

eFolio Minnesota for Lifewide and Lifelong Learning: Research Results

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Introduction

eFolio Minnesota differs from most electronic portfolio projects initiated within higher education because of its scope. Most projects focus on learning solely within the context of a formal academic program, and almost all projects concentrate only on supporting currently enrolled students and the educators who serve them. eFolio Minnesota, in contrast, offers electronic portfolios for lifewide and lifelong learning. In addition to supporting learning in the classroom, eFolio Minnesota encourages users to document their lifewide learning and performance as it is manifested in the workplace, family, and community. In addition to supporting students and educators during their formal engagement with Minnesota State Colleges and Universities (MnSCU) institutions, eFolio Minnesota invites all residents of and students within the State of Minnesota to capitalize on their learning before, during, and after formal education, regardless of provider. In its genuine embrace of electronic portfolios for lifewide and lifelong learning for all, eFolio Minnesota is unique in the United States.

Funding for the eFolio Minnesota came through a congressional award, administered by the Fund for the Improvement of Post-Secondary Education (FIPSE). The grant supported the expansion of MnSCU's e-learning curriculum and student services. Focusing on students, workers, and educators, respectively, three teams developed the vision of the project and guided its implementation. Each team was lead by an expert experienced in working with the targeted segment of potential users and represented the values and practices of that domain.

The teams' vision was put into action through partnerships. Avenet, a St. Paul web development company, won the contract to build the eFolio software, which built on one of their existing products. The Department of Labor provided help desk services through the Career One Stop Service Center and offered training to schools and workforce centers. MnSCU staff played several roles in the success of the project, legal council negotiating security and data practices, IT staff providing technical guidance, and academic staff provided outreach to member institutions and winning a Perkins grant to provide further funding. Faculty and staff at individual MnSCU institutions took up the challenge of incorporating portfolio composition into the curriculum.

Since the launch of eFolio Minnesota in October, 2002, over 32,000 Minnesota residents and students have taken advantage of the service. As shown in Chart 1, the number of active users has grown linearly from August 2003 through July of

2005 at a rate of approximately 1300 new users each month. Over the year ending in May 2005, eFolio received an average of over two million hits and 67,000 unique visits per month. As of Summer 2004, the project leadership had accumulated significant anecdotal evidence of the success of all this activity through informal conversations with recipients of MnSCU grants and other users of eFolio across the State. However, MnSCU identified a need to collect and systemically analyze data about how eFolio is being used. MnSCU commissioned Darren Cambridge to conduct this research during the summer and fall of 2004. Cambridge was chosen because of his leadership of national and international electronic portfolio initiatives, such as the National Coalition on Electronic Portfolio Research and the IMS Global Learning Consortium ePortfolio Working Group, and the related research he had conducted for the American Association for Higher Education (AAHE), EDUCAUSE’s National Learning Infrastructure Initiative (NLII), and the Joint Information System Committee (JISC) in the UK. This report describes the outcomes of the year-long investigation.

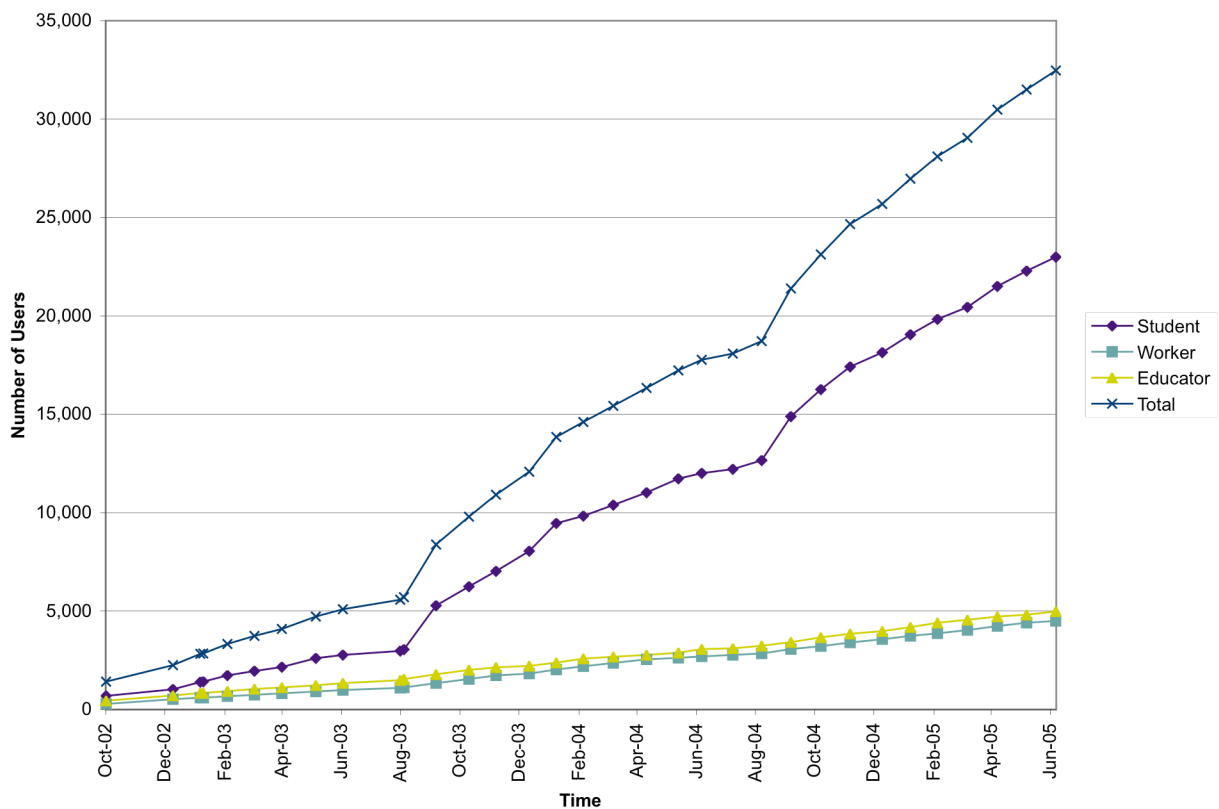


Chart 1: Growth in eFolio Minnesota Users Over Time

Research Design

The primary goal of the research was to identify and explore ways in which eFolio is proving valuable to users. In order to obtain both a broad view of patterns of use across the user base and to examine the details of individual practice, the research combined quantitative and qualitative methods. All eFolio Minnesota users were

invited to complete an online survey in July and August of 2004. The 487 responses to this survey were analyzed to identify patterns of use. Chosen from numerous volunteers, individual users whose responses were representative of the general patterns were subsequently contacted for phone interviews of 30 minutes to an hour in length. They were asked about their individual experiences related to the patterns from the survey, as well as about notable features of their individual portfolios. Interview transcripts were analyzed using coding methods adapted from the grounded theory methodology. Additional interviews were conducted to build upon patterns and themes identified in the first round of interviews. In total, 27 eFolio users were interviewed.

