

E-portfolios and Personal Construct Theory: the case of Computing students

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Introduction

This paper uses personal construct theory to elicit the views of new computing undergraduates about electronic portfolios. It explores the personal constructs used by a small group of computing students when asked to describe e-portfolio elements and an 'ideal' e-portfolio. Previous research indicated that when using a commercial e-portfolio students were unlikely to engage with the e-portfolio unless it was assessed and that there were a number of negative responses from staff and students related to the lack of rewards for the effort and time involved (Chalk, 2008). Our interest is in exploring how designers construe the process to which the portfolio tools are put in order to identify key features of different portfolios. The aim is to identify the possible parameters for designing e-portfolios, notably in relation to their potential for personal development planning.

Personal development planning (PDP) is defined by the Higher Education Academy (HEA) as 'a structured and supported process undertaken by an individual to reflect upon their own learning, performance and/or achievement and to plan for their personal, educational and career development' (HEA 2008). All UK higher education institutions are required to offer opportunities to students to engage in this process. There has been a movement toward the use of electronic-portfolio platforms to support PDP production (Strivens 2007).

Personal Construct Theory

Repertory Grid Analysis (RGA) is a method of providing insights into personal constructs and derives from the work of George Kelly (1955). Personal Construct Psychology is a theory rooted in understanding how a person constructs their unique view of the world. It emphasises the importance of understanding individual subjectivities as it is these that motivate actions and engagement. From an e-portfolio design perspective this is an interesting idea as Kelly would argue the 'the

world can only be known through our constructions of it and therefore our behaviour bridges the gap between our constructions/mapping of the world, and...the world itself' (Kenny 1984, p 3).

This approach would suggest that rather than evaluating the features of existing e-portfolio platforms we should first be interested in how users and designers are construing the purposes to which e-portfolios might be put. However asking questions directly of users about the perceived benefits and applications of e-portfolios is likely to be of limited value as Kelly emphasised that this process of construing involves the whole person rather than being a largely cognitive or affective process. As such he suggests that many constructs exist at a pre-verbal or tacit level of awareness and in trying to articulate these we may be seen to be 'struggling to make sense out of some experience that lies just beyond the reach of ... semantic language' (ibid., p.4).

A key aspect of Kelly's theory is that 'human thinking is essentially dichotomous, anything which can be said has an implied contrast which may be obvious or difficult to articulate.' (ibid., p.10). He suggests that the individual's construction of the world can often be articulated by exploring these hidden contrasts. He called this the "Dichotomy Corollary", as soon as we note an aspect of two events which we consider similar to one another we are at the same time choosing what counts as a contrast" (ibid.). Although Kelly's theory is firmly based in understanding the individual, Kelly also states that people may behave in a similar manner to one another in so far as they construe events in a similar manner, notwithstanding that the events themselves may not be identical.

Repertory Grid Analysis (RGA)

RGA is a tool which is used to support the process of gaining insights into an individual's personal constructs and also a way of recording these for later analysis. It is this analysis of patterns, linkages, contrasts, similarities and differences that may provide useful insights into how individuals, or groups of individuals, are making sense of the events which are the subject of analysis.

Initially used in the field of Personal Construct Psychology, RGA has been adopted by a wide variety of fields, including human-computer interaction (Steed and McDonnell 2003 and Fallman 2006). In order to explore the possibility of commonality between different approaches to e-portfolios, we decided to use RGA as a means of identifying the key features, aspects, uses etc for e-portfolios that might emerge during the RGA process. Herman and Kirkup (2006) characterize research into e-portfolio take-up as the search for the elusive 'X factor' – and RGA might be a useful tool for identifying what that X factor might be in relation to e-portfolios.

The case of the Computing students

A small group of seven first-year students took part in a two-hour workshop to explore how their personal constructs would influence potential e-portfolio design. Students were first briefed about the workshop and invited to sign an informed consent form, which indicated clearly that although the researchers (Chalk and Holley) would analyse their outputs, the students' names would never appear in draft or published work. They were informed they were volunteers and could withdraw at any time, and also they were free to take part in the full workshop, but to choose not to submit the rep-grid chart at the end. One student selected this latter option, the rest agreed to take part fully (labeled students one to six in the grid below).

