SOCIAL CAPITAL: DETERMINING A STUDENT'S E-PORTFOLIO NET WORTH

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ABSTRACT

Many schools or individual departments require student e-portfolios. The e-portfolios are used for different reasons including assessment, employment, internship, and/or co-op purposes. However, getting all students to "buy-in" to the idea of developing an e-portfolio is a daunting challenge as most academic professionals are well aware. There is increasing concern on the part of the student that e-portfolios are not relevant for employment purposes. From the first year through the senior year, Bachelor of Science in Management (BSM) students at Wentworth Institute of Technology are required to compile an e-portfolio of their work in consultation with their academic advisor. Since 2007 we have been struggling with helping students develop professional looking e-portfolios. Over the years we switched from static built web sites, to LinkedIn, and now we are using WordPress.com. Student e-portfolios look much more professional since we made this switch. In many ways students are building social capital for themselves through the use of an e-portfolio. But, what exactly is the net worth of an e-portfolio for a student? Developing a professional looking e-portfolio goes well beyond building social capital for the student. We define net worth as it relates solely to e-portfolios. We also propose a methodology or model that can be used to determine the net worth of a student e-portfolio. We conclude by summarizing that the net worth of an e-portfolio can be broken down into heuristic patterns that add value for the student.

KEYWORDS*: E-portfolio, social capital, technology, educational assessment, learning, value, co-op, internship.*

1.0 INTRODUCTION

E-portfolios have been in use for well over a decade now. Most e-portfolios contain similar electronic items, including but not limited to: profiles, resumes, pictures, artifacts, and references. These e-portfolios can be used for many different reasons including assessment, employment, internship, and/or co-op purposes. In addition, there is a strong, current push to utilize e-portfolios for self and/or lifelong learning

purposes (Barrett and Garrett, 2009; Stainback, 2008). Educational institutions have utilized e-portfolios mainly for assessment. Bachelor of Science in Management (BSM) students, at Wentworth Institute of Technology (WIT), have been required to develop e-portfolios since 2007. The e-portfolio is a core graduation requirement. Students must register for a course number and at the end of the semester a grade of a "Satisfactory" (S) or "Unsatisfactory" (U) is issued. Students begin developing their e-portfolio during freshman year and then finalize and submit during senior year. Student e-portfolios are also part of an assessment and self-study accreditation report at WIT. We also encourage students to submit their respective e-portfolios to co-op employers and upon graduation to potential career employers. Administrators and academic professionals generally understand the multi-level benefits of e-portfolio usage. However, most students do not seem to grasp the many purposes behind e-portfolio development and usage. There is an ambivalent perception on the part of the student e-portfolio developer. This perception could actually hurt a student's chance of co-op or career employment if this attitude funnels over into poor development or a lack of holistic motivation (Yancey, 2009). Since 2007 we have been struggling with helping students develop professional looking e-portfolios. Over the years we switched from static built web sites, to LinkedIn, and now we are using WordPress.com. Student e-portfolios look much more professional since we made this switch.

Even though students may not realize it, in many ways they are building social capital through the development and use of an e-portfolio. There is a net worth that can be determined theoretically in relation to e-portfolio development and usage. Developing a professional looking e-portfolio goes well beyond building social capital for a student. In this article we define net worth as it relates solely to e-portfolios. We also propose a methodology or model that can be used to determine the net worth of a student e-portfolio in order to help students grasp the perceived practicality of development and usage. We conclude by summarizing survey results showing a heuristic pattern that adds additional value for the student. Finally, we suggest a need for further research from the co-op and the employer's point of view.

1.1 Perspectives

Developing an e-portfolio takes a considerable amount of skills on the part of the student, such as organizational and technical skills (Barrett, 2011a; Barrett, 2011b; Strohmeier, 2011). The system upon which an e-portfolio is built are numerous and changing on a regular

basis, as well (Barrett, 2011a; Barrett, 2011b). Most, such as our own WIT students, started out developing e-portfolios from scratch using basic HTML, FrontPage or other web based platforms. Today there are a large number of e-portfolio based software programs for purchase or for a small annual fee (Barrett, 2011a; Barrett, 2011b). In addition, there are many purposes used for an e-portfolio, such as assessment, employment, and/or recruiting (Barrett, 2011a; Barrett, 2011b; Strohmeier, 2011).

