



The transformative potential of the DiAL-e framework: Crossing boundaries, pushing frontiers

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This paper investigates the responses and impact upon a group of adult learners (educators) to a novel framework for the use of digital artefacts in tertiary education settings (the Digital Artefacts for Learner Engagement Framework: DiAL-e). The framework was developed as part of a UK project, sponsored through the Joint Information Services Committee (JISC), to encourage academics and other educators to adopt digital artefacts (in this case video) as part of their teaching, learning and research strategies. Eighty academics were involved in a series of focus groups to pilot the framework during 2006-2007, and the data from these workshops (recorded in video format) is analysed using Mezirow's transformative learning theory as a lens to gauge the extent to which they have experienced perspective transformations. The study categorises a number of different responses and proposes a tentative model for professional development in tertiary education settings based on the centrality of critical reflection and discourse.

Keywords: 'disorientating dilemma', transformative, learning designs, meaning structures, video

Introduction

The design of learning experiences for students in higher education is dominated by perceived relevance to subject specific resources with the dominant focus of the learning experience remaining one of knowledge transmission and accumulation. The Digital Artefacts for Learner Engagement Framework (DiAL-e) represents an alternative philosophy, supporting educators to incorporate media rich artefacts and resources into their teaching and learning practices, with learner engagement as its primary objective (Burden and Atkinson, 2008). It is predicated around the application of engagement activities. These activities are designed to engage learners in meaningful and challenging exercises focused on knowledge construction and meaning-making, not the reception of 'transmitted content'. In this model subject content is an important, but subsidiary consideration when designing learning experiences. By placing the emphasis on the 'application of resource for engagement', and not subject content, the DiAL-e framework enables educators to use a far wider range of artefacts/resources, from collections and sources they might not normally consider appropriate, to achieve effective learning engagements with their students.

The authors experience has been that as educators engage with this alternative model for the design of learning experiences, their reflections and experiences, mediated through their expectations, bring about aspects of change which have much in common with Mezirow's phases of transformative learning (1978, 1990, 1991, 1997, 2000). This preliminary study examines the extent to which participants in a series of national and international workshops experienced elements of 'perspective transformation' as a result of the 'disorientating dilemma' produced through their initial encounter with the DiAL-e framework.

Background

Between January 2007 and July 2008 the authors developed an original learning design framework to support the effective adoption of the Independent Television News (ITN) NewsFilm Online archive in the further and higher education communities in the UK (<http://213.133.67.199/JISC/index.php>). The archive, like many similar collections currently being digitised through the sponsorship of the JISC Digitisation Programme (http://www.jisc.ac.uk/whatwedo/programmes/programme_digitisation.aspx), is

intended to support the development of media rich teaching, learning and research and features thousands of hours of segmented video clips along with a selection of original scripts and running orders. However, the use of resources such as these, as part of a principled teaching and learning strategy (Laurillard, 2002) is not yet common. This paper explores evidence generated through developmental workshops for aimed at promoting the pedagogical uses of digital video resources, in a fashion that is student-centred and sustainable. During the development stages of the project the authors organised a series of focus groups and workshops to test and validate the underlying principles of the DiAL-e framework along with the practical exemplars which form the basis of the support materials. Events at various locations across the UK (London, Glasgow and York), and in a variety of international technology related conference workshops (Croatia, Hong Kong, Singapore and Austria) were organised for this purpose and were attended by over eighty educationalists. Sessions, lasting a half and full day, were carefully designed as rich discussion opportunities. Interactions and feedback were video recorded, providing the data for this initial study and paper. The development and theoretical underpinnings of the framework itself are described more fully in a conference paper prepared for the EDMEDIA conference in Vienna in 2008 (Burden & Atkinson, 2008).

The original intention of the workshops, and the associated video data collected, was to refine the DiAL-e framework. However, as the data was reviewed it became clear that it was not only valuable for the development of exemplars and the language used to articulate the pedagogical affordances of the framework, but also evidence of something else. In reviewing transcripts of the workshops it was evident that something significant was occurring for participants. Patterns emerged from the workshop data that suggested strong correlations with the underlying principles of transformative learning, and in particular Mezirow's phases of development and stages of critical reflection. The reaction of participants in our developmental workshops, to a radically different framework for the creation of learning designs based around digital moving image artefacts, were therefore reviewed through the lens of transformative learning theory. A series of different engagements are described in which we believe participants demonstrate their reorientation and reconsideration of existing conceptual patterns, or meaning structures (Mezirow, 1978), around the way in which they use digital media (in this case video) to support learner engagement with new ideas and concepts.

