANNER is called 'A Fishy Affair' and asks the question:

- Should we eat less fish to solve the overfishing problem, and, if we do, what are the likely consequences for different groups of people (families, fishermen, governments)?

I now introduce all remaining four attention-directing ideas as outlined in table 1 and provide example questions and topics using teacher education as a context.

### Attention-directing idea 2: CAF

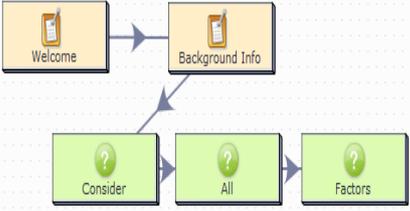
| Author view                                                                       | Student view                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <p><b>Welcome</b></p> <p>Welcome to deBono's <b>CAF</b> approach: Consider all factors. This is <i>the prime information input tool</i></p> <p><b>CAF</b> stands for:</p> <ul style="list-style-type: none"> <li>• <b>C</b> = <i>Consequences</i></li> <li>• <b>A</b> = <i>All</i></li> <li>• <b>F</b> = <i>Factors</i></li> </ul> <p>Instead of simply choosing randomly, when there are multiple options presented, it is of advantage to think carefully about the options and their possibilities.</p> |

Figure 3: LAMS CAF sequence.

Building on the PMI task, which is easily achievable by all students who apply themselves to thinking about the given problem or topic, the CAF approach invites students to take a stance and to commit to a particular position on a given topic. For example, educational psychology students may be asked the following question:

- Is child development *more* a function of maturation or learning?

Instead of simply choosing an answer, teacher education students in this example are invited to think carefully about the options presented to them, needing to understand that a human child's growth and development is influenced by both maturation and learning and separating these influences is difficult. Nevertheless, as a trainee teacher, it is vital to engage in deep thinking, debate and discussion about the biological and environmental influences of a child's growth and development. At the same time, the CAF approach can easily be applied to other disciplines as all of them present variations of ideas, theories or practices.

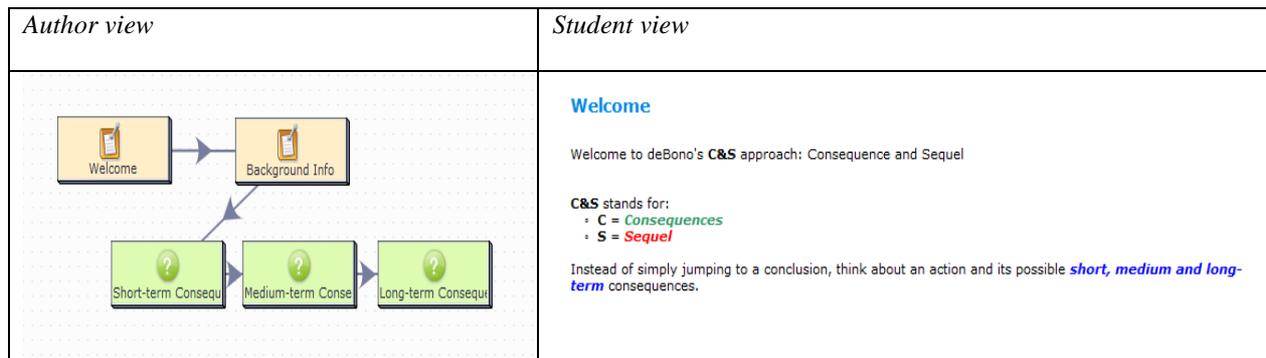
**Attention-directing idea 3: C&S**

Figure 4: LAMS C&amp;S sequence.

As we move deeper into the de Bono thinking lessons, we encounter that developing reflection skills and thinking deeply about possible consequences of actions is important for higher learning. The C&S approach (Consequences & Sequel) is a simple but effective tool enabling the learning and practising of this process skill. As schools and higher education institutions aspire to prepare graduates, who are competitive and dynamic knowledge-based workers, it is important to get students to acquire higher order thinking and knowledge management skills. To this end, teacher education students in the unit Studies of Society and Environment were asked the following two questions:

- What are possible short-term, medium-term and long-term effects of teaching primary school children, using didactic teaching approaches that Mexico City is the capital of Mexico and the capital of the Philippines is Manila?
- What are possible short-term, medium-term and long-term effects of teaching primary school children, using inquiry-based teaching approaches, to go and find out all they need/like to know about the capital city of a country they may need or like to visit in the future?