Representative Demographics for Age and Race, But Not for Gender and Formal Education

Survey respondents are equivalent to a random sample of Minnesota residents in terms of age, race, and ethnicity. eFolio Minnesota users range in age from 16 to 66 years, with a median age of 35. As can be seen in Chart 2, users differ significantly from Minnesotans as a whole only in the 20-24, 60-64 and 64-70 age ranges. While a disproportionately large number of users are of the traditional college age, the imbalance is relatively small when viewed in relationship to the complete distribution. eFolio Minnesota users also do not differ significantly from Minnesota residents in terms of their racial and ethnic identification.

Perhaps even more importantly, no other variables measured in the survey correlate with age. Users found eFolio similarly easy to use, satisfying, and effective regardless of their age. The level of perceived impact on learning and institutional relationships as a result of eFolio use does not differ significantly across age ranges. Except for a slight tendency in older users to employ eFolio more often to find jobs, the purposes to which users put eFolio are similar for all ages.

However, eFolio users are significantly different from the overall state population in gender and highest level of formal education. Women are overrepresented in the survey sample by 14%. The reasons for this imbalance are not clear from either the survey or interview data. On the whole, eFolio users have completed significantly more formal education than Minnesotans as a whole. As illustrated by Chart 3, the differences are most dramatic at either end of the spectrum. While only 9% of Minnesota residents have earned graduate or professional degrees, over 35% of eFolio users have earned these credentials. While over 32% percent of Minnesotans possess only a high school diploma or less, only 4% of eFolio Minnesota users are at this level.

Because MnSCU is the sponsoring organization and MnSCU institutions are a primary context through which residents are introduced to eFolio, the representative distribution of users in terms of age is somewhat surprising. This finding, combined with the lack of relationship between age and successful use, suggests that eFolio Minnesota is effective in reaching Minnesotans of all ages.

However, it has been less effective in reaching residents who have completed less formal education. There are two likely explanations for the difference between users and Minnesotans as a whole. First, many users reported being introduced to eFolio through an MnSCU institution. As either college faculty or students, these individuals would necessarily have some college education, even if they began using eFolio in their first course since high school. Second, using the eFolio software and the process of composing a portfolio may be more difficult for those with less formal education.

