

## The Annual AAEEBL Survey at Two: Looking Back and Looking Ahead

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This report on the second year of the annual Association for Authentic, Experiential, & Evidenced-Based Learning (AAEEBL) survey provides insights into the landscape of ePortfolio adoption and use within academic settings in the United States and abroad from the perspective of a self-selected sample of the organization's members. This report identifies the demographics of ePortfolio practitioners and explores the relationships among teaching beliefs, ePortfolio practices, and specific ePortfolio technologies. Drawing from data from the 2011 and 2012 administrations, emerging trends and preliminary findings begin to inform topics and sub-groups for future investigation, particularly with respect to the impact of ePortfolio pedagogy, technology, and culture on teaching beliefs operationalized as teacher, learner, and learning-centered orientations. The outcomes of this work have implications for the design of future deployments of the AAEEBL survey, but also for more targeted studies of ePortfolio implementations in specific disciplines and demographic groups.

The mission of the Association for Authentic Experiential Evidence-Based Learning (AAEEBL) is to leverage ePortfolios to change teaching practices in ways that might afford students more genuine and durable learning experiences. Accordingly, when we launched the annual survey two years ago, we did not aspire only to track the spread of ePortfolios. We hoped to understand the characteristics and nuances of transformation associated with portfolio practice.

In designing the AAEEBL membership survey, we purposely aimed to differentiate this instrument from other data collection efforts related to ePortfolios. For example, since 2003, the Campus Computing Project's annual survey of senior campus IT officers has tracked the increase in ePortfolio services across all sectors of higher education including two- and four-year public and private colleges and universities across the United States (Campus Computing Project, 2012). Representing the student perspective, the Educause Center for Applied Research (ECAR) conducts an annual Study of Undergraduate Students and Information Technology and found a similar and substantial growth in the use of ePortfolios reported by students (nearly sevenfold, from 7% to 52%) from 2010-2012 (Dahlstrom, 2012).

In contrast, the AAEEBL survey specifically addresses issues of interest to its diverse global membership which includes educators, practitioners, and ePortfolio technology vendors. As individuals representing institutions and organizations who have a pedagogical, technological, and/or financial investment in ePortfolios, AAEEBL members share a common interest in using ePortfolios to support learners and transform institutional cultures. The current survey instrument focuses on exploring the relationships among teaching beliefs, ePortfolio practices, and specific ePortfolio technologies. Because of AAEEBL's corporate affiliate program and partnerships with

leading ePortfolio providers, the findings from the annual membership survey are uniquely positioned to directly inform decisions made by these providers as to what kinds of ePortfolio features are valuable, useful, and needed by subsets of groups representing various demographic characteristics. As a result, we expect the AAEEBL membership survey instrument to evolve from year to year so that it may stay current and responsive to the relevant needs, challenges, and issues of the global ePortfolio community.

The 2012 AAEEBL annual survey is now past two independent pilots (Brown, Cho, & Ater-Kranov, 2012) and one year since modifications and implementation through AAEEBL. The results from the second year of the AAEEBL survey suggest that the implementation of ePortfolios, as compared with the pilot efforts and the inaugural AAEEBL administration, does indeed reflect an evolution in practice and teaching beliefs. The use of ePortfolios is gaining ground, and there is evidence that they are changing the ways practitioners think about teaching and learning. One key aspect of teaching practice in particular—how ePortfolio practitioners approach evaluation—has changed in ways that have significant and interesting implications.

This update on emerging findings from the AAEEBL survey will present first an overview of the demographic changes and spread of ePortfolio practice. We will then report on the development of the constructs of teaching beliefs as compared with previous pilots as well as the evolution of the ways we have assessed them. Finally, we will describe the distribution of those beliefs in practice and how those beliefs are now shaping and reflecting new teaching practices.