Tapping into the culture wars in education between the proponents of direct teaching approaches and inquiry-based approaches to teaching and learning is a productive way of encouraging trainee teachers to reflect on possible consequences of making their teaching and learning beliefs public when hunting for a teaching job in the future. As with other de Bono CoRT tools, the focus here is not so much on the content, but more so on the generic learning design as the C&S LAMS sequence can be populated with any content that requires student reflection.

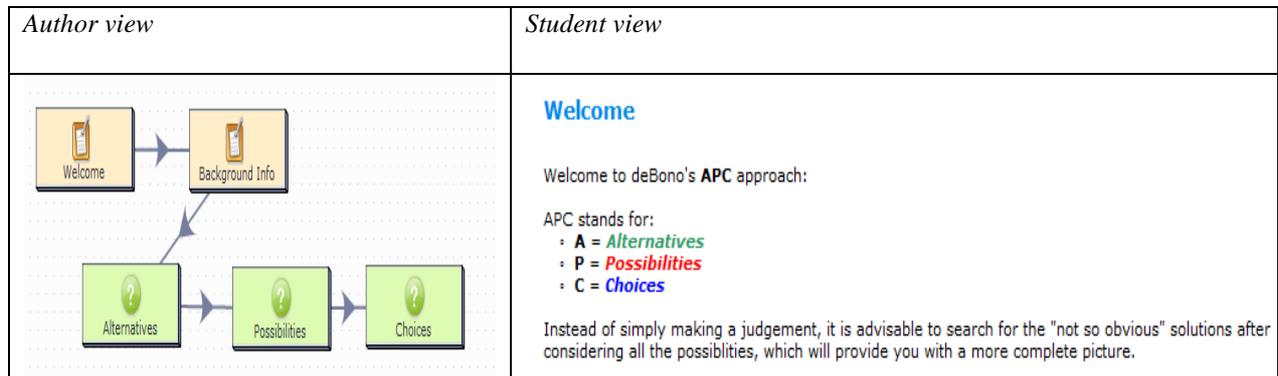
**Attention-directing idea 4: APC**

Figure 5: LAMS APC sequence.

Continuing on the deep thinking journey, de Bono has developed a thinking tool that inspires students to think ‘outside the box’. The APC approach (Alternatives/Possibilities/Choices) invites students to be imaginative and creative as they look for multiple ways of approaching a problem or issue. The goal of this approach is to be persistent and search for the ‘not so obvious’ solutions. For example, investigating the feasibility of Sugata Mitra’s (2010) ‘the hole-in-the-wall’ approach to education, teachers (pre-service and in-service) could be asked the following interrelated questions:

- Given the increased need for a highly trained workforce, able and willing to engage in lifelong learning, should autodidactics (the process of teaching oneself) and informal learning as an extension and augmentation of formal learning and teaching be getting more prominence and traction in school education settings?
- What other innovative solutions could be implemented that follow the principles but not the practices of ‘the-hole-in-the-wall’ project?

In the search for possible ways of answering these two questions, teachers would need to be deeply creative in finding alternative ways of enabling individual and collaborative learning to happen that is not teacher-centric, building on the ideas of self-organising systems and knowledge networks.

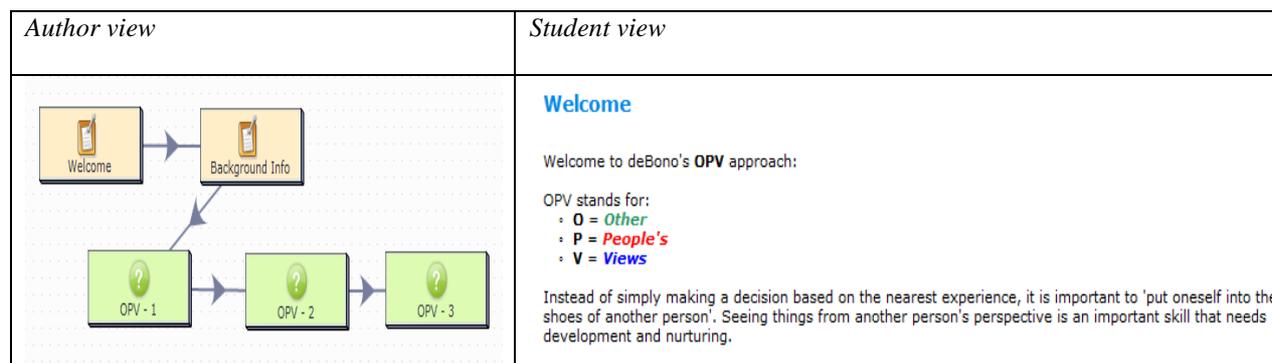
**Attention-directing idea 5: OPV**

Figure 6: LAMS OPV sequence.