Why transformative learning theory?

Starting with a flurry of intense academic activity following the publication of Mezirow's original journal publication in 1978, the interest in transformative learning theory has continued to grow whilst expanding into a wider range of subject areas and disciplines. Mezirow's original research focused on women adult learners returning to a college programme after a career break, but subsequent studies have expanded to include a variety of different care-based professional programmes including nursing, social care and education itself. It has also enjoyed considerable attention in community based learning where it is seen as a model for emancipatory community action.

The constructivist tradition developed by Friere and others has articulated the process of meta-cognition referred to as 'conscientisation' in which adults develop an awareness of the 'socio-cultural' realities which determine the context of their experience (Friere, 1970). Importantly, Friere suggests this awareness is the necessary element in the individuals' ability to act on reality in order to transform it. The constructivist notion that the individual possesses the capacity to find meaning is also explored at an individual level by Mezirow's advocacy of rational critical reflection as a tool for transformative learning. This critical reflection, Mezirow suggests, is frequently the result of "disorienting dilemmas" in which the individual is confronted with situations outside preconceived 'comfort zones', and is challenged by notions that prompt a re-conceptualisation of experience. Friere suggests then that the individual must recognise their context, Mezirow that such disorientation within that context is the basis of metacognitive transformation.

Boyd and Myers (1988, p.277) describe the transformative realisation as a 'discernment' process in which three stages, of 'receptivity', 'recognition' and 'grieving', are encountered. An individual must be receptive to 'alternate views' and then recognise such alternative views as either appropriate or genuine. In the final stage the individual 'grieves' for the notion that their previously held view is no longer tenable or at least is not unassailable. Transformative learning involves the development of reflective and critical abilities that suggest a willingness to engage with alternative perspectives in a respectful way. This process is not a purely psychological one but might be defined in Friere terms as 'socio-cultural'. As alternative perspectives become alternate realities, transformation occurs for learners but also for educators and the developmental tools used to support the learning.

Transformational learning explains how adults learn, based on the premise that individuals derive meaning in life both from the experiences that they live and from their existing expectations about the world, or what Mezirow terms ‘meaning structures’ (Taylor, 1998, p.6). However Mezirow’s perspective on adult learning and transformative learning in particular is not without its critics. Boyd is representative of a broad school of opinion that argue for a less rational approach than Mezirow proposes, and more emphasis on the emotional aspects involved in transformatory learning, a process he terms ‘discernment’.

At one extreme this view is articulated by Freire who argues for a far greater emancipatory focus in adult learning theory, criticising Mezirow for his misappropriation of Habermas’ ideas around social action (1979).

Why did we adopt transformative learning as a lens for exploring the impact of this framework?

There are an endless amount of different learning theories available to assist in understanding the nature of any educational endeavour. We acknowledge the importance of many of these including the socio-cultural and constructivist outlooks referred to already. However transformative learning theory, taking on board the criticism and alternative perspectives that have merged over the year, promises to shed light on the perspectives and experiences of individuals as they are challenged to examine their existing habits of mind when faced with a radical departure from what might normally be expected. We believe the introduction of the DiAL-e framework in the workshops we have organised to date represents a trigger to initiate a mind shift in the approach individuals adopt to the use and deployment of resources within a wider design paradigm. Whilst alternative learning theories assist in understanding the process of learning design itself, transformative learning theory is uniquely placed to assist in understand the personal shifts and processes experienced by individuals in undertaking this process. In our workshops described above, participants were challenged to engage in the ‘the study of making sense of one’s experience’ (Taylor, 1998, p.1). Transformative learning was seen by the authors as a useful theoretical lens through which to understand the process of adult learning, but also a practical vehicle for enabling adult learners to explore and support personal change. The means by which individuals ‘make-meaning’ is described as being a complex web of specific cognitive structures (e.g. knowledge, beliefs, values) and broader cognitive ‘perspectives’ (e.g. world-views or paradigms) which are gradually ossified during childhood, becoming less and less receptive to modification as we enter adulthood. Whilst these structures provide an important means by which the individual helps to rationalise an often irrational world (Taylor, 1998, p6) they also constrain our view of the world and our potential to impact upon it, ‘they are like a double-edged sword, whereby they give meaning (validation) to our experiences, but at the same time skew our reality’ (Taylor, 1998, p.7)