### Surveying ePortfolio Demographics

The first part of the AAEEBL ePortfolio survey focused on the demographics of ePortfolio practitioners

and ePortfolio initiatives emerging around the world: Who are ePortfolio practitioners? What are the sizes of the institutions they represent, what programs/disciplines, and what platforms or ePortfolio tools do they use? What is the primary purpose of the initiative? This baseline demographic information is important, but it is also subordinate to the second part of the survey which was designed to help understand some of the underlying thinking that might ultimately help AAEEBL and ePortfolio practitioners support each other in advancing practices that promote useful and durable learning. Survey participants were asked to respond to the survey questions from their own individual, personal and professional vantage, focusing on a single ePortfolio project or program in which they were involved. The survey took approximately 15 minutes to complete.

### Participant Recruitment

The AAEEBL survey was first administered in Spring 2011 and again in Spring 2012. In both years, the distribution of the survey was by call in an email invitation to AAEEBL members and colleagues working with ePortfolios on AAEEBL campuses. In addition, sister organizations were also asked to distribute the survey by email through their listservs.

Survey participation was solicited through partner organizations including the WICHE Cooperative for Educational Technologies (WCET), EDUCAUSE Learning Initiative (ELI), ePortfolio Action and Communication (EPAC) Community of Practice, ePortfolio Australia, and others.

### Response Distribution by Country

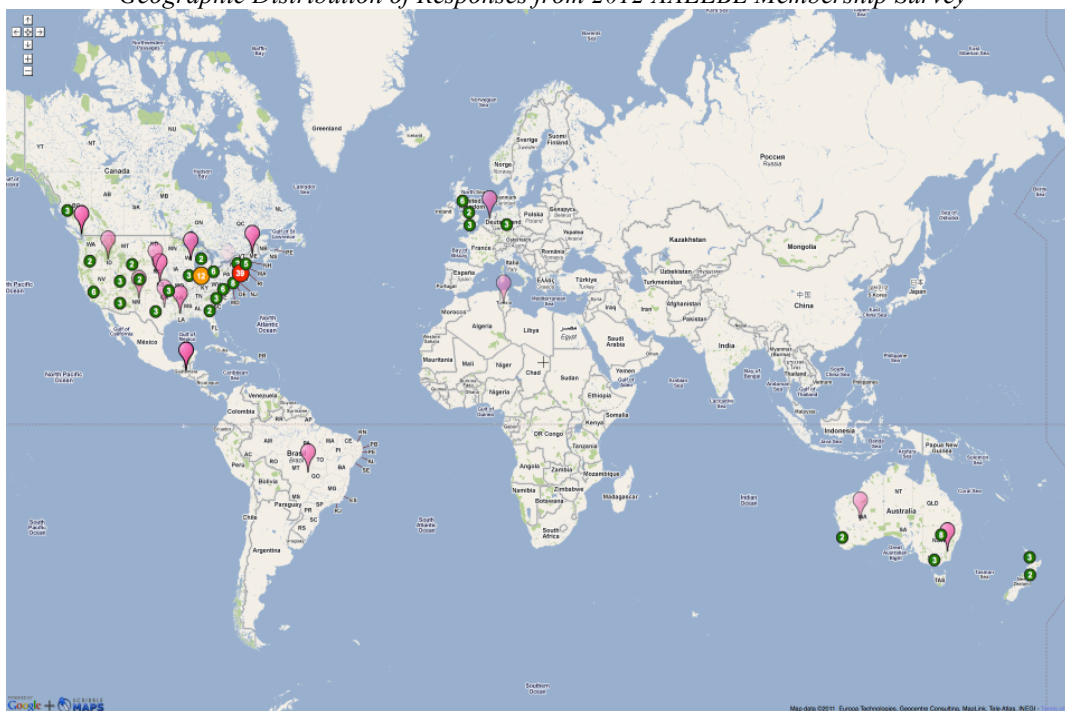
In 2012, of the 243 responses from 13 countries representing 97 institutions, approximately 80% of responses were from the United States. There were 20 responses from the United Kingdom, nine responses from Canada, eight responses from Australia, two responses each from Switzerland and Germany, and one response each from Argentina, Austria, Netherlands, New Zealand, Spain, Sri Lanka, Tunisia. Figures 1 and 2 represent the geographic distribution of responses in the 2011 to 2012 administrations of the AAEEBL membership survey. It is not clear, of course, the extent to which this distribution is representative of global penetration of ePortfolio use. We make no claims that the response distribution reflects anything beyond the views of the professionals who elected to respond to the survey.