The last of the currently developed de Bono LAMS sequences is an exploration tool designed to broaden students' perspectives. The capacity of 'putting oneself into the shoes of another person' is particularly important in our globalised, culturally diverse world. Basing our decision on personal social and cultural experiences and assuming behaviours of others based on our own cultural conventions is no longer sufficient. Hence the OPV (Other People's views) approach is ideal in triggering alternative responses by the way of perspective changing. For example, in a 'Cultures Education' class, teacher education students could be invited to think about intercultural interaction and culture-specific communication patterns, utilising a roleplay pedagogy. Students could be instructed as follows:

- Prepare three scenario notes, describing variations in culture-specific behavioural patterns that are considered 'typical' behaviours for people of various cultural backgrounds, without revealing the nationality and gender of 'the cultural actor'.
- Next, post your notes on the LAMS Forum and ask your peers to guess the cultural background/nationality of the person in the act, remembering that what is common practice in one part of the world can be offensive in another.

Engaging deeply with the OPV lesson, teacher education students learn about cultural faux pas and the need to pay attention to other people's actions and interrogating personal views, beliefs and values prior to jumping to conclusions; putting into practice the various CoRT tools and approaches introduced here.

**The de Bono LAMS sequence series: a thinking/reflection amplifier**

Rich learning opportunities have been created by de Bono (2009) for students to engage in deep thinking and collaborative reflection and some of these have now been translated into LAMS sequences. The de Bono LAMS thinking tools can be used individually or in combination with each other by lecturers from a variety of academic disciplines. The examples presented above sought to illustrate the gradual increase in complexity of thinking required by students as they engage with the de Bono LAMS sequences. Whereas it is anticipated that most students would be able to participate with ease in a PMI activity, the OPV approach demands more developed thinking skills and more effort from students as they grapple with deeply held beliefs and values, interrogating how other people may perceive the presented reality. Irrespective of the de Bono LAMS sequence chosen, there is a demand on students to deeply engage with the topic and material presented, activating their deeply held beliefs and assumptions, which are then tested using the de Bono structure as a framework.

The depth of active participation in meaning making is what distinguishes surface approaches to learning from deep approaches to learning (Bennet and Bennet, 2008). Encouraging deep thinking and active participation in knowledge creation and exchange, the action-oriented and structured task design allows students to engage in thought-provoking tasks aimed at presenting new ideas or offer a critique on commonly held ideas or assumptions concerning a given topic. The examples introduced have used the context of teacher education. However, the aim was to show the generic nature of the de Bono LAMS sequences. LAMS as a formidable OER may assist in open source learning design to become part of the current and future discourse of education. As the value-adding nature of the carefully crafted learning sequences are explored and used in a number of disciplinary contexts with diverse student groups, their evaluation and adaption is encouraged.

## **Conclusion**

Although it is not easy to capture the current 'Zeitgeist' in education, there are unmistakable trends, one of which is the ICTisation of our lifeworlds. Technology-mediated and enhanced learning and teaching in HE is becoming the norm rather than the exception, and with it a new paradigm is emerging. The new HE paradigm is superseding students who are passive consumers of information presented using lecture-style pedagogy of the past. The traditional transmission-education style of the past is possibly becoming less able to develop graduates ready for 21<sup>st</sup> century workplace demands. The future workforce will need to be skilled communicators, cultural actors and deep thinkers, individually and collectively producing knowledge and artefacts. To this end, the de Bono LAMS sequence series has been

introduced, which are self-contained learning objects (LO) that build on each other and can be used in a variety of disciplines and contexts. They are based on a knowledge-centric learning and teaching philosophy, which highlights the importance of the multiplicity of resources and ways of knowing. Rather than reducing the multiplicity of perspectives on a given issue or problem to a simplified consumable version, the de Bono LAMS learning sequences invite the articulation of various possible views and assumptions, which will be shared, debated and discussed, aiding the personal and collective construction of meaning.

It is hoped that OERs' popularity among HE lecturers will increase as the value-added nature of learning design is better understood. The effortful engagement that the de Bono LAMS sequences demand of students may assist them in developing habits of deep thinking. The next step is to monitor and document the adoption of such LOs by HE lecturers in our geographical region and elsewhere, learning about their disciplinary backgrounds, preferences, successes and obstacles.

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