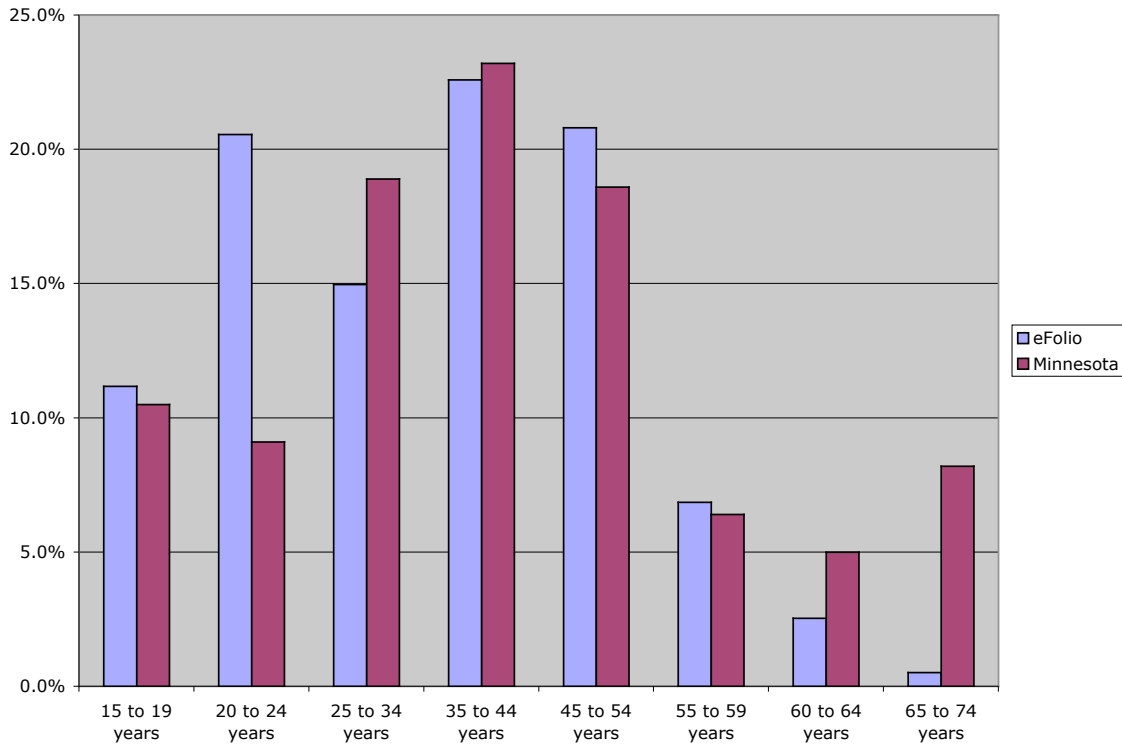


Chart 2: Age of eFolio users versus age of residents of Minnesota

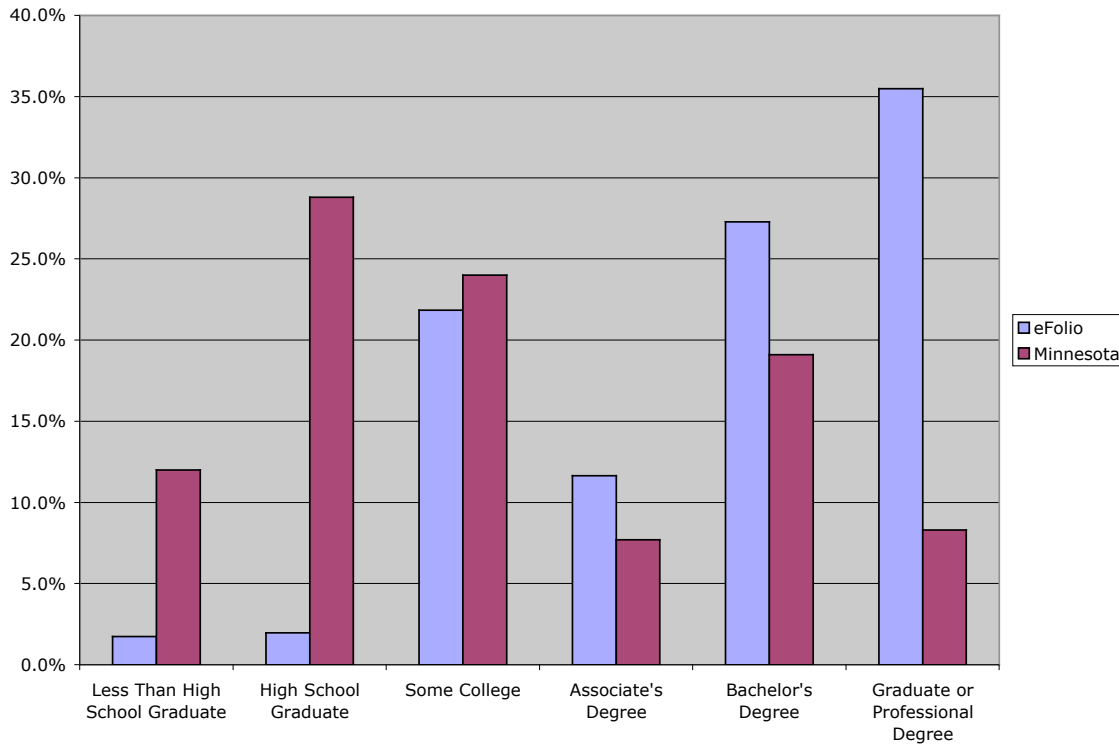


Chart 3: Education of eFolio users versus education of residents of Minnesota

Multiple and Connected Uses

The research results suggest that eFolio Minnesota users employ the software for a wide range of complexly interconnected uses. Through analysis of descriptions of electronic portfolio practice collected in the AAHE Electronic Portfolio Clearinghouse, six primary functions of electronic portfolios were defined:

- educational planning;
- documenting knowledge, skills, and abilities;
- tracking development;
- finding a job;
- evaluation within a course; and
- performance monitoring in the workplace.

In the survey, users were asked whether they had used eFolio for each purpose, and, if they had, how frequently, over how long a period, and at what level of satisfaction and perceived effectiveness. It was expected that use of the system would be concentrated around a small number of these functions. However, each of the six purposes was used by a relatively large proportion among those reporting, ranging from 36% for performance monitoring to 75% for documenting knowledge, skills, and abilities. As shown in Chart 3, for the most part, the proportion of users employing eFolio for each function remained high across students, educators, and workers. Unsurprisingly, workers used eFolio more often than other users to find a job and less often for evaluation within a course. Workers also used eFolio less for

tracking development, and, to a lesser extent, for educational planning. Educators were most likely to use eFolio for performance monitoring.

Users were asked about more specific functions within each area. Key uses included integration of formal and workplace learning, tracking learning in an academic program over time, development of technology skills for workers, and summative academic assessment.

As shown in Table 1, the most commonly reported level of satisfaction, level of perceived effectiveness, frequency of use, and duration of use were generally consistent across the primary functions. Users were generally satisfied with eFolio for each use, found the portfolio helpful, and used it at least once per semester over a period of one semester or more for that function. Finding a job showed a lower level of perceived effectiveness and less frequency of use: Users reported finding eFolio somewhat helpful for finding a job and used it less than once per year for this purpose.

As most individuals prefer to avoid frequent job changes, the later result is unsurprising. Other differences seem logical as well. For example, the fact that educators were most likely to use eFolio for performance monitoring may reflect the popularity of portfolios in sharing evidence of student teaching performance in teacher education programs. Analysis of both the quantitative and qualitative data point to additional patterns involving the use of eFolio for finding a job and educational planning.

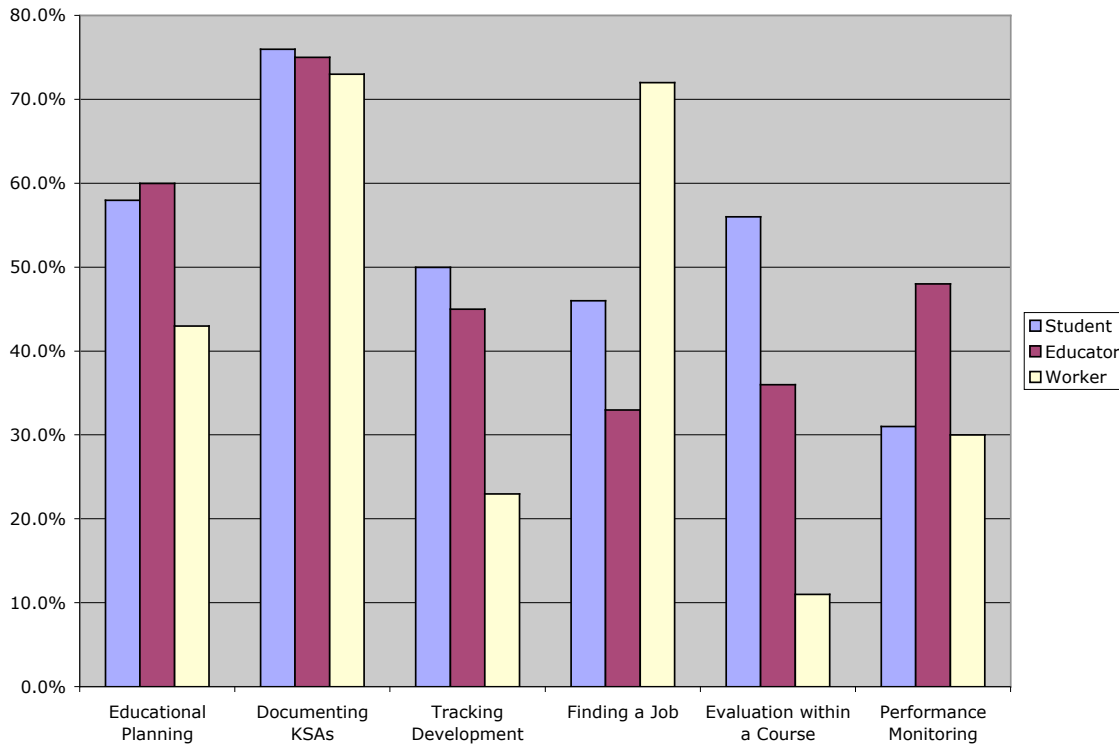


Chart 3: Percentage of eFolio users using eFolio for function by role

Function	Used	Satisfied	Found helpful	One or more times per semester	One semester or more
Educational Planning	56%	65%	40%	37%	44%
Documenting Knowledge, Skills, and Abilities	75%	45%	42%	38%	42%
Tracking Development	42%	53%	48%	47%	46%
Finding a Job	47%	33%	37%*	27%**	40%
Evaluation within a Course	40%	47%	45%	54%	53%
Performance Monitoring	36%	49%	47%	36%	34%

