

Paper 46 – Full Paper

Open access E-portfolios: Student motivations for the digital curation of professional identities for lifelong learning

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Abstract

Open access, lifelong learning e-portfolios offer students a way to create a showcase of their work that is accessible to all for an indefinite period. This approach opens up many interesting possibilities for students and alumni. The literature in this area reveals that e-portfolios have been adopted most readily by Arts students since their inception. This study contrasts findings from a pilot study of an open access, lifelong learning e-portfolio community tool called The Hive, which is free to join for anyone at www.the-hive.org.uk

A mixed methods approach was used to analyse the factors that motivated or prevented students from joining The Hive and also examines the use of Second Life to showcase work. The pilot study questions the benefits and popularity of The Hive with different students and examines its role in a higher education environment. The findings of the study are compared with the literature in this area to examine the motivations of students of different disciplines. According to the literature and the findings of this study, arts based students seemed most motivated to create an e-portfolio.

The study will be of particular relevance to people setting up or seeking information about the motivations and barriers of students joining an open access e-portfolio community and offers suggestions for further research into this area. This study will also be useful for people researching options for e-portfolio systems in higher education and contrasts open and closed systems.

“ Students expect resources to be free, and blend digital lifestyles with digital work-styles ... education is colliding with social networking, which is exciting, fast and very disruptive. ”

(Hall, 2010)

1. Introduction

A learning e-portfolio can be described as “a product created by learners, a collection of digital artefacts articulating learning (both formal and informal), experiences and achievements.” (JISC infoNet, 2009). An e-portfolio is both a process and a product, with the process being the collection, selection and reflection of work (Keegan, 2009). Some e-portfolio products offered in a higher education environment are used just for the duration of a course and are known as closed access systems, accessible only to selected people. E-portfolio products such as Pebblepad are offered by some institutions such as the University of Bradford until the end of the students studies.

The term web 2.0 is often used to describe online communities such as blogs, wikis and social networking sites, which are characterised by an architecture of participation and open access user-generated content. The rise of web 2.0 and virtual worlds such as Second Life have seen a myriad of options for creating showcases of student work. Learners can use these tools to create a professional digital identity which is an electronic representation of the skills that they possess (Lessig, 1998). Open access sharing of information, social networking and web 2.0 provide many interesting possibilities and are widely used by today’s students in higher education (Hall, 2010).

This study reviews the literature in the area of the learning e-portfolio, history, open and closed systems, lifelong learning aspects and student motivations. A mixed methods approach was used to examine student motivations of a web 2.0, open access, lifelong learning e-portfolio system and these results are discussed in conjunction with the literature review. The objective of the study is to examine open access, lifelong learning e-portfolio systems with particular regard for student motivations and barriers to participation. The connections between take up, level of study and programme of study in a higher education environment are examined and conclusions drawn.

2. Literature review

This study begins with a review of the literature in this area to give context to the study.

2.1 Learning e-portfolio history

The history of the learning e-portfolio can be traced back to partnerships between university computing services and campus electronic portfolio creation in the late 1980's (McGrath, 2005 p. 2). By the early 1990’s, multimedia creation tools such as Macromedia Director were being used to create e-portfolios on a CD-ROM. The mid 1990’s saw the rise of the World Wide Web and with basic editing tools, people were able to create showcase websites also known as webfolios. This development generated much interest in education “Webfolios may have the most significant effect on education since the introduction of formal schooling” (Love, D et al). 1998 saw the release of a web based learning environment

called Fle3 which was used by teachers and students to store different items related to their studies (Kligyte, 2003). In 2003, Pebble Learning created an interactive web based system called "Profitability" which allowed users to reflect upon their skills and receive feedback and comments from others. An increasing amount of research into the area of the e-portfolio and web 2.0 was seen around 2005 including Stephen Downes influential paper entitled "E-Learning 2.0". Downes drew attention to the e-portfolio system Elgg which was first released in 2004 (Downes, 2005). In 2008, Attwell suggested that showcasing work in immersive 3D environments such as Second Life could be more engaging than 2D and this may be the future for learning e-portfolios (Attwell, 2008). In August 2010, JISC began an e-Portfolio Implementations Study (ePI) to "Identify a range of examples of wide scale e-portfolio implementations within HE/FE" (Joyes, 2010). The delivery medium and technology may have changed over the decades, but the objective is often the same - to demonstrate the learner's best work. There are a variety of instances of e-portfolio products in use in higher education today (JISC, 2010).

2.2 Open and closed access e-portfolios

E-portfolios are generally seen as a powerful tool for informal and formal learning particularly in the fields of medicine and education (Attwell, 2008 p. 3), where reflective practice is a core component of professional development. The literature revealed that there is a parallel practice within the implementation of e-portfolios between open and closed access systems (Cohn, 2004). Closed access e-portfolio systems typically work for the duration of a course or are accessible only to a restricted number of people. Open access systems aim to be accessible to all and for an indefinite period and often for lifelong learning. (Attwell, 2008) suggests that if e-portfolios are a closed access, mandatory part of courses, then it can be difficult to maintain student motivation once completed (p. 12).

2.3 E-portfolios for lifelong learning

In a 2004 Educause article, Ellen Cohn states "why not develop a model providing a personal Web space for everyone, for their lifetimes and beyond?" (Cohn, 2004). Cohn questions the value of the closed, time limited e-portfolio "is it prudent to commit a university's faculty, administrative, information technology, and student resources to a time-consuming process that may be operational for only two to four years per student?" (Cohn, 2004).