1.2 Developers Perspective

Like many student developers, at WIT, we are currently using WordPress.com as our tool of choice (WordPress.com, 2011). WordPress.com is a free or small fee based blogging site, which contains thousands of different template themes for the user to choose from (WordPress.com, 2011). No matter which platform a student utilizes, research shows that the process for development is intrinsically the same. Most literature implies that student developers follow a process of:

- "collecting" the artifacts
- "selecting" the artifacts
- "reflecting" about the artifacts
- "directing" or setting goals" regarding the artifacts
- "presenting" or publishing the artifacts, and finally
- "receiving feedback" pertaining to the artifacts presented or published (Barrett, 2011a; Barrett, 2011b; Barrett and Garrett, 2009).

If developing from scratch, for the presenting phase, the developer must choose the publication modality. For students using WordPress.com, the platform and presentation modality is already determined (WordPress.com, 2011). In addition, the feedback phase can be accomplished much easier since WordPress.com is essentially a social networking blogging site (WordPress.com, 2011).

1.3 IS Perspective

WordPress.com, although it can be more complicated, is essentially a web based information system (IS) (WordPress.com, 2011). Just as a business uses an information system to maximize data processing, student developers can utilize an IS system for similar results (Strohmeier, 2011). This blogging system allows student developers to enter and store information. The templates help give the information meaning by sorting and storing in a structured and professional

manner. Just as information systems for businesses have evolved over many decades, e-portfolio information systems will continue to transform, as well. Currently, recruiters cannot search most systems; however, in the future these systems will give recruiters the ability to match qualifications for specific job positions quickly and efficiently (Strohmeier, 2011). Although not considered an all-inclusive e-portfolio system yet, we are already seeing this happen with LinkedIn.com (LinkedIn.com, 2011). It is in the best interest of the student developer to conceptualize and depict the e-portfolio in a structured manner, which means meeting today's objectives and planning for the IS e-portfolio of the future, as well.

1.4 Value Perspective Defined

Helping students understand the value or net worth of e-portfolio development can be a challenge. Human capital theory, as a relatively applied simple concept, provides clarity in relation to e-portfolio development (Stainback, 2008). Stainback states in his article, "the logic follows that as individuals acquire more education, knowledge and skill, their productivity increases, thus raising their relative worth over the value of another" (Stainback, 2008). Students utilize, perfect, and increase certain skills during e-portfolio development and usage. Also, value for the student developer is an "enduring belief" of satisfaction in the end result. (Fiona, Hong and Keng, 2011). In addition, Yancey states in her article, Electronic Portfolios a Decade into the Twenty-first Century, that "research at Seton Hall University has focused on the ability of e-portfolios to foster the development of noncognitive traits as well" (Yancey, 2009). She further states that these traits show "the ability to work with others, that correlate(s) with success in school and employment" (Yancey, 2009).

1.4.1 Social-Cultural Theories

Since WIT students are using a social networking blogging site for e-portfolio development, social-cultural theories of learning also apply. Kristy Young indicates that additional learning can be tied to a desire to engage (Young, 2009). Young presents two social-cultural theories that can directly apply to student e-portfolio developers. Situated cognition theory, in part, signifies that learning occurs in an online community via participation, investigation, and exposure (Young, 2009). Second, that activity theory applies because "human cognition occurs as individuals engage in motivated, goal-directed activity" (Young, 2009). Further, as participation continues mastery increases (Young, 2009). Thus, as students continue to develop and utilize e-portfolios

over time, their skills will continue to grow and learning will increase. Over time, as student developers begin to see the fruits of their hard work, their motivation level increases due to the direct impact of their demonstrated skill levels increasing.