* found somewhat helpful

** less than once per year

Table 1: eFolio Usage, Satisfaction, and Effectiveness

Finding a Job

The relatively lesser level of perceived effectiveness of eFolio for finding a job can probably be attributed to eFolio not generating new contacts with employers. Many users desired a great degree of findability for this purpose, as discussed below. Initial contact between users and potential employers generally occurred through personal networking or with the help of job sites such as monster.com. Users who did find eFolio helpful in seeking employment generally used it to communicate with employers after initial contact and prior to an interview. Carla, a self-employed technical writer, reports that “mostly what I use it for is if I get a lead or I’m talking to somebody, I send them to the website and it gives them more information. And

they can pull up samples of my work. It's not really something where somebody finds me by the website."

In this context, the eFolio serves as a pre-interview, enabling both parties in the employment process to make better investments of their time and energy than would be possible without the technology. Mitzi, an educational paraprofessional, says that eFolio "screens out potential employers and it lets them know my skills and my education and what I'd be qualified for, so I don't have to ... go to an interview that the employer, I wouldn't be happy working there and they wouldn't be happy with me." The portfolio gives the employer access to samples of candidates' work and answers questions about their qualifications and, in some cases, personality that would be difficult to judge from a resume alone. This step eliminates unnecessary face-to-face contact and makes the initial interview more productive.

Educational Planning

The levels of satisfaction, perceived effectiveness, and duration of use for the six functions were strongly and complexly interrelated. Planning had the most, and most complex, correlations with other uses, suggesting that planning plays a central role. Table 2 shows the strong (correlation coefficient great than 0.6) correlations identified in the survey data between these variables for educational planning and these variables for the other primary function. Each function is represented using a different color. The rainbow-like composition of the resulting table indicates the complex interconnections of planning and other functions. Educational planning shows a strong correlation with at least one of the outcome variables for each of the other five primary functions.

0.764	Duration Of Use In Edu Planning	Duration Of Use In Documenting
0.719	Effectiveness In Edu Planning	Effectiveness In Professional Performance Review
0.718	Duration Of Use In Edu Planning	Duration Of Use In Evaluating Within A Course
0.711	Effectiveness In Edu Planning	Effectiveness In Tracking Development
0.690	Effectiveness In Edu Planning	Effectiveness For Evaluation Within A Course
0.685	Satisfaction As Edu Planning Tool	Satisfaction For Evaluation Within A Course
0.643	Duration Of Use In Edu Planning	Duration Of Use In Tracking Development
0.642	Effectiveness In Edu Planning	Satisfaction For Evaluation Within A Course
0.640	Effectiveness In Edu Planning	Satisfaction In Finding A Job
0.632	Effectiveness In Edu Planning	Effectiveness As Documenting Tool
0.620	Satisfaction As Edu Planning Tool	Effectiveness For Evaluation Within A Course
0.614	Effectiveness In Edu Planning	Effectiveness In Finding A Job
0.613	Effectiveness In Edu Planning	Satisfaction As Development Tracking Tool
0.612	Satisfaction As Edu Planning Tool	Effectiveness In Edu Planning

Table 2: Educational Planning Correlations

In spite of the lack of any forward-looking prompts, users see planning as central to their eFolio experiences. Their portfolios are expressions of both who they've been

and who they'd like to be. Jeff, a graduate student and systems administrator, thinks of a portfolio as "a picture, a text picture of ones life, past, ... current, maybe future, ... where your dreams are, goals are." As well as representation of capabilities and aspirations, a portfolio serves as a "central repository" of the author's ideas and experiences on which he or she can reflect in making decisions about the future. Because eFolio "prompts [him] to look back," Jeff is better able to make informed choice about the future. "Once I look and see an overall view of all the different things, it is kind of directing me to hey maybe I need to look at different things in my career too, even my teaching." Carla relates that "I look at my site, and I was looking up my, the training, like the professional education, noticing I haven't done it in the last year." Upon this realization, she reflects on the rest of her portfolio to determine "Do I need more computer skills? Do I need a business topic? Do I need something more specific to training and development?" The portfolio serves as a "center piece" at the intersection of reflection and action, looking backwards and looking forwards.

Fluid Roles

When residents sign up for an eFolio account, they identify themselves as either a student, educator, or worker. However, the uses to which people put eFolio are not limited to these initial roles. For each of the primary functions for which they reported employing eFolio, users were asked what role they played in the context of that use. Over 27% of the time, users employed eFolio in a role other than that for which they signed up. Table 3 demonstrates that the most common role shifts are between student and educator and educator and student.

	Educational Planning	Documenting KSAs	Tracking Development	Finding A Job	Evaluation Within A Course	Performance Monitoring	Total Shifts
Student To Educator	19	21	14	19	9	9	91
Student To Worker	3	7	1	9	1	2	23
Student To None	1	1	2	1	0	0	5
Educator To Student	15	19	14	2	20	10	80
Educator To Worker	5	11	5	9	1	7	38
Educator To None	1	1	0	0	0	2	4
Worker To Student	9	13	5	8	4	4	43
Worker To Educator	6	5	1	4	2	2	20
Worker To None	6	3	2	2	1	2	16
Total Shifts	65	81	44	54	38	38	320
Total Responses	218	308	171	185	157	128	1167
Percent Shifted	30%	26%	26%	29%	24%	30%	27%

Table 3: Role shifts

Role shifting is strong evidence of eFolio doing what it is designed to do, that is to promote life-wide and lifelong learning. Interviews revealed two types of role shifting, moving among multiple roles at once and shifting between roles over time. Users employed eFolio for different purposes, assuming different roles simultaneously. For example, Arlyn, a faculty member at a community college and an experienced kitchen and bath designer, uses her portfolio both to represent herself as a teacher and as a designer. Her portfolio helps her explore the connection between these two roles in her professional life. By integrating her design experience, she is able to model effective professional self-representation for her students and to demonstrate how her teaching experiences allow her to grow as a practitioner. By helping users integrate the multiple roles they assume at one time, eFolio supports life-wide learning.