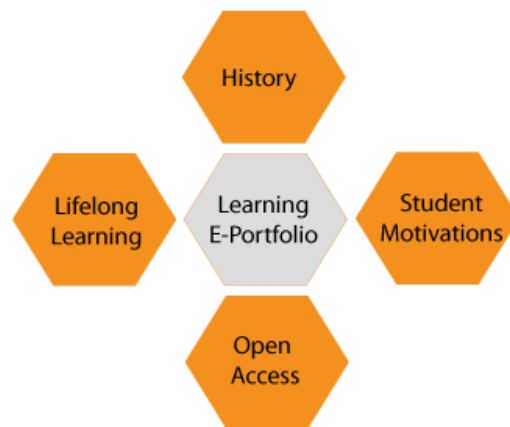
Barrett states that "When portfolios are used for accountability purposes, teacher candidates viewed their portfolios as a hoop they needed to jump through to graduate, and not the lifelong reflective tool that had been envisioned" (p.3). These perspectives are balanced with other studies which promote the value of linking the e-portfolio to the curriculum "Effective e-portfolio use does not occur on any scale without leadership from curriculum managers and practitioner teams" (Gray, 2008). An open access, lifelong learning e-portfolio offer learners autonomy and ownership of their work beyond a closed access, finite institutional system. An open access system that extends beyond graduation eases the transition from education to the workplace (Keegan, 2009).

2.4 Student motivations

A key aspect of this study is to examine student motivations and which courses would be most inclined to join an open access e-portfolio community. Barriers to participation are also examined. A 2010 assessment of e-portfolios revealed that "It was frequently mentioned that students failed to see the value of ePortfolios. In addition, a few tutors stated that lack of time was an issue" (Peacock, 2010). Historically e-portfolios were typically found in art-related

disciplines or those that consisted of substantial written components such as English studies (Connolly, 2010). The literature available indicated that Arts and English based courses had historically been early adopters of the e-portfolio “since the inception of the Internet in the mid-90s.” (Batson, 2002). Other studies indicate that other types of course such as computing students at the University of Lincoln did not have an e-portfolio (Beresford, 2010). The literature revealed that arts based courses were more inclined than other disciplines to create a lifelong learning e-portfolio.

Figure 1 – A diagram showing the different areas of literature relevant to this study



There are many studies in this area of e-portfolio, particularly in the medical sector and also the study of e-portfolios as tools. There was a lack of published research into student motivations of adoption of an open access learning e-portfolios.

3. Research methods

This section outlines the approach that was used for this paper and then explains the background information regarding The Hive e-portfolio system.

3.1 The approach

A mixed methods approach was chosen for this study to allow a thorough analysis of The Hive and provide information about the design and adoption of this system. A combination of quantitative and qualitative research was used to form a single study (Johnson, 2004, p. 17). Quantitative data such as the website visitor statistics, database of users and content was analysed. A survey was sent to the members of The Hive to obtain quantitative and qualitative data on motivation and trends. A combination of a case study and a survey was used to investigate the question of the nature and motivations of the people that joined The Hive (Yin 2008, p. 9).

The Hive survey was sent out in a web page format by email to make it simple to complete and the results simpler to collate. Evans and Mathur discuss the weakness of the online surveys as they can be impersonal and lead to low response rates (p. 195). In order to address these weaknesses, the survey was designed to be simple and quick to complete and was followed up with a personalised reminder. A sample of 12 people was used in this study to represent a cross section of the participants of The Hive community. This represented 28% of the 43 students that had built Hive spaces during the evaluation period. The sample group

were composed of students in higher education from a range of different courses and different levels.

Interviews were conducted in person, by telephone and by email. Course names have been included with student quotes to aid understanding of any particular bias between courses and level of study which is a key aspect of this study. The overall purpose of this study was to collect, analyse and present all data fairly (Yin, 2008, p. 3). The data from the sample was triangulated with existing literature to inform the research questions in this study.

3.2 The Hive Case Study - Background

This study analyses an open access, e-portfolio product called 'The Hive', which was developed at the University of Salford in 2010. After an analysis of other software, it was decided that a custom built system would offer the level of control and service required for the project. The Hive was built to strike a balance between the closed institutional system and the free to use, unsupported web 2.0 tools that sometimes contained adverts. The website was hosted on external servers and did not use the University brand styling.

The purpose of The Hive was to allow students to curate their own professional digital identity during and after their studies to form a lifelong learning web 2.0 community. The system provides ways for people to interface with and promote their existing online offerings including Facebook, Blogspot, Wordpress, Youtube and Twitter. The system was designed to work with any web browser on any device including mobiles. The Hive forms a central and searchable pool of ideas and connections. As members add text, photos, video or other media, it appears within their own personal web spaces and on the central Hive website. In addition to the website, The Hive had a presence in the virtual world of Second Life. This 3D immersive space is a combination of mixed media derived from the projects added by members to The Hive website. As projects and information were added to The Hive, they automatically appeared in the Second Life space.

The Hive was launched in May 2010 and by September 2010, 124 people had registered voluntarily. The Hive was used primarily by students at the University of Salford. Alumni and students of other UK Universities such as Bradford and Cumbria were also invited to join. The Hive was selected to feature as an installation at the University of Salford's new building at MediaCityUK (opens October 2011).