Mezirow likens meaning perspectives to a sieve filtering our daily experiences. In most cases adults modify their meaning structures slightly when faced with new experiences, in order to protect or maintain their existing paradigms or world-views. However, if the experience proves too incongruent with their existing meaning structures it is likely to be rejected out of hand or alternatively (and more rarely) a perspective transformation occurs in which the meaning perspective is fundamentally and irrevocably altered. This is the focus of this article as we explore how far a potentially disorientating dilemma (in this case the presentation of the DiAL-e framework) has led individuals to question and alter their underlying conceptual paradigms about teaching, learning and the use of new technologies. It should be noted that Mezirow describes a disorientating dilemma as only the trigger that might bring about a perspective transformation, regarding critical reflection and rational discourse, on the part of individual, as central to the process of reappraisal of previous assumptions and presuppositions before accepting a new way of seeing the world. The significance of critical reflection in the process of bringing about a perspective transformation in the manner described by Mezirow is fiercely contested. Some like Boyd and Myers (1988) have suggested this over-emphasises the importance of rational, cognitive thought and argue the case for activities such as intuition and creativity to be given greater prominence in this process. Others like Freire and criticise Mezirow for what they see as his overly narrow focus on the individual at the expense of the wider socio-economic backcloth against which their individual actions form but a part of the greater societal tapestry. In addition to being one of the most controversial aspects of Mezirow’s theory this is also one of the least well understood in both the theoretical and empirical literature. Whilst it was not possible in the context of this particular study to engage individuals in prolonged critical reflection or to explore some of the criticism levelled against Mezirow in any more depth, limited reflection and discourse were built into the design of the workshop through the feedback and plenary sessions. The potential value of this activity as a professional development exercise is further explored in the final part of this paper.

The theoretical literature on transformative learning is considerable but the empirical data-base is rather thin and is dominated by unpublished studies (for a list, see Taylor, 1998, pp.69-74). One of the few researchers to have undertaken empirical research relating to the use of transformational learning theory in a technology context is Kathleen King (1999, 2002). Her work with adult teacher educators sheds some interesting light on this relatively under-researched domain. She also notes the centrality of critical reflection as a factoring determining teachers likelihood of incorporating technology in their classrooms. She has also developed an interesting tool to measure the extent to which teacher have experienced a perspective transformation (King, 2002).

Transformative learning and the DiAL-e framework

In terms of transformative learning theory the DiAL-e framework could be seen as a potential disorientating dilemma (Mezirow, 1978) because it challenges the underlying assumptions upon which most academics use resources to support learning in further and higher education. It also runs counter to accepted wisdom amongst academics in that it positions a focus on learner engagement or activity above the content nature of digital artefacts when academics are thinking about how to use digital resources. In most situations the norm would be to search for resources related very closely to the subject matter of the teaching topic. In the DiAL-e framework the emphasis is shifted quite dramatically to learner engagements. Indeed the framework has been designed to force academics out of their 'content default' mentality, arguing that digital resources can be used in radically different ways from the content alone. It might be argued that the majority of academics will hold a series of meaning structures about teaching, learning and the role of digital resources that are firmly fixed in a content/transmission mode or paradigm. This premise would need further investigation perhaps through some empirical investigation such as an initial user questionnaire.

If Mezirow is correct, the 'disorientating dilemma' (i.e. the DiAL-e framework) is unlikely to initiate a perspective transformation in itself. This needs an associated process of critical reflection in which the adult is encouraged to create reflective logs and consider, and re-conceptualise, their existing paradigms of teaching and learning with digital tools against the alternative on offer. This was (as described above) an element of the process largely missing in the workshops we conducted in 2007-2008.