In contrast, Heather began her portfolio to fulfill a course requirement as a student in a teacher education program. She now continues to use her portfolio in her role as an elementary school teacher. As a student, she learned strategies for documenting and presenting her teaching philosophy and experience in accordance with the expectations of the program in which she was enrolled. As a teacher, she both makes use of and refines these skills to show how she has put her ideas into action and to document their results. When funding for her current position working with special needs students concludes, she plans to use her portfolio in her job search. As eFolio helps users like Heather negotiate transitions between roles, it promotes lifelong learning.

Experimentation and the Living Document

The research suggests three stages in the development and use of portfolios by eFolio users: experimentation, living document, and archived. In the experimentation stage, users try out different ways of representing themselves. The experimentation that characterizes the first stage involves trying out multiple ways of representing one's learning and performance, keeping some, discarding others, on the basis of their perceived benefits. This experimentation is conversational in nature. Authors iteratively develop their evolving online personae in relationship both to audiences and to the affordances and constraints of the eFolio software. At the conclusion of this experimentation, the portfolio reaches maturity and becomes a "living document." The portfolio continues to be perceived as valuable to the extent that it exhibits the viability associated with this stage. When it ceases to be viable, the portfolio can be considered archived.

Experimentation

Most users began to develop their portfolios without much in the way of detailed planning. Rather than determining what materials were needed and how they could most effectively be organized in advance, creators "played around" by beginning to use the software very early in the composition process. Users describe their early process as a combination of "trial-and-error," "testing," and "a lot of manipulating

all the information and content." Jeff admits, "I don't have the plans it's just as much of a work in progress again of trying it out and testing out certain things. Seeing how different items can work on there." John "just had at it." The feedback that shapes how the experimentation proceeds comes from peers also developing portfolios, the author's own sense of a public audience, and the experience of using the software itself.

During experimentation, users stress the importance of developing their portfolios alongside other portfolio authors. Kerry, a student, formed a group with other members of her class to build her portfolio in response to a semester-long assignment. Because she did not have a clear model for what purposes her portfolio might serve for her and how she might organize the extensive information about herself she could potentially include, she relished the opportunity to "bounce ideas off of someone else." From her group of peer portfolio authors, she got feedback on the strategies and content with which she was experimenting and gleaned new ideas from the others' experiments: "it was nice just to see somebody else's" in progress. "We were all pretty much clueless and just banging our heads against each other." Members of the group also shared expertise through the collaborative production of video introductions to be included in their portfolios, taking turns filming each other and learning together how to encode and upload the resulting files. For Scott, who had recently been laid off and was negotiating the job market for the first time in a number of years, sharing his portfolio experiments with other members of a dislocated workers' program provided a sense of solidarity as well as ideas. "It is a nice thing to be able to have ... something that you feel you're committed to as far as, you know, here's something maybe it's not a job today but at least ... I can talk to other people that are out of work. ... I felt like I was contributing to the group and, you know, trying to help other people get jobs as well as myself." Scott's portfolio, and those shared with him by the other workers, provided focus for these conversations and were shaped by them.

In addition to the observed audiences of peers, teachers, and counselors off of which users bounced ideas while experimenting, users also shaped their evolving self-representations in relationship to imagined, public audiences. Many portfolio authors had a strong sense of "being out there," of the need to address a public audience that is unknown and unpredictable. As she began choosing what to include in her portfolio, Tracy, a nursing educator, had this public audience in mind:

There are certain ... aspects that I don't feel the need to share with everybody, but ... just as you create a resume for public distribution, you choose the pieces that you feel most accurately and positively reflect your human being, and so I selected things that I felt demonstrated my values and shed a positive light on me in a public way.

Tracy balances a desire to share enough of the complexity of life to give her readers a sense of herself as a full human being with a need to control access to negative or unrepresentative information that could prove harmful to her in the hands of unforeseen public audiences.

The design of the eFolio software impacts how users experiment with different self-representational strategies in relationship to both peer and public audiences in two

primary ways. First, the content structures encoded with the software—categories, subcategories, prompts, and templates—play a heuristic role. The structure “kind of gets you to kind of focus yourself a little bit better” through suggesting what sorts of information might be included and how that information might be organized. The potentially overwhelming task of creating a consistent and complete portfolio becomes manageable because the system “kind of walks you along that because it gives you some very good basic starting categories.” At the same time, the structure also helps authors identify content they might otherwise have neglected: “the basic template made you think of things that maybe you wouldn't put down normally or that you'd just say ‘Oh I hadn't thought to include that, but oh that makes sense.’”

Second, because of the ease of use in making changes using the eFolio software, the perceived consequences of creating and organizing information within a portfolio are less threatening, encouraging experimentation rather than extensive planning. Because eFolio makes it painless to edit information, authors can “do a little footwork ahead of the game.” Because it requires little time and effort to begin to reach an audience and because the message shared with that audience can be easily changed if it has other than the desired impact, the risk of self-representation is lowered and experimentation is more likely. Users overwhelmingly report that eFolio is easy to use, and ease of use was the most frequently mentioned characteristic of the software that influenced users' judgment of eFolio Minnesota's effectiveness.

Living Document

When the portfolio reaches maturity, it becomes a “living document.” In the living document stage, changes are made regularly, but not continuously, to keep the portfolio up to date. By this stage, users have developed both a clear structure for their portfolio and a facility with the software. Heather, whose portfolio is in the living document stage, reports, “Now I know how to upload things, I know where things are going, I have an organized layout.” In the living document stage, updates are primarily additive, rather than transformational. New information is added about activities and accomplishments related to the established purposes of the portfolio. In academic contexts, this may mean tracking learning over time within a program, a key use identified in the survey. Beyond formal education, less detail may be necessary. For Tracy, her portfolio “is meant to be updated as most major things change in [her] life to reflect different directions that [she's] going.” While the minor events of day-to-day life need not be captured in the portfolio, the portfolio can chronicle significant events so that “stale information” is avoided and so that the portfolio serves as “a fairly updated ... onsite look at a person.” Depending on the user and his or her purposes, updates may be necessary on a weekly or monthly basis, but most users “wouldn't think that the information [must be] as dynamic as a news site ... where news is updated daily.” Other users link updates to milestones in their careers or educations, such as the completion of a contract or a school year. Transformative revisions, where the fundamental organization of content of the portfolio changes in response to new audiences and

purposes, are only attempted in reaction to major life changes, such as going back to school or entering the job market.