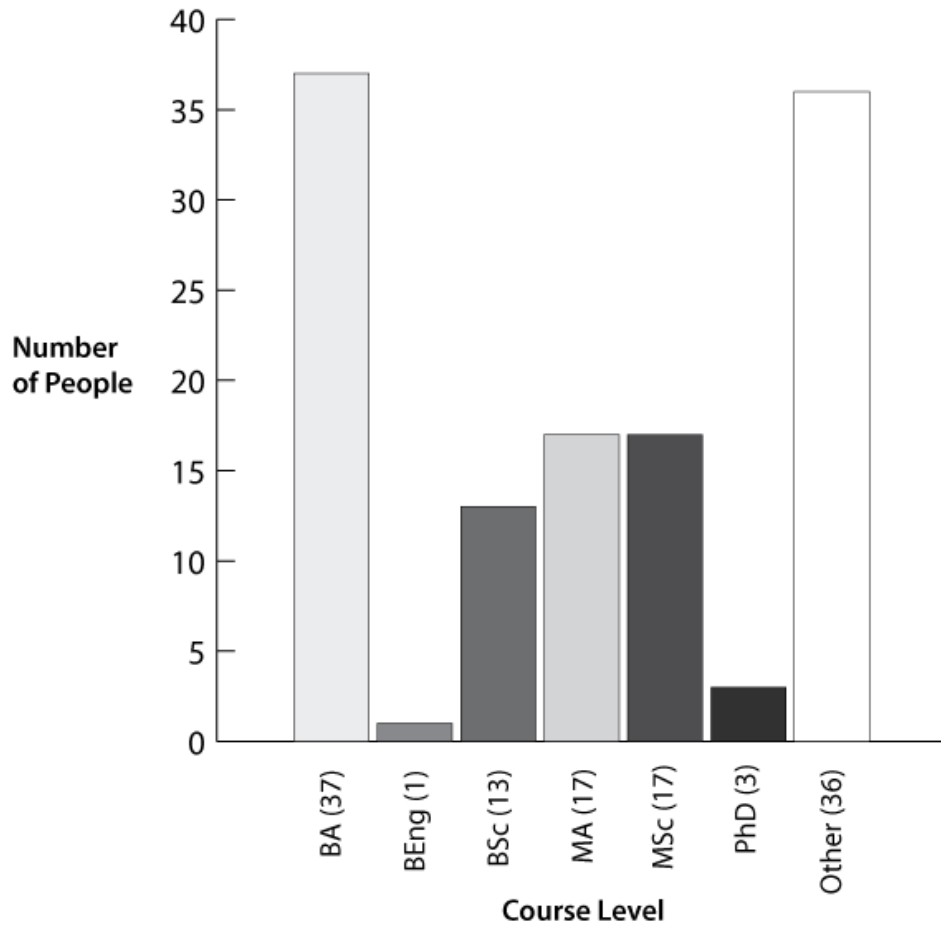
4. Findings

This section evaluates the data and survey for The Hive to give a deeper insight into the motivations of students that joined this open access, self directed e-portfolio community.

4.1 With which courses and levels did The Hive prove to be most popular?

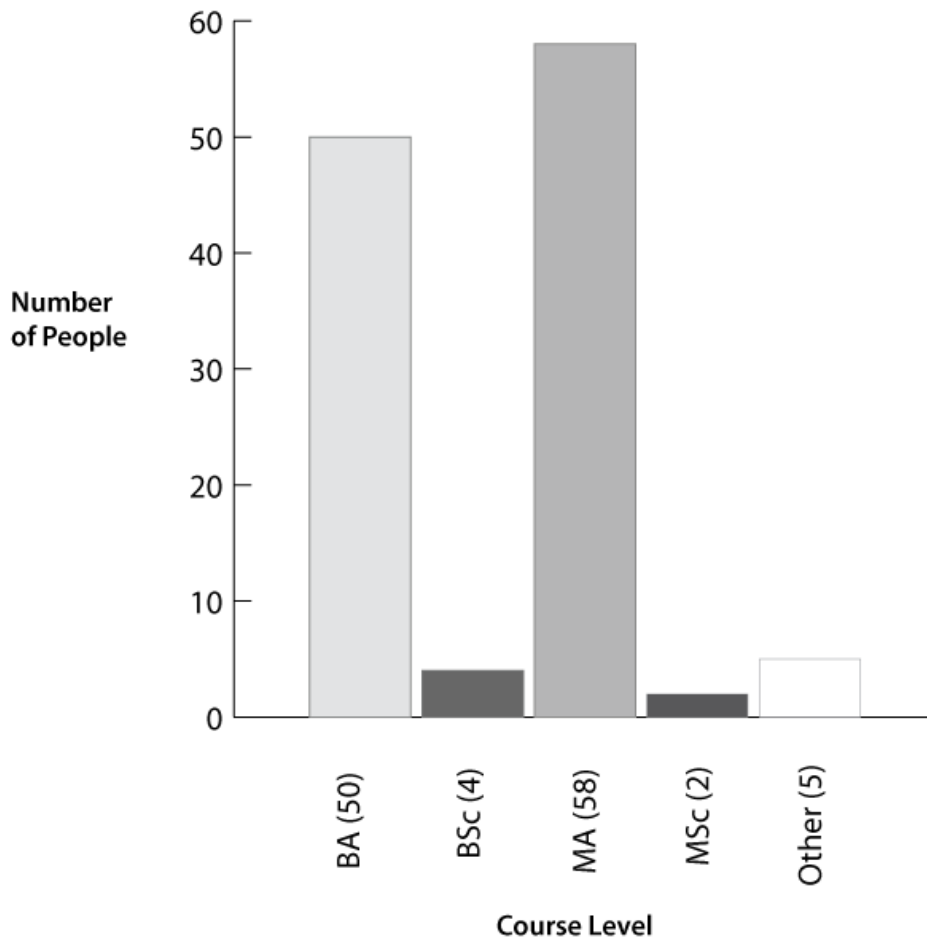
Students from 42 different courses registered with The Hive. The chart below indicates that The Hive was most popular with students studying BA and MA courses, with significant registrations from MSc and BSc students.