1.4.2 Model Skills

Students sharpen and gain new skills at the start, during, and at the end of e-portfolio development and usage. Table 1 lists a sampling of the skill sets in relation to the stages of e-portfolio development and usage.

Table 1: E-portfolio development and usage skill sets

Development	Publishing	Networking	Marketing
Technology	Identity Creation	Collaboration	Associations/Contacts
Organization	Intelligence gathering	Social interaction	Connections
Design	Norms and Rules	People-to-People	Searching
Self Reflection	Security/Privacy	Peer-to-Peer	Viral Marketing

The skill sets listed in the above table seems simple, when in reality the value or net worth for each student will vary across the board. Over the last four years we have witnessed an increase in the level of these skills across the board with WIT students. A survey conducted during spring semester 2011 explores this insight.

2.0 RESEARCH DESIGN

An online survey was created using Survey Monkey, which is an online free or fee-based survey tool. The survey was distributed to all WIT graduating seniors participating in the 2011 e-portfolio course. The survey remained open for a period of three weeks in March 2011. There were 31 WIT student participants.

The sample is not intended to be representative of the entire e-portfolio student developer population in general. However, this sample is an ideal representation of the 52 graduating seniors for the 2011 graduating BSM class. Although, this sample does not represent all college students, or the job seeking public in general, the survey findings provide many insights related to the student's perceived value of e-portfolio development and usage.

The survey included six Likert scale questions exploring the satisfaction or degree of:

- I believe that my e-portfolio (EP) represents me as a management professional.
- My EP tells a story of my college career.
- My EP reflects my self-achievement.
- How satisfied are you with your final EP product?
- After finishing my EP, I can tell that I have had significant improvement and growth since freshman year.
- In choosing artifacts for my EP I followed a: reflect, select, present strategy.

The survey also included two agree or disagree questions:

- I will use my EP for employment purposes.
- I will continue to update my EP after graduation.

The survey also included two ranking sets of questions related to before and after development regarding the following skill sets:

- Technical
- Organizational
- Writing
- Critical Thinking
- Self-knowledge

The survey also asked one yes or no related question:

- Did you celebrate when you complete your EP?

And, finally the survey asked one open-ended feedback question:

- During or after developing your EP did you learn anything about yourself? Please Explain.

3.0 FINDINGS

Out of the 31 respondents 56% agree and 13% strongly agree upon completion that their e-portfolio is representative of a management professional. In regards to their belief that the e-portfolio tells a story of their college careers, 42% agree and 19% strongly agree. Not

surprisingly, 45% agree and 23% strongly agree that their e-portfolio reflects personal self-achievement.

Interestingly, only 16% were slightly satisfied, 29% were moderately satisfied, and 26% were extremely satisfied with the final product. However, when asked if they could see significant self-improvement and growth over the four years of their college career a large 58% agree and 23% strongly agree.

In choosing artifacts for their e-portfolio 39% agree and 32% strongly agree that they followed a reflect, select, present strategy.

3.1.1 Employment

When asked if they would use their e-portfolio for employment purposes 71% agree they would. Almost 68% of the respondents reported they would continue to up date their e-portfolio after graduation.

3.1.2 Utilized Skill Sets

Table 2: Utilized Skill Sets represents the current skill sets students believe they utilized the most during the development stages of e-portfolio creation in five ranking orders.

Table 2: Utilized skill sets

Rank	Technical	Organizational	Writing	Critical Thinking	Self-Knowledge
1st	10%	**42%**	19%	3%	26%
2nd	**26%**	13%	22%	**26%**	13%
3rd	10%	13%	16%	**32%**	29%
4th	13%	16%	**26%**	**26%**	19%
5th	**44%**	13%	13%	13%	17%

From a ranking first through fifth skill sets perspective, out of each category, students indicated that their organizational skills are the most important skill they need during development, followed by tied technical skills and critical thinking skills second. In third place, they indicate critical thinking skills; in forth there was another tie of writing and critical thinking skills. Finally, current technical skills are last from the first to fifth categories in a ranking order.