Adaptability to multiple audiences and purposes without transformative changes is accomplished through the inclusion of multiple "layers." Layers are included both to adapt the portfolio to address different audiences and to adapt it to varying needs to the same audience for differing purposes. The layered portfolio provides "one-stop shopping" for the needs of these audiences over time. Layering is reflected in the organization of an eFolio:

I tried to organize it since everyone would have a different purpose to have a look at the site, and if I were showing it to my cousin in California, just saying "Hey, this is what I'm doing with my life," opposed to someone I'm applying to get a position for, try to organize it so different mediums would be able to find their way around for their specific needs.

Particularly for authors using eFolio to find a job, this organizational goal is realized through a hierarchical structure of categories and subcategories through which readers "drill down" the level of detail appropriate for their needs: "Say if I went under skills and then I have underneath there information technology and then managerial and then communication ... really you're just drilling down into the subsections." eFolio enabled Eric to include both the traditional "street" resume necessary early in the recruitment process and more detailed information about his accomplishments needed as his audience considers him for more specific assignments.

The printable street resume is first foot in the door type of thing. But then the other pie that I found was that the people that would be the head hunters would be interested in particular things, and they would want to get down to a more extensive oh let's say banking. How, you know, go into the number of different places that you've [worked] and just say, you know, you've been here, here, and here, explain a little more about, you know, the different types of things that you've done. And in that expanded resume, I would tell them, you know, take a look at that. And you can pick and choose, ... take more of this or less of that and ... rather than just having bullet points to give to the people that are looking at the possibility of hiring you.

Including multiple layers allows him to anticipate the changing needs of his audience and to address them. In the process of discerning the stages in the communication process, he gains a richer understanding of how to communicate his abilities effectively.

Impact Through Audience and Integrity

While most users report a small to moderate amount of impact of using eFolio on their learning and relationship to others within their institution, a significant minority, 18%, reports a substantial amount. Two primary factors contribute to the degree of impact: audience and integrity.

Audience

Users who report a strong sense of audience for their portfolios also report a high level of impact. Audiences are of two types, real and imagined. With real audiences, the user has actual evidence that people are reading his or her portfolio. These real audiences may include peers also developing portfolios that prove important in the experimentation stage, faculty and counselors with whom a student discusses his or her portfolio, employers to whom a worker refers, family and friends with whom a user talks about portfolio content, or anonymous readers who take the polls and surveys some users include within their sites. When portfolio authors have a strong sense that these real audiences find their portfolio interesting and useful, they tend to also see eFolio as having a more profound impact on their lives as a whole. As users negotiate their sense of "being out there" to imagined, public audiences (as discussed above), the perceived impact of their eFolio experience is increased because they have developed a sense of persons with whom their portfolios are intended to communicate and a set of strategies, such as layering, to address those intended audiences and to avoid misinterpretation and exploitation by undesired audiences.

The eFolio software, however, can be improved even further to better support connecting users with audiences through increasing findability and through giving users more information about who is actually reading their portfolios. Many users report a desire for increased findability of their portfolios. As discussed above in regard to using eFolio to find a job, few users feel that their portfolio has been discovered by readers with whom they have not had previous direct contact: Lesley regrets that "I don't really think anybody would stumble across my eFolio without the specific address; I can't see that ever happening." Users would like members of their intended audiences to find them more easily by providing readers with more ways to search the contents of the eFolio Minnesota site. At its simplest, findability can be improved by using popular search engines to index eFolios. Many users mistakenly believed that their eFolio sites were consciously hidden from search engines and that getting listed is an expensive process:

I'm not listed under any search companies. ... If I search my name... this eFolio site does not come up under a search. So, it's not bringing me any business. ... When I think of the future, ... I would want to be under a search engine, which I know I'm going to have to pay for.

Users also suggested that findability could be improved by inclusion of more structured metadata to enable more complex searches of eFolios. Suggestions ranged from including simple keywords targeted at search engine results to adding systems for quantitatively profiling skills. Job seekers, in particular, would like for their audiences to be able to search their portfolios in ways similar to more structured jobs databases like Monster.com and Career Builder. According to Scott

What would entice employers to come into eFolio would be the ability to just give a few words and the amount of expertise that ... he's looking for: ... Cobol, nine or above, ... CAD ... four to six, Caterpillar grater or whatever, nine, [etc.] ... You then let that run out there and grab off all of the people that have those things with that level or that they say they have of that level of expertise. I think that's something that, you know, an employer would

say oh, okay, I don't have to go out here and just thumb through all this stuff.

Many users would like also more information about who is reading their portfolio: How many people are reading it? Who are these people? How are they progressing through the site? How often and for how long do they read? In many cases, portfolio authors were unclear about whether their eFolios were reaching their intended audience. While they had some anecdotal evidence of use from conversations with employers, teachers, and friends, they expressed a desire for a more systematic account. Some users wished for a simple page hits counter. Although the existing site stats feature provides information at this level of detail, many users seemed unaware of its availability. Most, however, would like more extensive information. Job seekers, in particular, want information about whether or not the potential employers they are targeting are reading their portfolios. Some would also like to see statistics about the usage of eFolio by employers not just in relationship to their individual portfolios but to all portfolios in the system. Many authors would like to know the sections within their portfolios that are receiving the most attention and about the paths readers take through their portfolios. Kate wishes "I could know where people were going, if they're just stopping at the home page, if they were digging deeper, reading about myself, like my autobiography, if they were looking at the pictures, looking at the work samples."

Integrity

Integrity is as important to the impact of eFolio as audience. Users who report a strong sense of the integrity of their portfolios also report a high level of impact. Portfolio has integrity when it represents a well-integrated and complete representation of the creators' sense of themselves as they wish to make that sense visible to their audience(s). Key to achieving integrity is negotiation of a tension between the personal and professional. Users perceive portfolios as personalized documents for professional purposes, both in tone and content. The portfolio is a genre at the intersection of two spheres of life, more personal than a resume, but more professional than a personal website. While a portfolio can be more "warm and fuzzy" and "informal," allowing the author to assert his or her voice, it must have a "professional edge to it," so that it serves as "professionally tuned documentation." As detailed in the audience section, many successful portfolios address both personal and professional audiences through the use of layers and diverse types of evidence from all spheres of life.