Figure 1  
*Geographic Distribution of Responses from 2011 AAEEBL Membership Survey*



Note. Yellow balloons indicate one response in that country.  $N = 176$ .

Figure 2  
*Geographic Distribution of Responses from 2012 AAEEBL Membership Survey*



Note. Purple balloons indicate one response in that country.  $N = 243$ .

### What are the Characteristics of ePortfolio Practitioners?

Institutional size and enrollments are relatively constant when we compare responses between 2011 and 2012. Institutional types remain consistent from both 2011 and 2012, with fewer than 4% representing for-profit institutions and roughly 10% representing ePortfolio users reporting from community colleges. The variation is also consistent with findings from the Campus Computing Project (2011) that showed limited survey responses from community colleges. It also suggests that greater representation from these institutions would certainly provide additional insights into ePortfolio practices for a broader and more diverse student population within higher education.

Disciplinary implementation appears to be relatively stable from 2011 to 2012. As in 2011, Teacher Education and Health Sciences are strongly represented. English also continues to be well represented along with Nursing and the Arts.

On a somewhat less promising note is the continued limited representation from Student Affairs practitioners in the results reported. This has implications not only for subject recruitment for future surveys but also for determining the relevance and generalizability of our findings to the curriculum, activities, and informal learning that take place outside of the classroom.

In both surveys, almost half of the respondents were full time professionals. Tenure track faculty in both surveys represent almost one-third of the respondents. There is only a modest 1% increase in respondents in 2012 who are assessment specialists, which is somewhat counter to our observations that assessment is becoming more collaborative. Though AAEEBL leaders have anticipated an increase in the use of ePortfolios for institutional assessment purposes, that trend, as Batson (2011) confirmed in interviews with ePortfolio vendors, does not appear to be visible in ways we might have envisioned. It may be, instead, that assessment in the ePortfolio community is being reintegrated with teaching practices. There is evidence elsewhere, notably in the emergence of Massive Open Online Courses (MOOCs), that assessment is being split off and outsourced as an aspect of education that is distinct from teaching and learning (e.g., Kolowich, 2012). This is not consistent with the picture of ePortfolio practice discerned from the AAEEBL survey where assessment appears to be integral to ePortfolio practice.

A key story that is beginning to emerge from 2011 to 2012 is the consistency in the professional roles represented by the respondents. Though the response rate increased by nearly a third, there is remarkably little change from the previous year in the key characteristics of respondents. The relative reliability from 2011 to 2012 suggests that there is an emerging

culture of ePortfolio practitioners that transcends institutional type and participant roles.

### **Where are ePortfolios Being Created and Adopted Within Institutions?**

What is most pronounced in 2012 is that more students are producing ePortfolios. In 2011, 15% of respondents reported that 90-100% of students at their institutions had ePortfolios. In 2012, about 28% of respondents reported that 90-100% of their students are building ePortfolios. There also appears to be a gradual movement away from ePortfolios focused on courses toward those that are program-based (see Table 1). What predicates this change is not certain, but when students are expected to maintain ePortfolios for multiple courses, the locus of incentive evolves beyond the individual course, and that evolution appears to correspond, as we will discuss, with practices that are more collaborative as well as with teaching beliefs that are more learner or learning centered.