3.1.3 Gained Skill Sets

Table 3- Gained Skill Sets represents the skill sets students believe they gained the most during e-portfolio development in ranking order.

Table 3: Gained skill sets

Skill Set Gained	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
Technical	3%	10%	16%	**58%**	13%
Organizational	3%	13%	20%	**61%**	3%
Writing	3%	26%	**42%**	26%	3%
Critical Thinking	3%	16%	26%	**52%**	3%
Self-Knowledge	7%	10%	19%	**45%**	19%

Students believed that during e-portfolio development they gained additional organizational skills the most, followed by technical skills, critical thinking skills, self-knowledge skills and finally writing skills last in a non-ranking order. Meaning, these skill sets are what they believe they gained during e-portfolio development.

3.1.4 Comments

When students were asked if they celebrated upon e-portfolio completion 61% said yes. Finally, when students were asked to write open-ended comments in reference to during or after development of their e-portfolio did they learn anything new about themselves Table 4 Skill Set Comments below represents an interpretative analysis of these comments categorized into the skill set areas.

The survey results discussed above represent the WIT BSM senior sample of student developers. The discussion, interpretation, and limitation of the survey results are discussed next.

Table 4: Skill set comments

Skill Set	Comment
Technical	"I learned that it's not as hard as it looks to put it together, or at least Wordpress is easy enough to understand." "I learned that I have Technical skills." "I just learned a new software and way to build a website." "Learned how to use Wordpress, the social networking site."
Organizational	"Yes, I learned that I need to be more organized and keep better track and records of important documents throughout my entire time at a school or business." "Learned I needed to be more organized and aware of what will be required of me."
Writing	"It was interesting looking back on the documents I wrote during my four years of college." "I learned about the certain type of professional format that should be put on the EP."
Critical Thinking	"During my EP I realized that I had a unique take on completing my EP. I wanted to show my experience from previous majors and catered my EP to what I specifically want to do after graduation." "I learned to present the work I completed in a professional manner. I also learned how my work relates to the professional environment." "Learned about what I can do to set myself up for future employers to look at my EP." "The only thing that I might have learned is to have longer thoughts about my future goals." "It allowed me to be more creative."
Self-Knowledge	"I've learned that procrastination is death. If you leave off something for too long, and you try to do the impossible "one night" ordeal, you're setting yourself up for failure. In my case, that's what happened to me." "I learned that I accomplished more than I realized. By doing an EP, you can actually see your growth from Freshman year to Senior year." "Yes, I did not notice how much I learned throughout the school year. I actually went back and was surprised at the good work I have accomplished." "When I looked at the final product I was surprised at how far I've come since my freshman year. I felt that these four years helped me grow as a person." "I was given a greater idea of the things I have accomplished over the past four years." "I learned that I am a lot more collected under pressure then I thought I would be, and I gained self-knowledge about how resourceful I can be as well." "I was able to reflect on my experiences here at Wentworth Institute of Technology and learn how much I have done over the years."

4.0 DISCUSSION

The research that was conducted during March 2011 is a great start for subsequent studies and contributions to the existing literature base on the value of e-portfolios. The findings do indicate an increased skill set overall. However, it is important to note several implications of the current study.

4.1 Implications

A primary implication is the fact that the research conducted included only student's perspectives and was self completed by the students. Many problems are inherent with self-reporting based surveys; including the possibility that students may have overstated their utilized skill set and overrated their gained skill set.

Second, another consideration is refining the definition and application of the heuristic patterns included in the e-portfolio formula. It is implied that heuristic patterns are inherent in the design and development of student e-portfolios and that the e-porfolio itself represents an educational method in which learning takes place through discoveries that result from investigations made by the student.

An assumption is that our description of e-portfolio net worth (NW) is the sum of human capital (HC) and social capital (SC). In other words, NW = HC + SC. Defining human capital, social capital, and net worth need further discussion and research and is addressed in the following section entitled future research.