As Tracy was quoted above, a portfolio is successful if it maintains a professional edge while it simultaneously represents the author's whole "human being," her sense of herself as a complete, coherent person across the different roles she plays in life. An integral portfolio provides a "picture of [your] life, past, ... current, ... future" that serves both as a "synopsis of what you're doing" across different spheres and roles and as an expression of "your vision of your life," including what "your dreams are, goals are," both personal and professional.

Achieving this integrity is a reflective process. "It really does kind of get you to do a little soul-searching ... and to really think about how you want yourself viewed." Rather than eliminating the tension between personal and professional, many authors focus on providing a narrative of how they approach it over the course of their lives. Tracy uses her portfolio to share with her students the challenges she negotiates in balancing the different spheres of her life. Because this balancing is a shared experience, students get a sense of her as a whole and real person. She is making the conflict and competition through which she must find a path to be successful visible, rather than excluding it from her self-representation.

I think it'd be difficult to separate completely, you know, who I am and what my immediate family loves are, versus just me as a professional educator and nurse, so I think that that was important for me to be able to display that ... I am a real person, I have a family, I have kids and I think that that brings me closer to what maybe students are experiencing, I am not someone who's isolated to the world of professional nursing education, I also have conflicting, or competing maybe, obligations within my life that I need to balance, just as students do and other professionals do, and I think that that's a good thing, to show students and people that are reading my sites, I have other obligations in my life and I manage to hopefully balance them all and be able to perform to the best of my ability in all those domains.

For authors who haven't found a way to integrate their personal and professional experiences, the process of documenting both within their portfolios serves as an occasion to recognize and think about this disjunction. Reflecting on his portfolio, Jeff realizes that, while there are both "a lot of academic items" and "quite a few personal items" within his portfolio, he has not yet been able to articulate the relationships and connections between the two sets. John's portfolio helps him reflect that while "it'd be ideal if" his personal and professional lives "were related, ... unfortunately, they're not. Right now my work is my work. And my personal life is my personal life. And school is just sort of everywhere all the time." Through this reflection on his portfolio, he begins to see his academic pursuits as a bridge between these two spheres of life that he previously held fully compartmentalized.

Users often employ graphics, audio and visual, to represent the personal in their portfolios. Inclusion of these elements enables authors to create a more personal style and tone than they believed to be possible through prose alone. Heather includes both audio clips about her teaching philosophy and a brief video introducing her portfolio "so you could hear my voice." Similarly, Lesley includes a photo because "it's a good way for people to get to know me." Unlike in a formal resume, sharing one's personality is important to an integral portfolio.

Currently, however, representation of the personal is restricted by limits on space and visual control. Numerous users reported that the small amount of storage space allotted to them by the eFolio software impedes their ability to include substantial personalizing multimedia content. Rather than including a cursory introduction, Mitzi sees the need for a longer video to fully express herself: "I'd want something that had more, like maybe a five or a ten minute speech on there." Such a file, though, would exceed her quota. Other users reported including less

images throughout because of the space used by audio and video clips. Some more technically adept users worked around this limitation through storing media files on other Web servers and linking to them. Most users were unaware that it was possible to purchase additional storage space. While some users appreciated that eFolio enabled them to “not have to think about” the visual design of their portfolios while still producing a “professional” looking site, others felt that eFolio provided them with insufficient control to represent their identity visually. Lesley would like to “be able to personalize it a bit more, be able to come in with colors that are more me, because I’m very much into color and into design, those are part of who I am.”

Institutional Support Through Collaborative Development and Range of Uses

In order to recommend ways that MnSCU can better support the high impact patterns of use uncovered through this research, it is important to determine the relationship between the level and kinds of support that users receive from their home institutions—be they schools, colleges, universities, or workforce development centers—and their satisfaction with and sense of efficacy through eFolio Minnesota. Quite surprisingly, the survey showed no significant relationship between the level of support users received and any measure of success. However, the interviews uncovered two areas in which institutional support matters: collaborative development and range of uses.

As suggested in the experimentation section, many users reported that collaborative development, having others with whom they could share ideas and techniques, was key to their success. Because this interaction was often with peers, users did not perceive collaborative development as support from the institution. Institutions, however, can play a crucial role in ensuring the availability of contexts for collaborative development. The student who developed her portfolio through bouncing ideas off a group of fellow students did so at the suggestion of her instructor, utilizing contacts made through the class in which the portfolio was assigned. Similarly, Scott was able to take advantage of his fellow displaced workers’ experiences and contribute his own through the weekly meetings organized by his workforce development center.

A second way that institutions substantially affect the impact of eFolio experiences on their users is through initial presentation of the development and use of portfolios. Almost all users report being introduced to eFolio through some formal program offered by an institution, usually either a workshop or a course. The manner in which eFolio is introduced within these programs shapes users’ sense of the possible functions for which eFolio can productively be applied. The range of uses shared with new portfolio authors and the strategies for integrating across uses introduced impact the breadth of the author’s explorations during the experimentation stage. If the workshop or course introduces eFolio as a tool solely to address a single audience or purpose using evidence from a single sphere of life, authors are less likely to try out other applications. Once these portfolios reach the

living document stage, it is rare to see a significant broadening of audiences and purposes. With a narrow focus, the resulting portfolios will probably not enact the integrity that this research shows is closely related to a high level of impact on learning and development. While some users report positive experiences with eFolio with such a narrow focus, they have missed the opportunity to take advantage of its full possibilities for lifelong and life-wide learning. Through introductions that emphasize the full range of possible uses and discuss how they can be integrated, institutions can better the odds of powerful learning.

Recommendations

As a whole, the results of the research show that eFolio Minnesota is supporting lifelong and life-wide learning for a diverse group of Minnesotans. The patterns of usage identified, however, suggest that eFolio's impact could be broadened and strengthened in several ways. This report concludes with recommendations that follow from the results. MnSCU should expand access, foreground planning, increase findability, cultivate audiences, capture activity, foreground the personal, cultivate collaborative contexts, and promote integral introductions.

Expand access

In order to serve all of Minnesota, eFolio must do a better job of reaching residents who have a high school education or less. Because MnSCU's primary mission is higher education, programs targeted at this less-educated population should be developed in partnership with other organizations, such as primary and secondary school systems, workforce development organizations, non-profit organizations focusing on literacy and other basic skills, employers, and the Department of Labor. In order to promote lifelong learning, MnSCU should place a particularly strong focus on engaging secondary school students. Given a strong introduction at a young age, these students are most likely to continue using their eFolios as they move into higher education and into new roles as workers and educators later in life. In order to promote this articulation, MnSCU institutions and schools within their communities should be supported in developing K-16 programs that make use of eFolio. MnSCU should also investigate learning from and possible collaborations with organizations in the UK and the rest of Europe that share MnSCU's goals of reaching all citizens, both within and beyond formal educational programs.