Methodology

Our methodological design is largely framed by an interpretive approach with the emphasis placed on the collection of qualitative data in the form of focus group feedback. To date (October 2008) we have directly engaged approximately 80 academics and educational developers across diverse academic communities within the United Kingdom, Croatia, Hong Kong, Singapore, Australasia and Austria in full day and half-day workshops. Participants for the workshop series described above were recruited from across the UK higher and further education sectors following an open invitation to the community through various mail and distribution lists. Although the invitation covered the entire post-compulsory sector, actual recruitment was skewed towards representatives from the higher education community (see methodology section below). Participants were largely self-selecting (a small number were 'sent' by their institutions) and are therefore likely to be un-representative of academia as a whole. Indeed, many of them were educational developers and learning technologists in higher education rather than subject specialist academics. Therefore we might reasonably presume they were pre-disposed to the notion of using media rich resources to support teaching and learning in higher education. We do not have data at this point to establish a base-line in terms of participants pre-existing meaning structures, however we do believe that our analysis of the data reveals some of their underlying and existing meaning structures.

The workshops were designed with a blend of theoretical and practical sessions to acquaint participants with the underlying philosophy of the DiAL-e framework, and the opportunity to test a limited number of the exemplars that we had created to populate the model. Whilst the theoretical sessions were largely procedural in nature, the exemplar sessions were very practical, and featured numerous opportunities for individual and group feedback. For the purposes of developing and refining the exemplars (and indeed the framework itself), the sessions were recorded (video) and the relevant sections later transcribed.

We focused the practical sessions on three separate learning designs in the framework and repeated these in each of the workshops enabling a degree of consistency in the feedback collected. In the first activity participants were shown a short newsreel clip (30 seconds) based on a variety of prototype helicopter designs that had been edited from several longer clips. They were asked to work in pairs to identify one of the learning designs from within the DiAL-e framework around which to construct a learner engagement

activity. Participants were encouraged to explore the framework more carefully in order to identify a purpose and activity for students that might be supported by media of this nature. In the second exemplar the activity was reversed and participants were asked, again in pairs, to identify a suitable clip from the NewsFilm Online archive to illustrate one of the conceptual learning designs that we had pre-selected. The learning design was developed to illustrate how a conceptual skill – in this case, analysis - could be developed and taught using digital video. A teaching device called the ‘10-frame selection’ was used to illustrate how a series of still images carefully selected from any moving-image clip could serve as a guide to encourage learners to analyse a story or piece of media more carefully. In the third exemplar, participants studied another short clip from the archive based on an interview filmed in 1961 between a British interviewer and an American scientist who had recently won the Nobel Prize for physics. Participants were given a free choice from the learning designs in the framework and were asked to identify a suitable activity they might develop for students using this particular piece of media. This activity was chosen deliberately in order to encourage participants to think more creatively about the use of resources, which on the face of it were relatively limited in their appeal and applicability. We were eager to identify whether participants could see even a classic ‘talking head’ video as affording opportunities beyond its subject content.

In each of the practical activities, participants were asked to reflect critically on the activity they had developed before making a verbal presentation to the full group. The feedback sessions were recorded and participants were encouraged to provide constructive feedback to each other. These sessions were given especial attention by the authors, anticipating that these would provide rich and illustrative examples to supplement those of our own, and to indicate the degree to which participants ‘bought into’ the model on offer. It became evident very early on in the workshop process, that as well as gathering valuable developmental data to refine our learning designs framework, we were seeing a change in perception amongst participants of the value of archive materials, and of the opportunities for practical deployment in learning and teaching.

The data we collected, and subsequently analysed, from each of the workshop sessions was in the form of video records. Each of the workshop feedback sessions was video-recorded as participants described how they would use the framework or explained what clips they would use to illustrate it. These video records amount to approximately twenty hours of data and were subsequently transcribed by a professional transcription agency. The data was then independently ‘cleaned’ by two of the researchers prior to its use in NVivo8 for analysis purposes. NVivo8 was selected as an appropriate analysis tool for a number of reasons. Firstly, because we wanted to maintain the richness and contextual detail of the original data (i.e. the video records) and NVivo8 enables video records to be studied alongside their transcripts providing a degree of visual contextualisation that transcripts alone miss. Secondly, because we had decided to adopt a phenomenological approach to our analysis based around ‘grounded theory’, (Glaser & Strauss, 1976) and NVivo is strongly influenced in its underlying design by this approach (Gibbs, 2002).