4.1.1 An Interesting Discovery

Since our WIT management students need to develop leadership skills, during our research it was interesting to discover that gained leadership qualities applies to the net value of e-portfolio development and usage, as well. McCallum and O'Connell suggest that leadership skills can be gained through "development experiences that provide opportunity for learning" ([8]). Also, their research shows that leadership skills can be acquired though "personal orientation to learning including's one's abilities, skills, and motivation" ([8]). They also suggest that through rewards gained, leadership abilities are further developed ([8]). These researchers believe that increased human capital equals increased social capital ([8]). Thus, the net worth of a student developer's e-portfolio can ultimately be determined by the following equation: e-portfolio net worth = The sum of human capital plus the sum of social capital. Net worth includes learning outcomes, networking proficiency, and increased vocational opportunities. In addition, as a by-product, the net worth of a student developer's e-portfolio can enhance more effective leadership skills.

4.1.2 The E-portfolio Model

An e-portfolio model defines net worth as it relates solely to e-portfolios. The e-portfolio model, as previously discussed, defines e-portfolio net

worth (NW) as the sum of human capital (HC) and social capital (SC); or simply NW = HC + SC.

In short, human capital represents technological skills, organizational skills, writing skills, critical thinking skills, and self-knowledge skills. These skills are either utilized or gained during the e-portfolio process from freshman to senior year.

Social capital represents the ability of students to communicate, work with others, including faculty members, and create and maintain networks as a result of their e-portfolio. Social capital is also considered a non-cognitive trait development and that these social capital skills are transferable skills in the workplace, in school, and in personal life-long learning.

Net worth or simply, the intended outcome of e-portfolios is for the student's to maximize measurable learning outcomes (curriculum based objectives), creating and utilizing effective networks (social networking based objectives), and increasing a student's marketability in terms of employment potential (vocational based objectives).

5.0 RECOMMENDATIONS AND CONCLUSION

A number of areas are recommended for future research. More specifically, the development of an assessment rubric as it applies to the e-portfolio model is an important area to address. Other areas include employer perspectives, both co-op employer and career employer, as well as faculty buy-in, free vs. fee based platforms, and transitions from academic to professional e-portfolios.

5.1 Assessment Rubric and the E-portfolio Model

A key factor for future research is to look beyond a checklist assessment of e-portfolios. A rubric will help quantify a final grade and its respective letter grade conversion. This takes the equation of NW = HC + SC to another level, beyond simply "Satisfactory" (S) and "Unsatisfactory" (U), which is the current method for giving student's a final grade on their e-portfolio.

Can heuristic patterns be sufficiently correlated with the e-portfolio net worth equation, which equals the sum of human capital and social capital? Therefore, defining human capital, social capital, and net worth as they apply to e-portfolios is a critical next step as e-portfolios

continue to expand in academia. More specifically, the definition of human capital, based on human capital theory, social capital, including non-cognitive trait development, as well as leadership skills, are all in need of further qualification and, whenever feasible, quantification.

Future research would utilize a revised matrix based on current best practices regarding e-portfolios, input from faculty members who are trained in outcomes based assessment, as well as input from employers (both co-op and full-time career).

5.1.1 Employer Perspectives

Future research that would be vital for e-portfolios is to obtain information from co-op employers and career employers. Determining the net worth of an e-portfolio from the student's perspective, from our own research and experiences, the data revealed quite interesting results. In order to strengthen the survey additional samples can be taken as well as the administration of interviews, focus groups, and questionnaires with hiring professionals. Given the rapid changes in the work environment and the continued impact of technology in academia, future research is needed from the perspective of the hiring institution. As Strohmeier suggests in his article, "Electronic Portfolios in Recruiting," more empirical evidence-based research is needed from the recruiter's perspective (Strohmeier, 2010).

5.1.2 Faculty Mentoring & Buy-In

Future research involving faculty mentoring and buy-in is also important for continued progress in the e-portfolio endeavours at WIT. Our own faculty need to develop an e-portfolio just like WIT students. This accomplishment would not only help faculty understand this process better, but would also give them the ability to help our students more effectively.

