Developing Scenario Learning and its implementation in LAMS

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Problem-Based Learning (PBL) and role plays are examples of teaching strategies that can foster student engagement and reflection. This paper describes "Developing Scenario Learning" (DSL), which combines elements of PBL and role plays to encourage students to reflect on different possible approaches to scenarios that they may encounter in future work. A distinguishing element of DSL is that the initial scenario allows for multiple interpretations and potential actions, and following a period of discussion, the scenario "develops" through the presentation of new information that changes the dynamics of the scenario in ways that may require different potential actions, as well as reconsideration of assumptions made during earlier discussion. This paper outlines a number of different DSL structures and provides examples of their implementation using LAMS.

Keywords: Problem-Based Learning, role play, Developing Scenario Learning, LAMS, PBL, DSL, templates

Background – PBL & Role plays

One of the important recent shifts in education has been a move away from content-transmission models of teaching and towards teaching strategies that foster active student engagement in solving authentic problems and the application of knowledge to real world problems (eg, Ramsden, 1992). These teaching strategies often focus on the development of skills such as teamwork, communication, research and problem-solving in addition to understanding content knowledge. These skills can be described as "21st Century Skills" (Partnership for 21st Century Skills, 2011), general capabilities (ACARA, 2012) and the generic attributes of a graduate (Barrie, 2005).

Problem-Based Learning Overview

Problem-Based Learning (PBL) is an example of a teaching strategy that focuses on the development of teamwork and problem-solving skills (Hmelo-Silver, 2004). PBL is based on a facilitator working with a small group of students in a structured process around a complex authentic problem (Cameron, 2010). It is a student-led process of discussion and research in which the facilitator plays a supporting and guiding role, rather than the traditional teaching role of "content expert" and "lecturer". While PBL can be used across many disciplines, it is widely known for its use in medical education (Savery & Duffy, 1996), where PBL typically applies to several face to face class sessions (often 2 hours each) spread over 1-2 weeks, with student research activities between classes.

To summarise the process in terms of typical learning activities: students start by analysing and discussing the problem, including sharing any relevant prior knowledge. Next, students work together to determine where they need to conduct research to gain new knowledge in order to understand (and try to solve) the problem. Students will often divide up research tasks across the members of the group (individually or in small groups). Students then spend time (usually away from class) conducting research in order to gain knowledge to share back with the group (typically after a number of days). The students then "pool" their understanding based on their research and use this to further analyse the problem. The facilitator may at this point provide advice or guidance on issues that need consideration, and may even take on the role of the patient from the problem (in medical cases) in order to simulate the experience of the students asking questions of the patient in order to test their hypotheses about the problem. Students may also select certain laboratory tests, with the facilitator providing test results. Students typically then conduct another period of research away from class in order to investigate new lines of inquiry, and to

seek to confirm the group's proposed solution to the problem. After reconvening, the students share their additional research and use this to propose a solution to the problem and provide a rationale for this solution. The facilitator then provides feedback on the solution and rationale, including advice about key issues that may have been missed or misinterpreted.

While the above provides a summary of the typical PBL process as often used in medicine, there are many possible variations: for example, sometimes only one research stage is needed, rather than two. More broadly, the general investigative structure of PBL is used in many other disciplines where it may not follow the specific steps of a medical PBL. That is, the underlying style of teaching is similar – student-centric, group-based, problem-oriented, research-driven and an active rather than passive approach to the construction of knowledge by students. In some contexts this is known as "Inquiry Based Learning" (eg, Levy, Aiyegbayo & Little, 2005) and in other contexts this style of teaching does not have a particular "name", but follows a similar approach.

Role Play Overview

Another teaching strategy with a focus on generic skills like teamwork and communication is a role play (McLaughlan et al, 2001; Wills et al, 2009). There are several types of role plays – such as language learning role plays (where students practice their speaking skills) or business role plays (where students practice certain types of business interactions, eg, call centre conversations). In this paper, however, role play has a more particular meaning in terms of teaching scenarios where student take on a role and play out this role in a situation that often requires them to act in ways different to their own personal beliefs, and this potentially leads them to reflect more deeply on unfamiliar ideas and opinions (Vincent & Shepherd, 1998). This essence of this kind of role play is "walking in the shoes of others", and is based on the metacognitive skill of self-reflection and the ability to question one's own assumptions.