The workshop started with the students generating elements they would typically use online, or be interested in using or communicating to future employers. These elements were: online forums, websites, emails, Google videos, 'my experience' 'my skills' social networking (labeled e1-e7 in the grid below). Then the researcher asked them to consider the 'ideal'.

The grid consists of elements to be compared, and the 'ideal' across the top. These are sorted three at a time, and two are chosen for their similarity (the construct on the left, scored at 1) and the opposite (the construct on the right, scored at 5). The other elements are then scored on a scale of 1-5 depending on which 'side' they belong to, and the student was then asked to score the 'ideal' electronic portfolio. For example, in the first line, student one picked three elements and grouped 'web site' and 'my skills' together using the construct 'public' (scored at 1) with the opposite construct 'private' applied to the third element 'email' (scored at 5). He then decided that his ideal e-portfolio should have the score 4 which makes it close to being 'private' as opposed to 'public'. A score of 3, as in the second line under 'ideal', means the student was undecided (in this instance, between 'all about people' and 'one-to-one'). In RGA normally, there would be more entries per individual, but this was a tutorial of limited time so most students only attempted three groups of elements.

		e1	e2	e3	e4	e5	e6	e7		
	Elements → (sort 3 from...)									
Student No. ↓	Explicit Constructs (2 alike) – level 1	forum	website	email	google video	my experience	my skills	social networking	Ideal	Implicit constructs (1 different) – level 5
One	public (website and my skills)	1	1	5	1	4	2	1	4	private (email)
	all about people (forum & google video)	1	1	5	1	4	5	2	3	1-2-1 (email)
	my professional profile (my skills & my experience)	1	1	2	1	1	1	5	2	my social profile (social networking)
Two	general to my life (social network & website)	4	1	1	5	1	1	1	2	Specific one off (google video)
	happened in my life (my skills & my experience)	4	4	3	2	1	1	4	3	selected bits of my life (website)
	Its about me (website & social networking)	5	2	2	3	2	1	1	1	its what I think (forum)
Three	across to people (networking & my skills)	1	4	5	1	5	5	3	4	private to me (email)
	about me (my experience & website)	5	1	1	1	1	1	1	1	other people (forum)
Four	socially owned	3	3	5	3	5	5	1	3	personally owned
	Observation and presentation	3	2	5	1	3	3	5	3	communication
	Internet based	1	1	1	1	5	5	1	1	personally owned
	Communication	2	4	1	4	3	3	1	3	general information
	Information and Entertainment	1	1	1	1	5	5	1	1	personally owned

		e1	e2	e3	e4	e5	e6	e7		
	Elements → (sort 3 from...)									
Student No. ↓	Explicit Constructs (2 alike) – level 1	forum	website	email	google video	my experience	my skills	social networking	Ideal	Implicit constructs (1 different) – level 5
Five	many people /connected (forum & website)	1	4	5	3	5	5	3	4	personal (my experience)
	Sharing views (forum & website)	2	1	5	3	5	5	3	4	my view (my experience)
	sharing views/ experience (my skills & website)	1	2	5	3	5	5	2	4	personal (email)
Six	Connecting with people (email and networking)	1	1	1	4	5	5	1	5	me as individual (my skills)
	use computers (google video and forum)	1	1	1	1	5	5	1	5	about me as individual (my experiences)
	disseminate info (website and email)	5	1	1	3	5	5	1	5	Creating knowledge (forum)

There are different ways of analyzing the repertory grid – either by correlation of construct scores with the ideal, or by deconstructing the narrative formed by the subjects’ choice of elements, constructs and scoring. In this case there seems to be a common set of important constructs which have a high correlation with the ‘ideal’ e-portfolio: ownership (me), about (me), profile (professional not social), access (private), views (personal, not shared), creating knowledge. (Except in the case of student four, who possibly misunderstood the instructions, as his scoring of the ideal seems to be the opposite of what might be expected). In any case, a deeper analysis is possible, based on students’ choice of constructs and the relationship with their other characteristics as students – aspects of which can be read from the extracts from their blogs in the appendix.