5.1.3 Free vs. Fee-Based Web Hosting

The free versus paid sites and the direction of web sites and blogs is another area that will need to be addressed at WIT in the future. For now, we will continue to use WordPress.com but that could change for many reasons. As e-portfolio tools evolve and grow, the skill sets needed to develop an e-portfolio will increase. As IT evolves so will e-portfolio development and usage.

5.1.4 Transition from Educational Career Portfolio to Professional Career Portfolio

A final consideration for future research is the transition from an academic environment to a work environment and the migration of the e-portfolio between these environments.

5.2 Conclusion

In conclusion, the student e-portfolio will continue as part of the curriculum at Wentworth Institute of Technology. At least for the short term, WordPress.com will be the site and students will still be required to have the basic components including a student profile, resume, pictures, artifacts, and references.

Student artifacts will be broken down into a cross-section of a student's human capital, including papers, projects, reports, and other academic and/or work-related artifacts; all of which attest to a student's technical, organizational, writing, critical thinking, and self-knowledge skills. The social capital elements of the e-portfolio will also include a cross-section of proficiencies, with an emphasis on social networks, imbedded technology, external hyperlinks, and other measures of social-related skill sets.

Finally, the net worth of student e-portfolios is an evolving concept and requires future research and discussion on ways to capitalize on this useful and important technological tool from a variety of stakeholder perspectives. An emphasis on students is of paramount importance and empowering students as they reflect, select, and present their e-portfolios will continue to be the primary objective of the e-portfolio process.

REFERENCES

Barrett, H. (2011a). Blurring the Boundaries: Social Networking and E-portfolios. MacLearning. 1-6.

Barrett, H. (2011b). Balancing the Two Faces of E-portfolios. British Columbia Ministry of Education, Innovations in Education, 2nd Edition.

Barrett, H and N. Garrett. (2009). Online Personal Learning Environments: Structuring Electronic Portfolios for Lifelong and Life Wide Learning. *On the Horizon*, 17(2), 142-152.

Canali, C. (2010). Characteristics and evolution of content popularity and user relations in social networks. Computers And Communications (ISCC), IEEE Symposium. 750-756.

Fiona Fui-Hoon Nah; Hong Sheng; Keng, S. u. (2011). Value-focused thinking and its application in MIS research. *Journal Of Database Management, 18*(3).

Leedham, J. T. (2011). Opportunistic social networks for academia. Mobile And Online Social Networks (MOSN), Workshop. 1-6.

LinkedIn.com. (2011). Retrieved December 26, 2011 from http://linkedin.com.

McCallum, S. (2009). Social capital and leadership development. *Leadership & Organization Development Journal, 30*(2).

Ritzhaupt, A. (2008). Development of the Electronic Portfolio Student Perspective Instrument: An ePortfolio integration initiative. *Journal of Computing In Higher Education, 19*(2).

Stainback, K. (2008). Social Contacts and Race/Ethnic Job Matching. *Social Forces, 87*(2).

Strohmeier, S. (2010). Electronic Portfolios in Recruiting? A Conceptual Analysis of Usage. *Journal Of Electronic Commerce Research, 11*(4).

Upadhyaya, B. (2009). Social Overlay: P2P Infrastructure for Social Networks. INC, IMS And IDC, 970-976.

Wang, C. (2009). Comprehensive Assessment of Student Collaboration in Electronic Portfolio Construction: An Evaluation Research. Techtrends: *Linking Research & Practice To Improve Learning, 53*(1), 58-66.

WordPress.com. (2011). Retrieved December 26, 2011 from http://wordpress.com/.

Yancey, K. (2009). Electronic Portfolios a Decade into the Twenty-first Century: What We Know, What We Need to Know. *Peer Review, 11*(1), 28-32.

Young, K. (2009) Online Social Networking: An Australian Perspective. *International Journal of Emerging Technologies And Society, 7*(1).