### **Who is Responsible for Evaluating Student ePortfolios?**

In 2011, more than half of ePortfolio evaluation was conducted by the instructor or Teaching Assistant (54.4%). In 2012, that percentage is down by 16% and program level evaluation has increased by 5.1%. Cross disciplinary evaluation has increased by 4.2% and evaluation teams that include students are up by 6.2%. In sum, collaborative assessment has increased by a relative 15.5% (see Table 2). The growth of that collaboration is underscored by the increase in participation from the community represented by stakeholders beyond the institution. The involvement of external stakeholders reflects a small but critical change in institutional culture that is perhaps not surprisingly associated with evaluation practices at a time when accountability has gained increased national attention. This change of practice, as we will discuss, may not be trivial.

### **How has the Market for ePortfolio Technologies Evolved to Support Changing Institutional Needs?**

In 2012, we continued to ask respondents about the ePortfolio platforms they used. The findings in 2012 as compared with 2011 reveal a market that is in flux (Batson, 2012). The use of homegrown applications appears to be decreasing which is consistent with corresponding findings elsewhere indicating that costs and security are driving institutions to new vendor partnerships. We note the parallel with evaluation practices that suggest that the walls of higher education are coming down. The market also appears to be

expanding with more commercial applications represented in the response pool. Though the dissemination of ePortfolios appears to be a rising tide, it is too soon to tell how the market will shake out. While it would be imprudent to share preliminary findings and speculations, the trends suggest that this growth may well continue for some time.

### **What is the Relationship Between Professional Development via AAEEBL and the Changing ePortfolio Culture?**

Underscoring the emerging picture of ePortfolio users as members of an ascending and distinct culture of educational practice is the counter-intuitive change in respondents to the AAEEBL annual survey. Table 3 shows that there was an almost 18% increase in the number of respondents who did not know if they or their institution was a member of AAEEBL. There was another 15% decrease in respondents who identified themselves as members of AAEEBL. What this suggests is that educators who received the invitation and responded to the survey represent a reliable group of educators engaged in a notable and emerging sub-culture of educational practice. It is the practice of teaching with ePortfolios that binds them.

### **Teaching Beliefs—Monitoring the Penetration of ePortfolios Beyond Demographics**

As noted, a key research goal of the AAEEBL annual survey has been to document the transformative impact of ePortfolio practices. Those practices, in turn, are inextricably entwined with the teaching beliefs of ePortfolio practitioners. The relationship between one's beliefs and practices is complex (Fosnot, 1996; Trigwell & Prosser, 2004; van der Schaaf, Stokking, & Verloop, 2008), but our work itself rests upon the belief that over time we might leverage our understanding to help build a deeper educational community and capacity, enrich students' learning experiences, and do more to help students' take ever greater responsibility for their own learning.

The pilots conducted by Brown et al. (2012) together with the research and thinking of many (i.e., Brookfield, 1995; Downes, 2006; Kane, Sandretto, & Heath, 2002; Lave & Wenger, 1991; Siemens, 2004), informed and shaped the direction of the AAEEBL survey and the exploration of a fundamentally different set of assumptions and approaches to teaching and learning afforded by ePortfolios. From this work, we constructed, explored, and confirmed the relationships of three categories of teaching beliefs—teaching, learner, and learning-centered. For the purposes of orienting readers to this report, we provide these brief descriptions:

Table 1  
*Frequency Distribution of Contexts for ePortfolio Adoption from the 2012 AAEEBL Membership Survey*

ePortfolio Context	2011		2012	
	Frequency	Percent	Frequency	Percent
Individual course	51	32.9%	51	25.8%
Program or department in Academic Affairs	41	26.5%	75	37.9%
Program or unit in Student Affairs	7	4.5%	9	4.5%
Institution-wide	38	24.5%	39	19.6%
Other	18	11.6%	24	12.1%
Total	155	100.0%	198	100.0%