Findings and analysis

In the initial stages of analysis we adopted a phenomenological methodology seeking to identify the meaning and interpretations of comments by participants as they encountered the DiAL-e framework for the first time. We reviewed each of the data sets reflectively using an open coding procedure to analyse the data eschewing, as far as possible, pre-existing theory. We sought to code the data without preconceptions or pre-defined notions of what we might encounter, in line with an interpretative grounded theory approach (Strauss & Corbin, 1990). The ‘free-nodes’ which emerged from this preliminary analysis of the data are shown below:

Table 1: Initial coding categories

1. Epistemological concerns	5. Structural uncertainties	9. Mis-match
2. Eureka moments’	6. Surprise	10. Mimicking
3. Subject fit	7. Outside of the box	11. Presentational
4. Group-think	8. Theory fit	

1. *Epistemological concerns*: this node encapsulated comments in which participants reveal an epistemological dilemma associated with their existing beliefs about the nature of their own subject discipline, for example, how they see knowledge should be codified and organised in their discipline area.

2. *Eureka moments*: although relatively rare in this particular data set, there were occasions when participants experienced an epiphany or revelation, which we have termed a 'Eureka moment' because they suggest the individual has hit upon a new mental construct or way of conceptualising an idea or topic.

3. *Subject fit*: this code is used to describe examples where participants affirmed their support for the DiAL-e framework by indicating the designs would work well in their own subjects or in others.

4. *Group-think*: several respondents gave responses which revealed a degree of 'group-think' occurring within the workshops. These typically included reference to the specific learning design categories we have identified, picking up on comments made by other individuals or groups during the recorded feedback sessions.

5. *Structural uncertainty*: this code was used to denote uncertainty on the part of the participant about which part/s of the framework a particular idea or example would fit. Probably does not understand the language although is supportive of the concept beyond the framework itself:

But what's the purpose? Why are you actually trying to get them to do[that]? Are you trying to get them to précis what they've just seen and (unclear) the, you know, main points, which is the all ten shots here, or (unclear) something quite different and you're actually trying to get them to use it to provoke them to think about it, how things would have (unclear) how things have changed and what it means today and so perhaps how (unclear) things and also plan things which are very different. So (unclear) what we've got it would be much more ... (London workshop respondent)

6. *Surprise*: examples of disorientation where the participant is caught out or genuinely surprised by something they did not expect to see in this place or context

7. *Outside the box*: this code describes responses that were entirely novel or unexpected. They often indicated the need for new categories within the framework itself (some of which we have subsequently incorporated) and therefore suggested participants were engaging with the framework at a deeper level by developing their own conceptualisation of how it might be operationalised.

8. *Theory fit*: this node is superficially similar to the 'subject fit' node, but recognises a different level of engagement with the framework by respondents as they demonstrate their support for the underlying philosophical and theoretical perspectives upon which the model is based. In these statements there is usually an implicit acknowledgement of the participant's espoused learning theories that match with the exemplars and designs offered through the framework.

9. *Mis-match*: this category is reflected by comments expressing a strong sense of unease caused because of a perceived mis-match between the participants discipline area or types of students taught (e.g. age range) and the learning design/activity being illustrated

There's a couple of them actually that really pounce out at you. And um, again, getting a group of people to work with that would be relatively easy in that particular subject, but again, there was only **really one about young people**, so that's ... (Glasgow workshop respondent)

10. *Mimicking*: this category is a more extreme version of the 'group-think' set in which individuals consciously, or unconsciously 'mimic' the internal structures of the framework in their recorded responses (e.g. in language, ideas, values) For example, in response to the open-ended helicopter exemplar one participant responded

Um, there's obviously, also there's the very obvious one of you know, that **predict, observe, evaluate** for the student of aeronautics. Will it actually fly? Stop the clip. Do you think it'll get off the ground? Why do you think it will get off the ground? Why do you not think it's going to get off the ground? So there's the obvious one there as well. (York workshop respondent)

The 'predict, observe and evaluate' comment is a direct reference to the language used in one of the conceptual learning designs in the framework itself that indicates a degree of cognitive support for this construct.

11. *Presentational*: ideas or comments which illustrate a traditional presentational approach to using video clips with students largely passive .