Figure 2 – Bar chart showing Hive registrations by level



Within the period of study, arts based students (MA and BA) had the most with 54 registered students. Science based courses (MSc, BSc and BEng) had 31 registered users. Specifically, the course with most registered students was BA English and Creative Writing with 13 people. This was followed closely by MA Creative Technology with 10 registered users. BA Visual Arts was the next popular course with 7 registered users. A table of registered users and courses can be found in the appendix.

Figure 3 – Bar chart showing which level made the most posts to The Hive

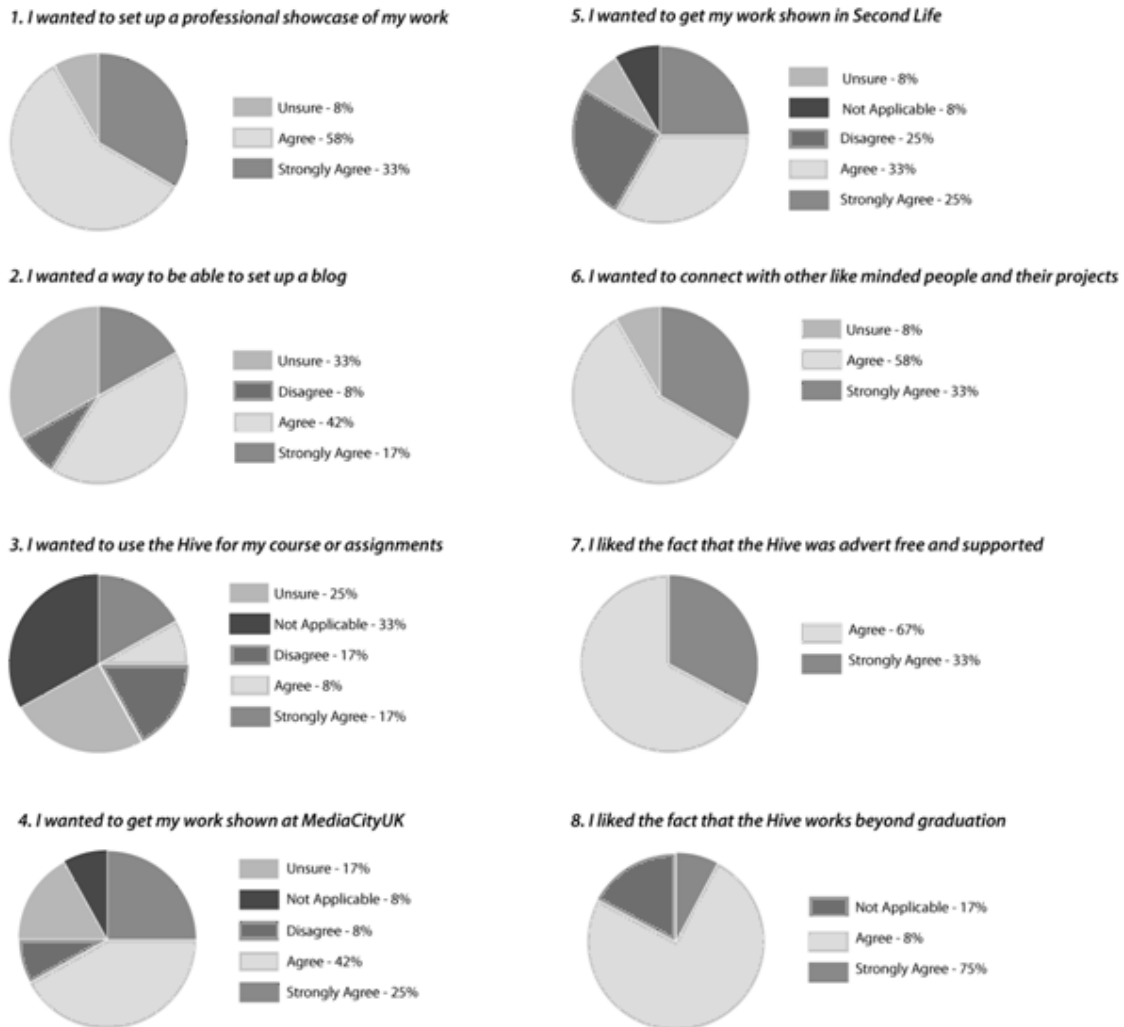


Arts based courses (BA and MA) were most active in posting to The Hive. It was interesting to note that 30 students registered from BSc and MSc courses, but only 6 items were posted from this level of courses. BSc and MSc level courses made up 24% of registered users, but they were responsible for only a very small amount of material posted. Figure 3 indicates that the majority of content came from BA and MA arts based courses. Specifically, MA Creative Technology was the most prolific with 29 posts. BA Contemporary fine art yielded 21 posts and next was BA English and Creative writing (17).

4.2. What motivated people to join The Hive and what were the barriers to participation?

A survey was sent out to registered Hive members and interviews were undertaken to gauge what aspects of The Hive had motivated them to join. The diagram below outlines the results of the survey questions that demonstrate the motivations of the sample group to join The Hive. These results are evaluated in the discussion section.

Figure 4 – Pie charts showing the results of The Hive survey section “Which of the following motivated you to join The Hive?”



The results of the survey revealed the motivations of the sample group for joining The Hive. The most popular factors were that it was advert free and supported, that they had wanted to connect with like minded people and projects and they had wanted to set up a professional showcase of their work that would function beyond graduation. A significant number of Hive members also expressed interest in MediaCityUK and Second Life as a way to showcase their work. The results indicate that the primary motivation of the sample group was to showcase their work and make new connections in an advert free and supported environment. The Hive offered free technical support, it was advert free and it worked as an open access system beyond graduation, and these factors proved to be most popular.