Table 2  
*Frequency Distribution of Evaluators of Student ePortfolios from the 2012 AAEEBL Membership Survey*

Student ePortfolio Evaluator	2011		2012	
	Frequency	Percent	Frequency	Percent
The instructor (or designated assistant)	67	54.4%	75	38.9%
Faculty and members of the academic program	37	30.1%	68	35.2%
Cross-disciplinary teams both inside and outside of the institution	12	9.8%	27	14.0%
Teams of faculty and stakeholders, including student peers	7	5.7%	23	11.9%
Total	123	100.0%	193	100.0%

Table 3  
*Frequency Distribution of Awareness of AAEEBL Membership Status from the 2012 AAEEBL Membership Survey*

AAEEBL Membership Status	2011		2012	
	Frequency	Percent	Frequency	Percent
AAEEBL Members	63	37.5%	54	21.9%
Not AAEEBL Members	45	26.8%	61	24.7%
Not Known	60	35.7%	132	53.4%
Total	168	100.0%	247	100.0%

- *Teaching-centered* beliefs are represented in practice when it is predominantly the faculty member who determines not only what is to be learned and how that learning is to be measured. Teacher-centered practices are also guided by structures and sequences of activities that are determined and controlled by the instructor.
- *Learner-centered* beliefs are represented in practice when it is still the faculty member who determines what is to be learned but unlike teacher-centered beliefs, learner-centered practices encourage incipient student agency by engaging students more fully in the process of determining answers or solutions as well as modes and avenues for presentation. Learner-centered practices often situate learning in ill-structured domains that often do not have clear correct answers.
- *Learning-centered* practices are represented in practice when the faculty member invites learners to have some determination in not only how the work will be pursued and represented, but also in determining what it is that is necessary to learn. In learning-centered practice it is presumed that students will collaborate, employ peer review, and network to inform their learning.

We recognize that these belief constructs are not mutually exclusive. We know from our own work and the work of others that teachers' practices are shaped and reshaped by context and constraints. In various contexts, one set of beliefs and practices may have an instructional advantage as compared with others. Though we do not deny a bias for learner and learning-centered practice, it is precisely because we hold that

bias that the evolution of ePortfolio practice and the context it makes possible are interesting and promising.

### Exploring the Constructs

To refine our understanding of ePortfolio practice, we developed these three constructs from the literature referenced earlier in this report. Using the data from the 2011 AAEEBL survey, we ran exploratory factor analyses. The factor analyses were used to explore and then confirm the viability of teaching belief constructs to help us understand more fully the implications of ePortfolio practice. For instance, we suspected that traditional teacher-centered beliefs would likely associate with ePortfolio contexts and practices that contrast from the beliefs of those working in collaborative and more expansive or institutional contexts. We wanted to ascertain in particular if the teaching belief constructs we derived and hypothesized were valid, and we wanted to refine the sub-scales of the survey instrument. The outcome of the exploratory factor analysis that was conducted is provided in Table 4, which presents the individual items and loadings by construct. Consistent with principles of factor analyses (Comrey & Lee, 1992), variables with factor pattern loadings less than 0.35 were excluded from the study. Variables that loaded on more than one factor were also excluded from the study. Table 5 lists the items that were retained for each teaching belief construct for the AAEEBL 2012 member survey.

### Confirming the Teaching Belief Constructs

The exploratory factor analysis applied to data from the AAEEBL 2011 survey resulted in a reduced set of items for each of the three teaching belief constructs. The final model derived from the 2011 data set contained 13 valid items that indeed loaded on the three factors of teacher, learner, and learning centered beliefs (Table 5). We found that not all sections were equally balanced. For instance, we needed to develop two additional items to fit exclusively in the teacher-centered construct:

1. I design my teaching with the assumption that most of the students have little knowledge of the topics to be covered.
2. I feel it is important to present a lot of facts to students so that they know that they have to learn for this subject.