Following this initial phase of open coding we then shifted our focus towards axial coding to explore the relationships between different nodes. In NVivo this phase of grounded theory is represented through the use of 'tree nodes'. In this case we believed we had identified two main categories of phenomena which were 'affirmative' and 'critical' responses. 'Affirmative' responses indicated support for the general approach we were advocating in the workshops, and 'critical' responses indicated some degree of opposition or concern. We felt the categories identified above could be represented along this continuum, stretching from affirmative at one end to critical at the other.

Affirmative responses:

The following codes were initially identified as belonging to the 'affirmative' tree node, indicating broad support or alliance with the new framework tool:

2. Eureka moments; 3. Subject fit; 4. Group-think; 7. Outside the box; 8. Theory fit; 10. Mimicking

In the case of Eureka moments (2), although they were rare, it was immediately obvious that the participant had experienced a significant shift of perspective as a result of the learning activity. In the case of Subject fit (3) this was less obvious and it might be expected that such comments would be grouped under the critical heading since they epitomise the subject centred mindset our approach is designed to counter. This type of comment was fairly common but we chose to see this more positively as an indication that the individual was beginning to recognise the possibilities of using this tool across a range of disciplines and was therefore making a personal connection to the data through their explicit support with examples of a subject nature.

Whilst a category such as Group-think(4) can be interpreted in several different ways we opted to see it as generally indicative of an affirmative mindset in which individuals collectively mimic or support the principles of the framework itself. This suggests participants are beginning to recognise they hold common perceptions and experiences around the framework and are prepared to offer support to other individuals or groups undergoing a similar experience. Like Eureka moments (2) examples of the category Outside the box (7) were relatively rare but when they occurred it was seen as a vindication of the radical approach we were adopting since it indicated a willingness on the part of the individual to move beyond the learning designs of the framework itself. For example the idea of using an entirely unrelated newsreel clip in an allegorical fashion was not a learning design we had considered before this point. Subsequently we added a tenth learning design to the framework called 'figurative' which incorporates allegories, metaphors and similes, as ways of explaining ideas and concepts. In the case of Theory fit (8) we recognised this as a higher stage of engagement with the ideas of the framework compared, for example, to Subject fit (3) because the individual was engaging with the principles or designs inherent in the tool rather than just the content matter of the clip which was being used as a stimulus for the exercise. Finally Mimicking(10) was seen to be firmly affirmative because it suggested participants were consciously or subconsciously connecting with the language, and therefore the principles of the framework itself. This was seen as a more extreme version of the Group-think (4) category described above.

Critical responses:

The remaining codes were identified as belonging to the 'critical' tree node, indicating concern or disagreement with the underlying principles behind the framework tool. These were:

1. Epistemological concerns; 5. Structural uncertainty; 9. Mis-match; 11. Presentational;

In the case of the Epistemological concerns (5) category we initially identified this at the negative extreme along the continuum described above. Comments grouped under this code were invariably critical of the idea of using media produced for one purpose (in this case journalism and news stories) in ways that altered or distorted their original form (e.g. by removing the sound-track). The Structural uncertainty(9) category, on the other hand, described less negative opinions and summarised comments expressing confusion about the framework itself. Typically comments described uncertainty about what each learning design might mean or about the spaces dimension of the tool. In the case of the Mis-match

(9) category participants referred to the unsuitability of the exemplars and learning designs we had demonstrated on the basis of not matching the kind of students (e.g. age profile) or contexts (e.g. ability profile) they were teaching in. These comments appeared to be critical of the approach we were proposing because they appeared inflexible and bounded by factors we could not change (e.g. the age of the pupil). Finally, the Presentational (11) category represented a significant number of comments in which the participant indicated overtly a wish to use the media largely as an illustrative device separate from any discussion or indication of what the student would be doing at this time. This was seen as representing a quite different mindset from the engagement-based philosophy that underpinned our thinking in the original design of the framework.

Discussion of the findings

For the purposes of analysing the data we started by mapping our emerging categories listed above, against Mezirow's own ten phases of development as show below in order to gain an impression of the likely similarities.