Access can also be expanded through adding new features to the eFolio software that make the initial development of a portfolio less difficult for users with less formal education. New tools should be developed that guide users step by step through the early stages of development, providing them with a usable version of their portfolio quickly and building their confidence so that they may move on to use the existing features of eFolio. In partnership with the Department of Employment and Economic Development and the Department of Education, MnSCU and Avenet have already made significant progress on new functionality that addresses this need through interview-style creation of portfolios and questionnaires that collect structured data.

Foreground planning

The research indicates that educational planning plays a central role in successful portfolio practice. Currently, however, eFolio Minnesota places little explicit emphasis on planning. From common programmatic applications within academic programs to the structure of the software itself, the focus is almost always backward rather than forward looking. MnSCU can support educational planning in

at least three ways. First, the eFolio Minnesota website and other documentation and support materials should be revised to encourage use of eFolio for planning, as well as documentation and communication. Second, the default categories and subcategories for all three roles should be modified so that some prompts explicitly elicit information about future goals, aspirations, and plans. Third, programs at MnSCU institutions and other organizations that encourage the use of eFolio for planning should be identified and promoted, and the successful strategies used in these programs should be documented and shared.

Increase findability

Making connections with audiences is central to high impact use of eFolio. In order to increase the availability to meaningful audiences for eFolio users' portfolios, their findability should be increased. At the most basic level, this action may be as simple as ensuring that users who so desire are assisted in getting their sites indexed by major search engines. At a more sophisticated level, eFolio might offer a search interface for employers which allows them to search all listed portfolios for specific skills, competencies, or characteristics. Providing such an interface would require eFolio to become more data centric through the inclusion of features that enable users to include the necessary structured information in a standardized format. The IMS/GLC ePortfolio Specification offers such a standardized format. Implementation of the specification would also enable the portability of portfolios and portfolio data between eFolio and the Open Source Portfolio software used throughout the University of Minnesota system. Increased findability might also be facilitated through integration with job search databases offered by other agencies, such as the Department of Employment and Economic Development, and by private services, such as Monster.com.

Cultivate audiences

While increasing the findability of portfolios is a first step towards cultivating audiences for them, simply ensuring that they make it onto the screens of desired readers does not yet mean these readers can use them effectively. MnSCU should find ways to work provide guidance and support to members of such audiences as potential employers, graduate school admissions officers, and parents about how to make sense of portfolios and how to integrate their use into organizational practice. MnSCU should encourage programs to work in partnership with businesses and government agencies whose workers they educate to help them capitalize upon and support the continuation of portfolio learning through the use of eFolio. The work that MnSCU has begun with the Department of Education to use eFolio for paraprofessional licenses is a first step in this direction. These collaborations should be supported by a richer picture of portfolio use from the perspective of the audience. In addition, further research is necessary to learn how people read eFolios, what they value about them, and how they can be used effectively to support the goals of the readers and their organizations.

Capture activity

In addition to the increased availability of audiences, users would benefit from more information about how and by whom their portfolios are being read. Through more detailed information about audience, users would gain both a stronger sense of whether their portfolio is reaching the audiences they intend and more information about which rhetorical strategies have been effective in making the desired connections. A first step toward capturing and making available to authors more data about reading activity could be extending eFolio's site stats feature to provide statistics for each page within the portfolio. Capturing additional information about the characteristics of readers would most likely require readers to register and provide some basic information about themselves prior to accessing eFolios. Mandatory registration has obvious drawbacks. However, registration might be tied to use of the enhanced search interface proposed above. Using the interface, readers would have access to more structured information about portfolio authors, who would, in return, learn more about their readers. Such data would also be valuable to future research.

Foreground the personal

As for planning, little in the eFolio documentation, software, and use in most programs explicitly supports documentation of personal life. The focus is almost entirely on professional and educational spheres of life. However, success in integrating the personal, professional, and educational is central to a powerful portfolio experience. As with educational planning, eFolio materials, tools, and programs should be revised to actively encourage and support the integration of personal life into authors' portfolios.

Cultivate collaborative contexts

Users reported that having a group of peers with whom to test ideas and share techniques while developing portfolios significantly contributed to their success and satisfaction. Such collaborative development can be supported in two ways. First, programs using eFolio should be encouraged to provide opportunities for collaborative development and to introduce techniques that have proved effective in facilitating such collaboration. One strategy worth consideration is the establishment of portfolio studios where authors can both connect with others and receive expert assistance, an approach proving effective at institutions such as Clemson University and LaGuardia Community College. MnSCU might support the establishment of studios within its institutions and their programs. Second, the collaboration feature of the eFolio software should be enhanced. Building on the success of the online form and survey tools, additional commenting functions allowing readers to more easily comment upon portfolios, pages, and categories might be added. The structured search tool proposed above might also be crafted to help authors identify other authors with whom they might wish to collaborate informally.

Promote integral introductions

The way users are introduced to eFolio has a major influence on how they make use of it. Users who are introduced to the full range of possible applications of eFolio and who are encouraged to experiment with including evidence from multiple spheres of their lives are most likely to create portfolios that achieve integrity, a key predictor of a high level of impact on learning and relationships. MnSCU should encourage institutions that introduce eFolio to users to develop workshops, lessons, tutorials, and guides that emphasize and illustrate the full range of observed uses, that encourage experimentation, and that stress integrity as an important goal.

Further Research

While this research provides a more comprehensive and systematic account of how people use eFolio, many questions remain. eFolio Minnesota would benefit from additional research along four lines. First, in order to provide a fuller account of role shifting, an important trend identified in this research, longitudinal research on individual use of eFolio is needed. Second, more research is warranted into how readers make sense of eFolios, as discussed above. Third, in order to better support programs and organizations facilitating the use of eFolio, MnSCU could benefit from a state-wide inventory of effective practices for encouraging the high impact patterns of use identified in this report. Finally, similar research should be conducted on electronic portfolio programs that aim to promote lifelong and life-wide learning in other states and countries. By contrasting and comparing results, this research will identify the impact of cultural norms and policy structures on how portfolios can best be used to support learning throughout life.

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