A typical structure of a role play in terms of learning activities is that students are introduced to a scenario which has a number of different actors/roles. Students are assigned to a role and then conduct research on their role. In many cases multiple students are assigned to each role, so students within a particular role group can work together on research and discussion of their ideas about their role. After a period of research and reflection on their role, students then enter into the role play "proper" and play our their role within the scenario, interacting with students in other roles. Most role plays involve some form of tension or conflict between roles, so students act out their role and try to understand the reasons for the conflict and different starting assumptions, and, where possible, try to negotiate a solution. After the role play proper, student step back from their roles and "debrief" by reflecting on their role and the differences between their role's ideas and their personal ideas (usually in discussion with other students and a facilitator).

As with PBL, there are many variations to the typical role play structure, such as more than one period for the role play "proper", including options for bilateral discussion between pairs of roles in order to work towards negotiation of a solution (eg, Versailles role play in IMS Learning Design, 2003). Some role plays may include an "event" that occurs during the role play that changes the scenario or changes the relationships between roles, and hence requires participants to adapt to these changes.

Alternative requirements to PBL and role plays

While PBL and role plays are effective teaching strategies in many contexts, there may be other teaching contexts that have alternative requirements to the standard implementation of these approaches. For example, medical PBL is typically implemented with a single correct solution, whereas in other disciplines, there may no obvious correct solution to a problem, and an important focus of student learning is considering different possible interpretations and approaches to a problem. Another issue can arise from the "static" nature of most PBL scenarios – that is, the scenario doesn't change after initial presentation. There are other teaching contexts where an evolving problem is important to student learning, both in terms of the ability to react to changing circumstances, but also for re-evaluation of initial assumptions/interpretations in the light of new information.

In the case of role plays, an alternative requirement for student learning might be that students imagine their attitudes and reactions in a given scenario *as themselves*, rather than as a different role. There are

many cases where students can reflect on how they might handle future employment scenarios (eg, psychology, business, government) given their own ideas, attitudes and values, rather than as an imagined role. Another benefit of focussing on a student's own approach is that it avoids any potential disjunction arising from lessons learned while playing a role that may not be integrated into the student's own beliefs (eg, if debriefing and consolidation of learning is insufficient). Finally, as with PBL, many role plays are based on static scenarios, whereas there can be benefits from an evolving scenario (as role plays with mid activity "events" illustrate).

In summary, the general structure of PBL and role plays, together with the alternative requirements needed for other kinds of learning (as described above) provide a foundation for a new kind of teaching strategy.

Developing Scenario Learning

Developing Scenario Learning (DSL) is essentially a hybrid of PBL and role plays. It begins with an authentic problem/scenario – typically a situation that learners could encounter in their future working lives. Unlike role plays, learners respond to this scenario as themselves – that is, they imagine how they would react in the future given that they become professionals in the discipline area of the DSL. Unlike PBL, the scenario does not have an obvious correct answer, rather it is open to a range of interpretations and possible actions. Students should be able to discuss the evidence for various interpretations and the merits of different responses, with the focus of learning on discussing multiple perspectives and drawing out the implications of actions based on these perspectives.

In practical terms, the first phase of DSL is the introduction of the overall learning experience followed by presentation of the initial scenario. The second phase involves students considering the scenario individually and then as a group, and answering various questions to assist students to articulate their view and to see the views of others. Shared answers to these questions provide a foundation for general discussion, which can also include an opportunity for research or information gathering to inform discussion (in the style of PBL research). To push students towards making a personal judgment (rather than simply exploring a range of possibilities), the second phase ends with students documenting their plan of action to address the current scenario. An example of a LAMS template illustrating DSL is provided in Figure 1, with the first and second lines of the scenario corresponding to the first and second phases described. In LAMS the Notebook and Q&A tools are used for reflection and sharing of answers to questions (and sharing the plan of action), while the "double tool" of Forum and Share Resources is used for general discussion and sharing of research. A stop point is used at the end of this phase to ensure sufficient time for student discussion prior to the next phase.