Table 2: Mezirow's phases of development set against an initial coding pattern

Mezirow's 'phases of development'	Results of 'open coding'
1. A disorientating dilemma	<ul style="list-style-type: none"> • Introduction to the DiAL-e framework
2. Self-examination with feelings of guilt or shame	<ul style="list-style-type: none"> • Epistemological concerns* • Structural uncertainties • Mis-match
3. A critical assessment of assumptions	<ul style="list-style-type: none"> • Surprise • Eureka moments
4. Recognition that one's discontent and process of transformation are shared and that others have negotiated a similar change	<ul style="list-style-type: none"> • Group-think • Subject fit
5. Exploration of options for new roles, relationships and actions	<ul style="list-style-type: none"> • Seeing outside of the box
6. Planning of a course of action	
7. Acquisition of knowledge and skills in implementing one's plans	
8. Provisional trying out of new roles	<ul style="list-style-type: none"> • Mimicking*
9. Building of competence and self-confidence in new roles and relationships	<ul style="list-style-type: none"> • Theory fit
10. A reintegration into one's life on the basis of conditions dictated by one's new perspective	

* indicates a weak fit (e.g. suggests there are more sub-stages than Mezirow's model would allow for)

A number of patterns or issues emerged from this preliminary mapping against the phases of development Mezirow initially proposed. Some of our categories, based on the primary interview data we have collected, appear to sit outside any of the ten phases described above, or have only a tenuous association with any of these phases (these are marked with an asterix). For example, the presentational category does not appear to match any of the phases described by Mezirow. In these cases it might be assumed participants have not actually under-gone a disorientating dilemma at all as their ideas are essentially those we might have expected without the framework. We cannot be certain because we did not undertake a base-line survey of participants existing meaning structures, a point Taylor notes rarely occurs (1998, p.43)

However, after re-reading and reflecting upon the axial codes we had originally constructed an alternative interpretation from the continuum representation began to emerge. It became apparent that the central focus or underlying narrative within the data was not in-fact polar opposites (i.e. affirmative versus critical responses) as we had initial described, but rather a single phenomena linking all of the categories: varying degrees of disturbance in response to the disorientating dilemma we had created, rather like ripples emanating from a central spot in which a pebble is dropped. In this case the disturbance or 'disorientating dilemma' was the introduction of an alternative framework for using digital media in support of teaching and learning. This became evident as we examined the axial codes (and their children) against the criteria established by Strauss and Corbin for choosing a central category (Strauss & Corbin,

1990, p.147, cited in Gibbs, 2002, p.225). In particular they refer to the ability of the central concept to explain variation as well as the main point made by the data. We believe the range of comments expressed by respondents relate to a wide variation of views and opinions all focused on the impact of a disruptive mental construct introduced through the framework. Hence, in our re-conceptualised visual representation the model is not linear but rather concentric, in the form of ripples emanating out from the centre where the disruptive element has been introduced. They are all shades of opinion associated with a disruptive cognitive device (the framework) ranging from those who were experiencing a mildly disruptive shift in their meaning perspectives through to those who had made quite a radical shift, passing through the stages Boyd describes as 'grief' and into a realisation of a new way of seeing the world. We have attempted to represent this in the diagram below (Figure 1).