Broadly, outcomes of the repertory grid process can be themed by the individual, the role of the tool (personal via professional) and around creating knowledge with others. The individual aspects are very much around ownership of the portfolio, personalisation and reflecting the student in differing personas, thus for social

networks a distinction seemed to be made around personal life i.e. socialising and staying in touch with friends; whereas any professional aspects of a portfolio would be far more about 'my skills and my experience', i.e. work related.

Privacy, and the selection of who is going to view what, seems a very important construct, and students drew a distinction about personal and private very clearly. Professional use was clearly demarked from social use, thus a portfolio combining social and personal tools was not seen as useful. It may be the case that students already use Facebook, Hi Five, MySpace and see little point in duplicating a well-used social networking site. It remains to be seen if these would be imported into any e-portfolio system by choice of additional tools by students.

Creating knowledge was a key area highlighted by those with more experience of working life. Comments made by these students during the process indicated that students were very comfortable with going to online discussion groups and forums, and contributing to the conversation, as well as using these sites to find out how to 'mix' programming errors.

Involving the student group in repertory grid construction was an interesting way of collecting student attitudes than the more usual research method of the questionnaire. Students engaged with the workshop, and were genuinely interested in the process. The constructs arising feed into the larger research context of University and Governmental policies about how students can evidence their personal development planning, and lessons learned are clearly that any electronic developments has to be negotiated with, not imposed on an individual student. Flexibility in the storage of materials and selection of viewing audiences (private/professional) in different spaces is essential, and thus the student needs to take ownership of their own material. For this group of students, social aspects of Web 2 technologies were not a desired construct of any personal development planning process. What was most significant was the 'me' in the constructs, indicating the strong sense of personal association. Engaging students with the process in partnership with the tutor as one of the possible audiences takes the debate further forward in a significant yet under-theorised researched area.

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The Inter/National Coalition for Electronic Portfolio Research convenes research/practitioners to study the impact of e- portfolios on student learning and educational outcomes. We are part of the fourth cohort, and as well as our own research project on personal construct theory, work with ten other international higher education institutions. For further details please see: <http://ncepr.org/>

Appendix – Extracts from students' blogs

The following four biographies, taken with the students' permission from their online blog, typified this group of computing students as coming from an international background, having had experience in work but not necessarily computing work; being over 21; having achievements in other fields (eg sport); and wanting a career in computing.

- “I was born and raised in Tallinn (Estonia) where I studied for 12 years at school including the last 4 years at the Tallinn Language School studying English... I believe this and confidence are the most important qualities I have gained playing rugby. I also do digital photography... I am doing Computer Science course. The main reason for studying it is me being very able and creative when it comes to computers. I do like challenges and problem solving. Although I am not entirely sure what I would like to do in the future as a few different aspects of IT I like. I guess I will have to do a bit more research or perhaps get some experience in those fields and then make a decision.”
- “The reasons that push me to study this course are first of all because I think this is the study which I believe will take to success in my life. One of the other reasons is because I like the Computing studies...”
- “I did my primary and secondary education in Nigeria and most of my college education. I then developed an interest in computing and decided to come to UK to further my education. I came into UK in 2004 and started my studies. First, I studied basic computer knowledge for beginners in MS packages, got my certificate and then went over to networking at the Britannia IT academy. I graduated from there, got my certificate and then decided to go to a university to get a degree.”
- “Before starting the course I studied I.C.T, Business Studies and Media as A Levels at Enfield College. I enjoyed Media the most. Filming and editing using final cut express was a great experience. I play basketball and sometimes go to the gym. I currently work at Homebase, part-time. The big motivator for me doing this course is the money. By doing research I found out that a Java programmer can earn and charge a lot. I want to be able to solve problems by creating good programs for clients.”