The survey also captured qualitative data by interview to further explore these results. A BA Media Technology student commented: “With it becoming increasingly competitive to land a career in the media industry, I believe it’s vital to showcase as much work as possible. The Hive helps to achieve this.” A BA Visual Arts student commented: “I saw The Hive as an opportunity to organise my work into a more contemporary framework. I’m not quite a technophobe but my technical knowledge is limited. My own website is maintained by

someone else who's always busy so it never gets updated. The Hive is easy enough to use and it's friendly. My initial motivation was to get through a specific module that asked for a 'publication' (i.e. making public) of my work. I like the way it worked and decided it suited me.”

35% of registered users had made a contribution to The Hive within the period of study. Interviews with students revealed a number of potential reasons that prevented more people from contributing material to The Hive. A student of BA Visual Arts commented: “The Hive’s a great idea, but I just don’t have time at the moment”. Other students that had joined and were yet to contribute cited lack of time or the fact that they already had an existing blog and they did not want to duplicate their efforts. A BA Creative Writing student commented: “I keep my own site for my writing, and don't particularly want the hassle of having to keep up with many sites”.

4.3 The Hive in Second Life

The Hive survey results indicated that 58% of people surveyed agreed or strongly agreed that The Hive Second Life space had been a motivating factor to joining The Hive. This was a positive response, but it was cited as less important than most other factors. A BA Media student commented “The idea of having my work in MediaCityUK / Second Life sounds very appealing” At this stage of the project however, the current members of The Hive had little direct contact and interaction with The Hive Second Life space. One MA Contemporary Fine Art student that had been particularly active on The Hive website commented: “I am struggling to find time for all of my lives, so there is no time to set up and use Second Life at the moment”. Other Hive users interviewed had found Second Life difficult to access and use. Linden Labs CEO stated in a recent article “One of Second Life's biggest problems, says CEO Philip Rosedale, is that it's not enough like an iPhone” (Wagner, M 2010). At the time of writing, Linden Labs were investigating ways to make Second Life easier to access and use, including the trialing of a Second Life viewer within a standard web browser (Wagner, M 2010).

5. Discussion

The following section draws together these findings with the relevant literature to form a discussion and recommendations for further study.

5.1 Connections between adoption and level of study

The literature revealed that historically, Arts and Creative writing courses were early adopters of e-portfolios and that this situation continued today to some extent. Results of The Hive e-portfolio system concurred with this result. Arts based courses represented the most registered Hive students, and overwhelmingly were responsible for most material added to The Hive. Further research could be undertaken to gauge the popularity and motivations of e-portfolios between undergraduate and postgraduate students.

The Hive was promoted by word of mouth, articles and email. The project was presented and sent to many tutors within the Art and Design department at the University of Salford, Creative writing and also Music, Media and Performance. The Hive proved to be most popular within these departments as a way to showcase their work. Despite a significant amount of BSc and MSc students joining The Hive, the BA and MA level students were the

ones that contributed most material to The Hive. This phenomenon could be explained in part by the design and promotion of The Hive by tutors in these areas of the University and also concurs with the literature of the history and use of the e-portfolio in higher education.

Interviews were conducted with the sample group to further explore the fact that Arts based courses were responsible for most of The Hive content. A BSc computing student who used The Hive to set up her portfolio of work commented: "I believe more BA students are drawn to the site as traditionally they are the subjects in which portfolios are needed to gain entry into employment, or act as a base for freelance work. Most BSc subjects outside of the computing field do not lend themselves to needing a portfolio, slideshow of work or progress blog." This position is reinforced by the study of BSc computing students at the University of Lincoln, the majority of which did not have an ePortfolio. (Beresford, 2010). This research, survey and interviews offered some explanations to explain why most of The Hive content had been added by arts based courses.

5.2 E-portfolios in an immersive environment

The literature revealed that showcases in immersive environments such as Second Life could potentially be more engaging and should be an area for further development in the future (Attwell, 2008). The Hive Second Life showcase space proved to be a useful tool to showcase The Hive and student work at events. The Second Life space was integral to the decision to include The Hive at the forthcoming University of Salford MediaCityUK space as it demonstrated a new way to disseminate student work. The Second Life and MediaCityUK spaces provided a new way for Hive participants to showcase their work.

The Hive offered a unique opportunity for student work to be displayed at the forthcoming University of Salford, MediaCityUK space, but for some students, they joined The Hive and then decided that they wanted to use their original method of disseminating their work such as their own personal blog. The Hive offered a means of reading from an existing blog into The Hive, but not all students were aware of this or preferred to use existing and familiar methods.

5.3 Barriers to participation

Lack of time to devote to contribute to The Hive was a factor cited by a number of students that failed to make a contribution. There was a feeling amongst some tutors that students would only contribute to a system such as The Hive if there were marks available for using it. Other tutors questioned in the study suggested that they had concerns with regard to copyright issues of an open access showcasing tool like The Hive. This concurred with the literature, particularly Peacock, 2010 who evaluated attitudes to e-portfolios. Some studies indicate that another barrier to usage can be that students find some e-portfolio software difficult to learn and master (Beresford, 2010). Respondents for this study indicated that they had found The Hive relatively simple to use however. An MA Contemporary Fine Art student commented in interview, "It is a truly wonderful thing you have done for us. The Hive was the easiest experience in setting up a website I have known."

The JISC report 'Effective practice for e-portfolios suggests that e-portfolio adoption is much higher with leadership from curriculum managers (Gray, 2008). The Hive has proved to be a popular tool with students at the University of Salford so far and the information gathered

from this pilot may be useful to pave the way for a further project and study. University of Salford Vice Chancellor Martin Hall stated that Salford are developing their strategy for delivering courses and extending reach, which should include systems such as The Hive.