After the second phase, a development of the scenario is presented. While this development could take any form that is appropriate to the scenario topic, it is recommended that (in many cases) the evolution of the scenario be in a way that students might not have initially predicted, and that would lead students not only to reformulate their action plan, but also to reconsider their assumptions during interpretation of the initial scenario. From a metacognitive perspective, the development of the scenario could help student identify certain assumptions or biases in their initial reaction that led them to a plan of action that could be inappropriate given the development of the scenario. For example, consider the initial scenario and the development of the scenario described below (from an application of DSL to teacher training).

> Initial Scenario: You are a head teacher in a typical secondary school, trying to encourage staff to adopt a new teaching technique (role plays). An older male teacher, who is known to be quite conservative, is proving difficult to engage in the process – he seems to want to just continue as in the past. He seems not to be enjoying his teaching (he even complains he doesn't enjoy his newspapers anymore – which he was famous for always reading in the staff room), but does not seem willing to try new ideas. When you ask him directly about try this new approach, he is uncomfortable, distant and non-committal about what he will do.

After reflecting on and discussing this scenario in the second phase, students then proceed to the development of the scenario in the third phase.

A week later you receive a letter from a psychologist who is treating the staff member for serious depression. The psychologist notes that his patient is a private person who would rather not raise his troubles at work, but recognises that he is not coping with the idea of changing his teaching approach, especially for a strategy that can be quite emotional for students. The idea of facilitating a role play is causing a lot of anxiety. At the same time, he finds little pleasure in his teaching as it is. The staff member wishes to continue teaching, but is finding change difficult.

In the fourth phase, students then follow a similar pattern of reflection, shared questions and discussion as the second phase, but with the focus now on how they would change their plan of action given the development of the scenario. In the fifth and final phase, students reflect on their interpretation of the initial scenario (in phase 1) and how the development of the scenario (in phase 3) may have led them to reconsider their assumptions about the initial scenario. These third, fourth and fifth phases are illustrated by the third, fourth and fifth "line" of activities in the LAMS template in Figure 1.
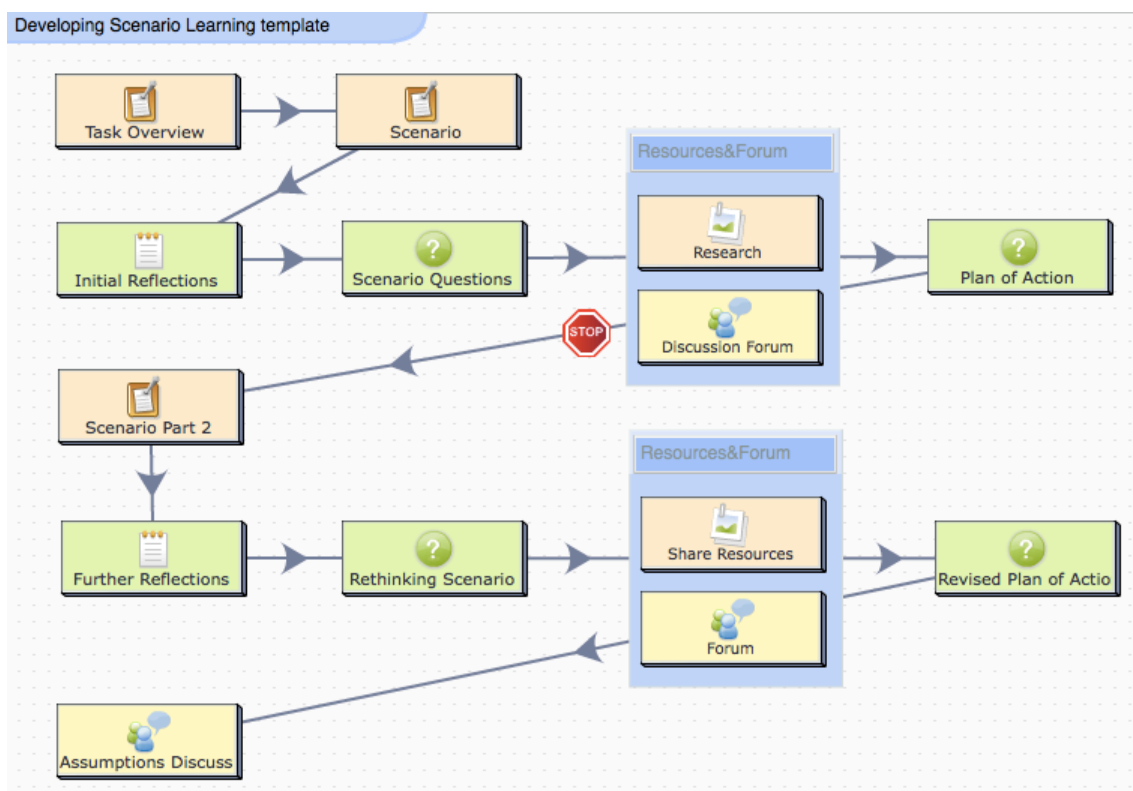