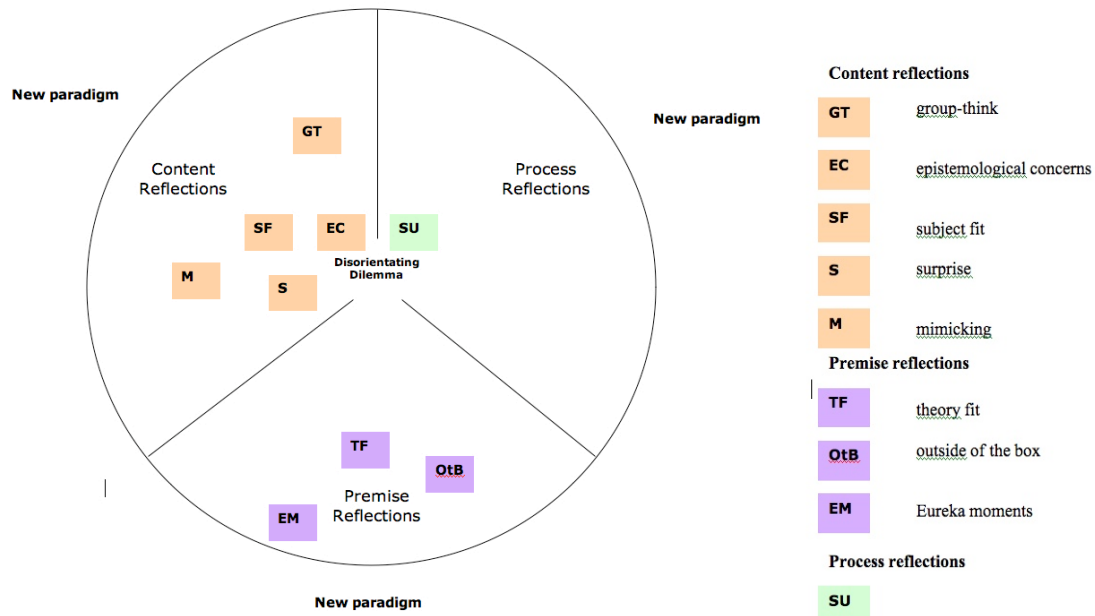


Figure 1: Mezirow's processes of reflection and phases of development mapped against codes

Critical reflection and rational discourse

Critical reflection, or reflectivity as it sometimes called, is deemed by Mezirow to be the central activity by which 'perspective transformations' are cultivated. (Wang & King, 2006) We are conscious that the truncated nature of the field trials we have run did not offer participants an extended opportunity for serious critical reflection or rational discourse, as advocated by Mezirow himself. However these two elements were both designed into the workshops we ran, albeit on a shortened timescale. It is particularly interesting to note, therefore, the extent to which serious shifts in conceptual mindsets took place even within a relatively foreshortened timescale. Indeed we feel this particular aspect of the workshops needs further investigation and research as we seek to establish just how concentrated we can make the critical reflection episodes whilst retaining the impact Mezirow claims they have when developed over longer timescales.

Mezirow (1991, p.104) identifies three different types of reflection and seven levels of reflectivity. These include:

- Content reflection
- Process reflection
- Premise reflection

Content reflection is in a sense the least disruptive or deep form of reflection based on an examination of the surface content or description of a problem. Process reflection is more elaborate and intense, focusing on the strategies which are used to solve a problem. The most intense and meaningful form of reflection is Premise reflection in which the individual questions and reflects upon their underlying assumptions and presumptions. Figure 1 represents our initial attempts to map the codes we have identified against these three types of reflective processes identified by Mezirow. In doing so it provides a visual representation of where participants are situated, cognitively, following from the introduction of a disorientating

dilemma, in this case a novel approach to the selection and use of digital media resources to support teaching and learning.

Conclusion

We began the development of the DiAL-e framework by theorising about how to encourage a range of pedagogical activities to engage students in post-compulsory settings. We identified the stereotypical large lecture situation as representative of a traditional, didactic, information-delivery, or presentational, approach to teaching and learning. We sought to postulate a range of learning designs to challenge this paradigm. Our theorising was largely concerned with exploration through Laurillard's conversational framework (Laurillard, 2002) of the process in which practitioners move from their 'default' position, their preconceived notion, in relation to identifying, in a content-specific mode, what they regard as suitable resources. What has emerged, more in some cases, has been a radical re-conceptualising of teaching strategies, borne of the transformative nature, not just of the digital resources themselves, but of the process of engaging with the DiAL-e framework, a disorientating dilemma.

We have been pleasantly surprised to see evidence in the data, unprompted, which supports the notion that the DiAL-e framework has transformative learning potential. In particular the role of critical reflection and rational discourse in bringing about significant perspective transformations was tested in the use of the workshop forums we held and the impact these techniques had on participants, albeit at a much reduced length compared to what Mezirow advocates. This suggests the framework tool has potential as a professional development device in contexts such as these and we are currently experimenting with how it might be used in various workshop professional development sessions. In future development activity we anticipate that further adaptation of our data gathering instruments, supported by video and audio records, will ensure an even clearer interpretation of the DiAL-e framework in the context of Mezirow's original model. The framework is currently underpinning the development and testing of a module for the JISC to explore the issues in using and re-using digital content to support teaching and learning in tertiary education (<http://hull.ac.uk/dial/>). It is also being adapted to provide a pedagogical framework for a new European funded project exploring the use of digital video in schools (EduTube). We anticipate further developments in the UK as other digital collections begin to explore the potential of using the framework to support the take-up of their resources in a similar fashion to that described here for the ITN NewsFilm Online archive and plan to report the issues arising from such activity in the near future.

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