6. Conclusion

This pilot study draws information and data from The Hive project at a relatively early stage and as such, further study would be required after October 2011 to gather further information. Another limitation of the study is that the sample group surveyed was derived primarily from active users of The Hive in a small geographical area. Further research could be undertaken with students over a longer period in other locations to gauge motivations and where the barriers to participation lie. The goal of this pilot study was to examine and assess the effectiveness of an open e-portfolio system and gather knowledge that will inform further projects and study.

Within the evaluation period, The Hive website proved to be popular with students with 124 people joining and 73% of the students surveyed indicating that The Hive had been useful to them. Although 58% of people surveyed indicated that Second Life had been a motivational factor, few students had directly engaged with this space in the pilot study period. The Second Life space had been useful for demonstrating at events and was important to the selection of The Hive for the forthcoming University of Salford MediaCityUK foyer space.

In terms of registrations, there were more students from Arts based courses than Science based courses by a ratio of three to one. 30 students studying BSc and MSc courses joined The Hive, but many of these had not contributed to The Hive at this stage. This concurred with the available literature which suggested that Arts based courses in Higher education may be more likely to set up an e-portfolio than other disciplines. There were various factors that may explain this phenomenon, but additional studies would be required to investigate this.

Many students expressed an interest in The Hive, but because its usage was purely voluntary, time became a barrier for some students to make a contribution. Further study would be required to assess if embedding The Hive officially into modules would increase the amount of material added and the adoption rates. A future study could be undertaken to investigate engagement, motivation and learning of participants and pedagogical issues of e-portfolio usage. The Hive has so far provided students with a lifelong learning and open system to showcase their work, share ideas and make new connections. This study provides suggestions for further research and information to help inform and develop e-portfolio tools and strategies to provide flexible platforms in a higher education environment.

7. Acknowledgements

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8. References

- Attwell, G (2008) 'e-Portfolios – the DNA of the Personal Learning Environment?' available: <http://www.pontydysgu.org/wp-content/uploads/2008/02/eportfolioDNAofPLEjournal.pdf> [accessed October 20 2010]
- Barrett, H. and Carney, J (2004) 'Conflicting Paradigms and Competing Purposes in Electronic Portfolio Development' available: <http://electronicportfolios.org/portfolios/LEAJournal-BarrettCarney.pdf> [accessed October 20 2010]
- Batson, T, (2002) 'The Electronic Portfolio Boom: What's it All About?', Syllabus
- Beresford, W (2010) 'The role of eportfolios in higher education: Their perceived value and potential to assist Undergraduate computing students', *EDULEARN10*
- Connolly, T et al (2010) – 'An Empirical Study: The Implementation of a Virtual Learning Environment and ePortfolio', *Networked Learning Conference 2010*
- Cohn, E and Hibbitts, B (2004) 'Beyond the Electronic Portfolio: A Lifetime Personal Web Space', *Educause*
- Downes, S et al (2005) 'E-Learning 2.0', *E-Learn Magazine*
- Evans, R & Mathur, A (2005) 'The value of online surveys, Internet Research Vol. 15' *Emerald Group Publishing Limited*
- Gray, L et al (2008) 'Effective Practice with e-Portfolios', *JISC*, available: <http://www.jisc.ac.uk/media/documents/publications/effectivepracticeeportfolios.pdf> [accessed October 12 2010]
- Hall, M (2010) 'When Worlds Collide' available: <http://www.corporate.salford.ac.uk/leadership-management/martin-hall/blog/2010/05/when-worlds-collide> [accessed May 12 2010]
- JISC infoNet (2007) 'What are e-Portfolios?', *JISC Infonet* available: <http://www.jiscinfonet.ac.uk/infokits/e-portfolios> [accessed October 7 2010]
- Johnson, R et al (2004) 'Mixed methods research: A research paradigm whose time has come'. *Educational Researcher*

Joyes, G (2010) 'Value of e-Portfolio Implementations Study (ePI)', *JISC*
available: <http://www.jisc.ac.uk/whatwedo/programmes/elearning/epi.aspx> [accessed October 7 2010]

Keegan, H et al (2009) 'Mentoring For 21st Century Skills – It's all about the Learning'
University of Salford

Keegan, H (2009) 'Formal to informal – Education to Industry Easing the transition through Social Media', *Proceedings from Online Educa Berlin*

Kligyte, G (2003) 'Fle3 User Manual', *UIAH Media Lab*
available: http://fle3.uiah.fi/FLE_user_manual/ [accessed October 20 2010]

Lessig, L et al (1998) 'Digital Identity in Cyberspace',
available: http://rfrost.people.si.umich.edu/courses/SI110/readings/Privacy/MIT_Paper_on_Digital_ID.pdf [accessed October 12 2010]

Love, D et al (2004) 'Portfolios to Webfolios and Beyond: levels of maturation', *Educause Quarterly*

McGrath, O (2005) 'Gauging adoptability: a case study of e-portfolio template development.' *ACM*

Peacock, S. & Murray, S. (2009) 'Learners' initial expectations and experiences of ePortfolios: A pilot study'. *Brookes eJournal of Learning and Teaching*

Wagner, M (2010) 'Second Life should be more iPhone-like' available:
http://blogs.computerworld.com/16932/second_life_iphone [accessed November 22 2010]

Yin, R (2008) *Case Study Research: Design and Methods*, Sage Publications

9. Appendix

9.1 The Creative Hive and digital appendix

In April 2011, The Hive was renamed Creative Hive at www.creativehive.org

The digital appendix and case study database are accessible at:
www.creativehive.org/appendix

9.2 Additional supporting data from The Hive

Table showing the number of people that responded to each question in The Hive survey section "Which of the following motivated you to join The Hive?"