Figure 1: Template for Developing Scenario Learning (in five phases – one phase per line) in LAMS Author.

Sample questions for use in the second phase could be:

• What are your initial thoughts?
• What knowledge issues might be at play?
• What attitude issues might be at play?
• What emotional issues might be at play?
• What additional information/research might you need (either for yourself, or to address the situation)
• What do you see as the problem, and what is your plan of action to address this problem?

Sample questions that could be used in the fourth phase (that is, after the development of the scenario) could be:

- What are your new thoughts?
- How did your initial assessment of the situation fit with the letter?
- How do you need to revise your strategies in the light of the letter?
- What additional information/research do you need?
- What is your revised plan of action?
- What are your reflections on the whole scenario?

The sample template in LAMS illustrates a way of implementing DSL in a fully online context. However, the concept could equally be implemented entirely face to face, or as a blended learning approach. In terms of blended learning, if DSL was run over a fortnight using the LAMS template above, then a weekly face to face tutorial could be conducted in place of (or together with) the discussion forum(s) in the second and fourth/fifth phases.

There is an important role for the teacher as facilitator during DSL, particularly in guiding discussion. For example, the facilitator should watch out for students who struggle to adapt their plan of action following the development of the scenario – persistence with an inappropriate plan of action could indicate a type of "cognitive rigidity". As facilitator, it is important to watch out for this phenomenon among some students and to offer careful prompts to such students to help them see the need to reconsider their approach following changed circumstances. This may include gentle guidance to help students recognise that their initial interpretation was mistaken or insufficient.

Variations of Development Scenario Learning

There are many small variations that could be made to the timing, choice of online tools and phrasing of questions in the DSL example above. Some more significant variations to DSL include:

- There could be two (or more) developments of the scenario (provided that this remains authentic to the discipline and scenario), allowing for multiple phases of reflection and reconsideration of action plans.
- If DSL is used multiple times within a course, then over time student might tend to leap to unlikely or surprising interpretations of the initial scenario (based on prior DSL examples). To overcome this, it would be useful to include some more "likely" scenario developments after some less expected outcomes so as to encourage students to consider both likely and less likely interpretations of initial scenarios.
- For a more complex implementation of DSL, students could be asked to make a decision on a plan of action at the end of the second phase – for example, whether to act on a certain dimension of the problem or not (eg, in the teaching scenario above, the decision could be whether to raise performance concerns with the teacher, or to focus only on advice). Based on the group's decision, there could be two different developments of the scenario (arising from the nature of the decision). In terms of implementation in LAMS, this could be implemented using Branching based on Voting (NB: students would need to agree on their vote as a group, and then each student individually chooses the same vote in order for all students to be taken to the appropriate branch). Going further, there could be more than two voting options (and hence more than two branches), and it is possible to imagine a subsequent voting decision after the first vote and the subsequent development of the scenario, leading to a "branch within a branch" (an example of this in LAMS is given in Figure 2).
- A different style of DSL is a crisis situation, such as responding to an evolving bushfire or security threat. In this case, student may have different information presented regularly (eg, daily) over a period of time (1 week), with students expected to discuss and make decisions throughout the developing scenario. An example of this structure using timed "Stop" points in LAMS is given in Figure 3.
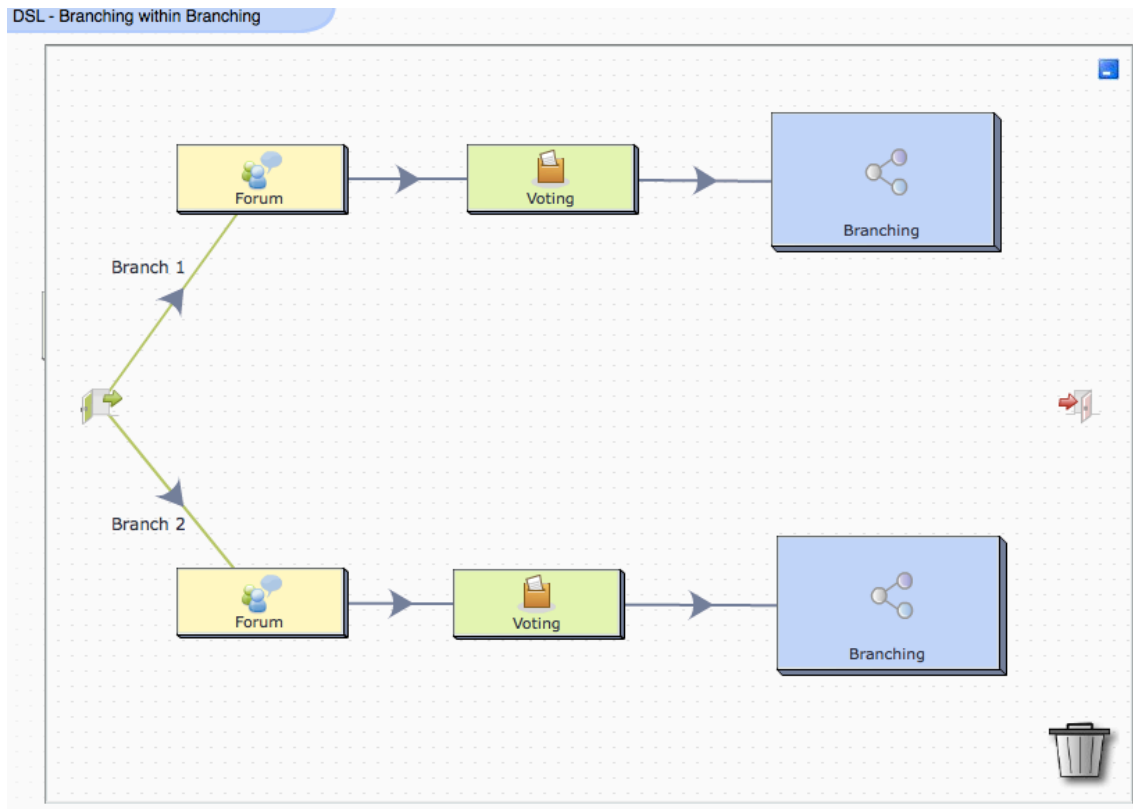
Figure 2: A view of a Branching activity within LAMS showing initial Branching according to a previous Vote (not shown), followed by discussion in a Forum, then a further Vote, leading to a second Branching activity (NB: the sequence ends at the end of each branch – the branches do not merge back together again at the end) - the outcome is four different final scenarios.
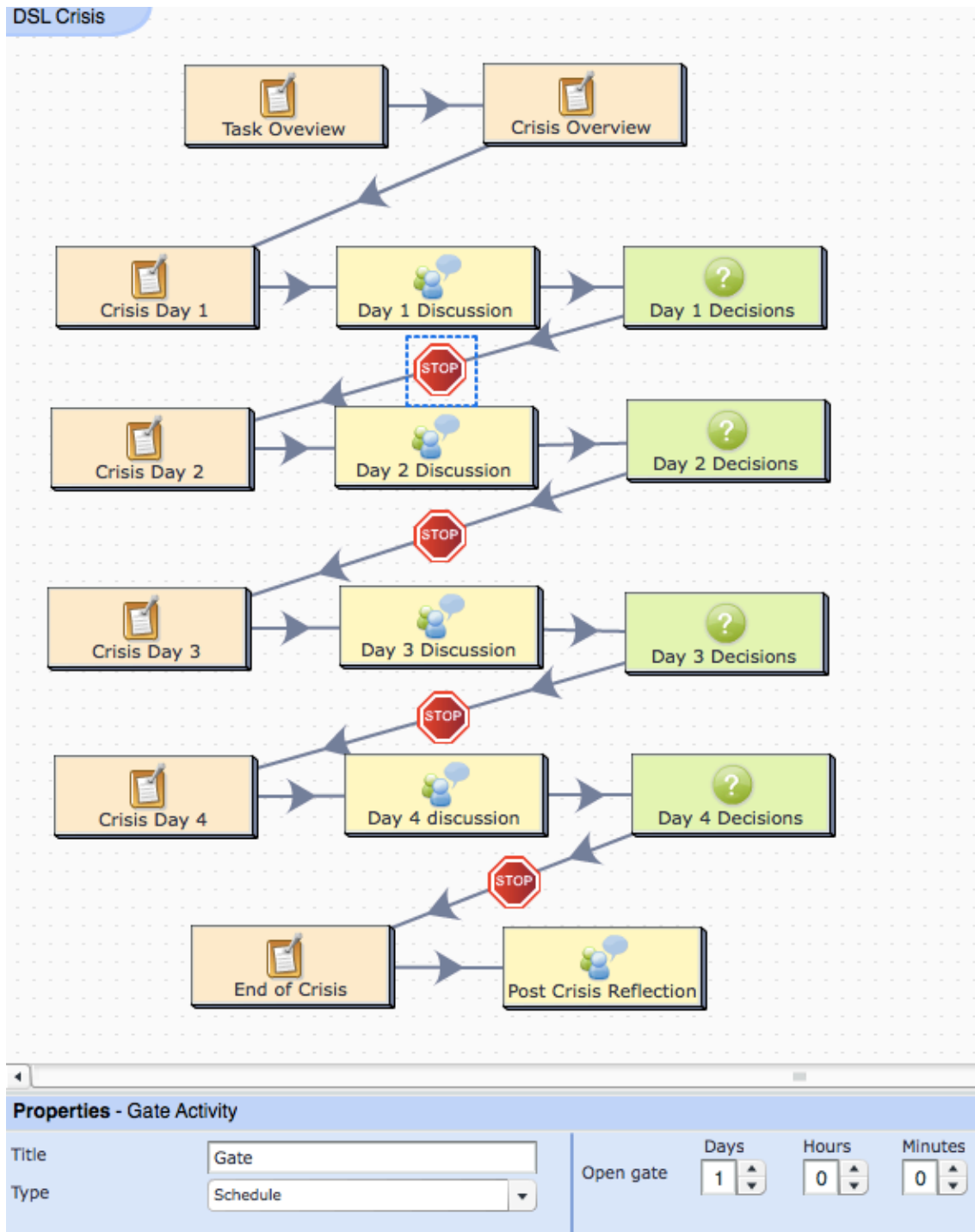
Figure 3: An crisis-style example of Development Scenario Learning in LAMS using timed Stop points (see Preference area at the bottom for end of Day 1 Stop point).

Conclusion

Developing Scenario Learning (DSL) is not a completely new teaching strategy – indeed, there may be examples similar to those described above already in use by teachers in various contexts. This paper has attempted to provide a conceptual background to this approach based on a hybrid of PBL and role play concepts, together with the development of a scenario (often in unexpected ways) and the implications of

a developing scenario for metacognitive learning such as reflection on of assumptions and biases. DSL is likely to be of use in the humanities, social sciences and professional education (such as law, business, teacher training, psychology, etc) where there is value in having students consider scenarios from different perspectives, and reflecting on their assumptions when making decisions about actions, as well as the ability to change a plan of actions according to changing circumstances and revised assumptions.

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