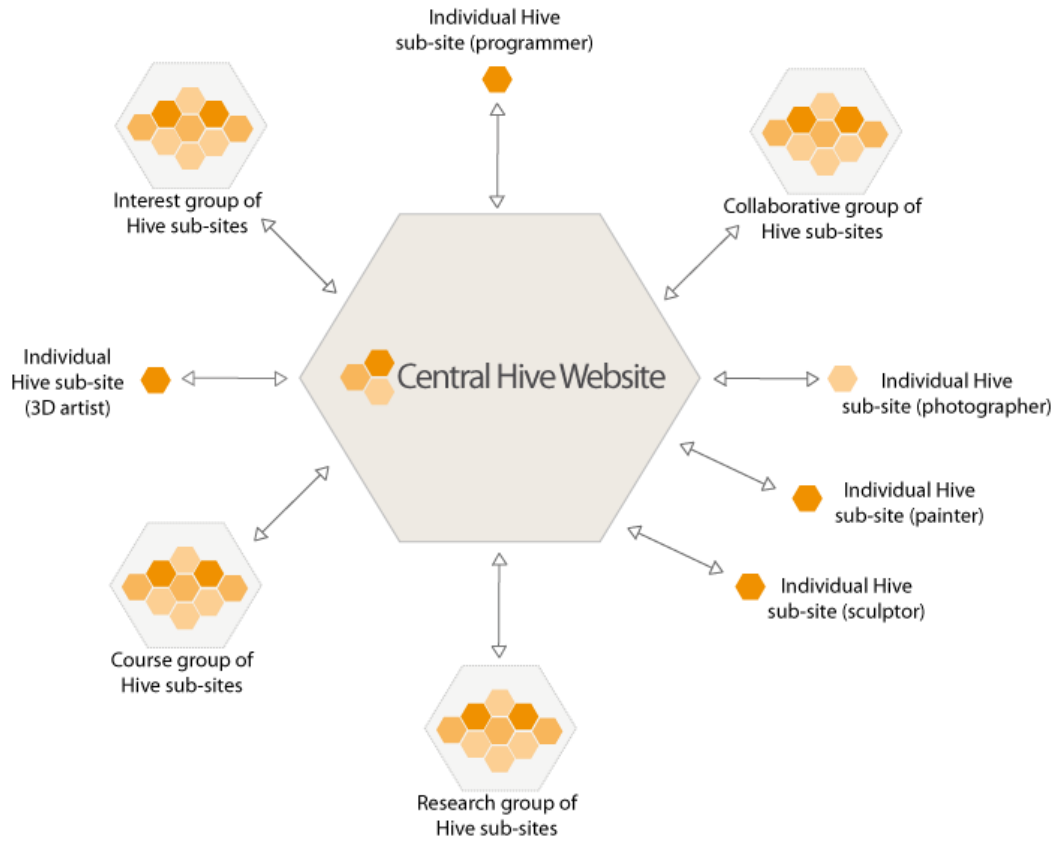
Question	Strongly Agree	Agree	Disagree	Strongly Disagree	Unsure	Not Applicable
1	4	7	0	0	1	0
2	2	5	1	0	4	0
3	2	1	2	0	3	4
4	3	5	1	0	2	1
5	3	4	3	0	1	1
6	4	7	0	0	1	0
7	4	8	0	0	0	0
8	1	9	0	0	0	2

Table showing the number of students registered on The Hive per course

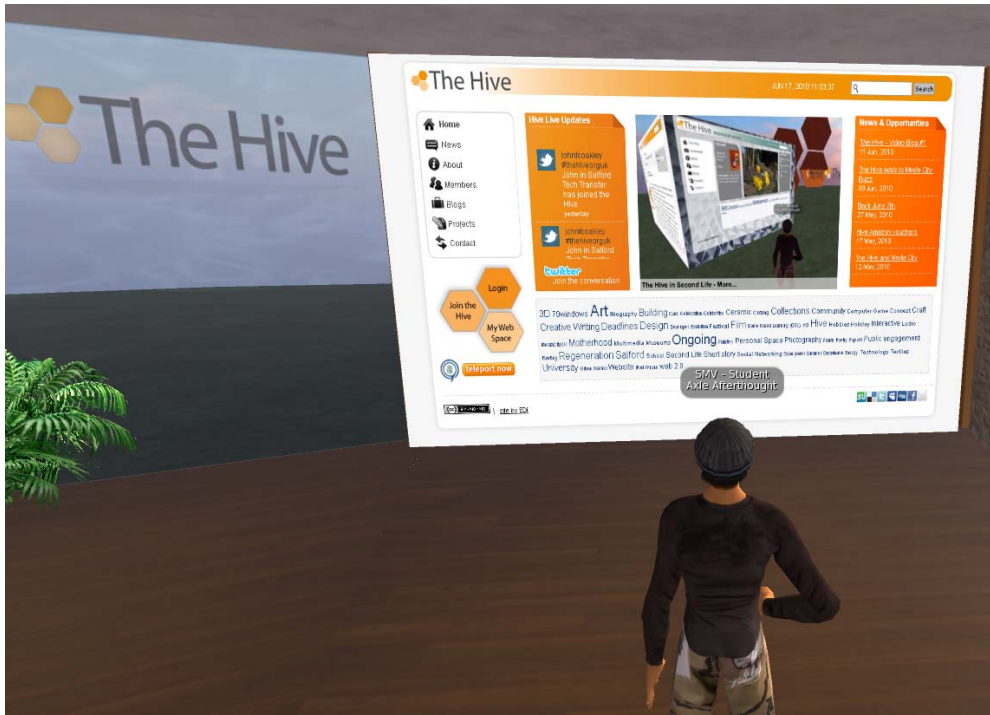
Course	Registered students
BA Media and Performance	1
BA Advertising design	2
BA Animation	2
BA Contemporary Applied Art	2
BA Design for computer games	1
BA Design for Digital Media	1
BA Digital Media	1
BA English and Creative Writing	13
BA Geography	1
BA Graphic Design	2
BA Photography	1
BA Television and Radio	1
BA Television Production	2
BA Visual Arts	7
BEng Mechanical Engineering	1
BSc Building Surveying	1
BSc Computing and Information Systems	1
BSc Construction Project Management	2
BSc Media Technology and Production	2
BSc Mental Health Nursing	1
BSc Podiatry	1
BSc Professional Sound and Video Technology	1
BSc Software Development Applications	2
BSc Web Design and Technology	1
MA Arts and Museum Management	1
MA Contemporary Fine Art	4
MA Creative Technology	10
MA Creative Writing: Innovation and Experiment	2
MSc Advanced animation and special effects	1
MSc Aerospace engineering	2
MSc Audio Production	2
MSc Creative Games	1
MSc databases and web based systems	1
MSc International Banking and Finance	1
MSc Managing Information Technology	1
MSc Manufacturing Systems and Management	1
MSC Petroleum and Gas Engineering	1
MSc Professional Sound and Video Technology	3
MSc Project management in construction	1
MSc Quantity Surveying	2
PhD Acoustics	2
PhD spinal Orthoses	1

9.3 Images from The Hive

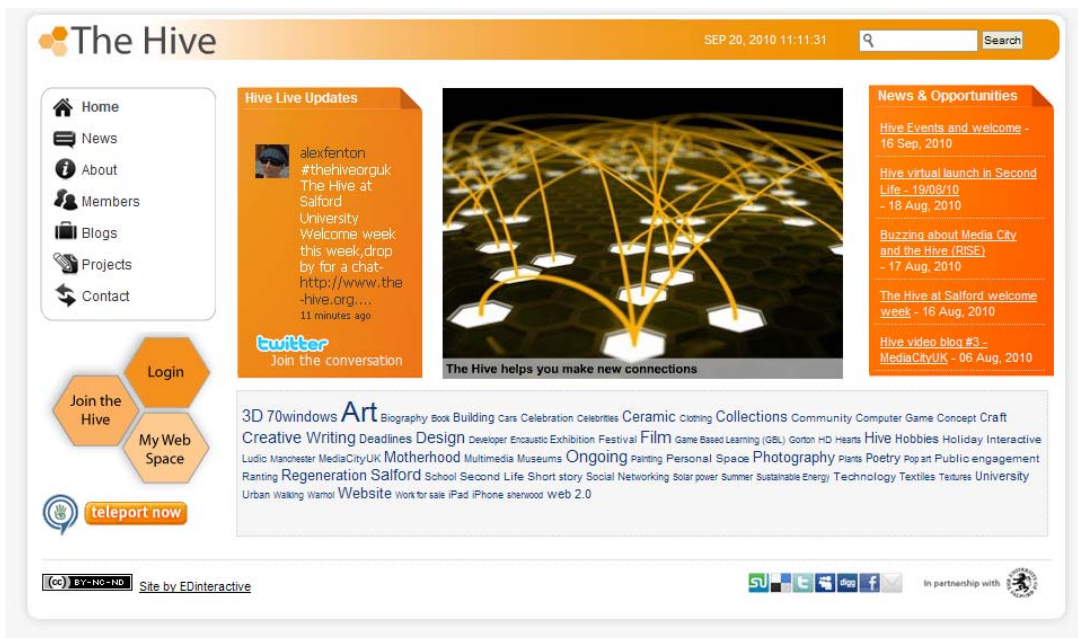
Each individual and group Hive website feeds into the central Hive website



The Hive space in Second Life –live data coming from The Hive website



The central Hive home page

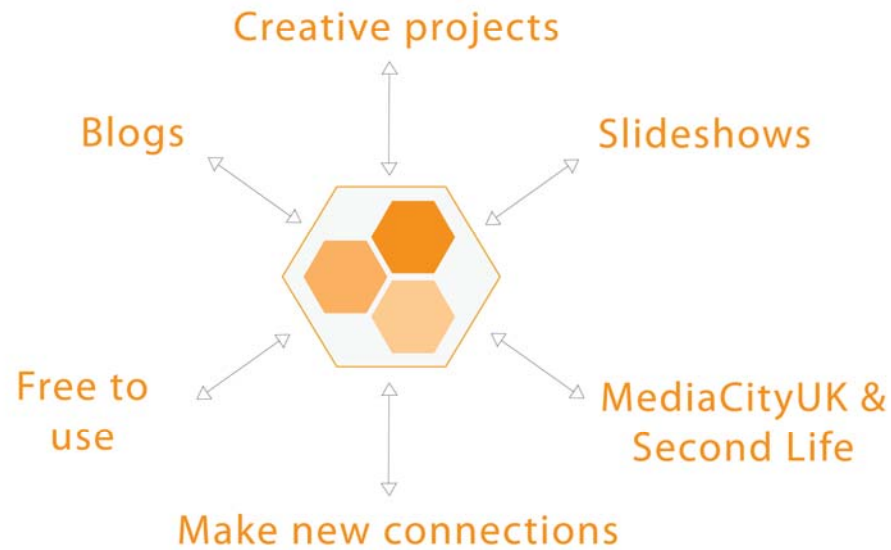


Individual Hive spaces that have been customized



The Hive

Showcase & promote *your* creative work



 www.the-hive.org.uk

 hive@xfs.org.uk