The 2012 AAEEBL survey provided the opportunity to confirm these constructs and the validity of these scales.

Once the underlying structure was developed (and hypothesized) from the exploratory factor analysis, we

used a structural equation modeling confirmatory factor analysis to confirm the findings from the 2011 AAEEBL Data Set and to examine the relationship between the underlying constructs. The structure created was analyzed using the responses from the AAEEBL 2012 survey. The analyses included a Chi-Square Fit Index (i.e., likelihood ratio), Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), Root Mean Square Error of Approximation (RMSEA), and the Standardized Root Mean Square Residual (SRMR) in order to determine the acceptability of the model. The initial three-factor model provided the overall chi-square ( $\chi^2$ ) = 216.374, degrees of freedom ( $df$ ) = 87, and  $p$  less than .000, CFI = .712, TLI = .664, RMSEA = 0.092, and SRMR = .099.

These fit indices suggested that this three-factor model needed to be modified. Most of the questions were a good fit. However, and as an example of the process, the question, "I assess students' teamwork skills" needed to be removed because it loaded on all three factors. In short, teamwork is not exclusively a teaching practice unique to a single teaching epistemology. The nuances of implementation of teamwork will, upon review and analysis, align with any number of objectives and any flavor of teaching belief. With refinements, we developed an analytical framework that attained significance for all factor loadings at the  $p = .05$  level. In the analysis, we affirmed that beliefs can be validly referenced in three categories. The new questions provided useful distinctions.

### Relationship Between Teaching Beliefs and ePortfolio Practice

Using the 2012 AAEEBL dataset, we examined the relationship between teaching beliefs and ePortfolio practice. A one-way multivariate analysis of variance (MANOVA) was conducted to identify patterns of teaching beliefs associated with ePortfolio practice. The Box's Test was not significant, thereby indicating that homogeneity of variance-covariance was fulfilled,  $F(18, 22199.788) = 1.100$ ,  $p = .344$ , and Wilks' Lambda test statistic was used to interpret the MANOVA results. The MANOVA results revealed significant differences among different ePortfolio evaluation processes, Wilks'  $\Lambda = .891$ ,  $F(9, 382.247) = 2.070$ ,  $p = .031 < .05$ ,  $\eta^2 = .038$ . An Analysis of variance (ANOVA) was conducted on each dependent variable as a follow-up test to the MANOVA. Univariate ANOVA results were interpreted using a more conservative alpha level ( $\alpha = .05/3 = .017$ ). These results revealed that the ePortfolio evaluation processes were significant for learning-centered beliefs (LEARNING),  $F(3, 159) = 3.603$ ,  $p = .015 < \alpha = .017$ , partial  $\eta^2 = .064$ .

Table 4  
*Summary of Exploratory Factor Analysis Results for the Three Teaching Belief Measures (N = 69)*

Item	Factor Loadings		
	Factor 1 (Teacher-Centered)	Factor 2 (Learner-Centered)	Factor 3 (Learning-Centered)
I use a textbook to plan my course.*	<b>.635</b>	-.051	-.039
Lectures are important models of subject matter expertise.*	<b>.813</b>	-.082	.079
Teachers should know the answers to questions that students ask.*	.288	.113	-.033
I focus primarily on information students will need to pass the exams.*	<b>.560</b>	-.113	-.082
The assessments I use have clear and correct answers.*	.124	.181	.024
My course activities usually require students to work individually.*	.332	.133	<b>-.636</b>
It is important to present basic knowledge to students.^	.029	.073	.016
I use thematic units to organize my teaching.^	.238	.056	-.051
It is important to collaborate with students in planning the course.^	-.065	.114	.016
I provide opportunities for students to discuss concepts that are new to them.^	-.032	.098	.027
When evaluating student performance, it is important to consider multiple examples of student work.^	-.078	<b>.348</b>	.190
Instruction should be flexible to accommodate students' individual needs.^	-.343	<b>.627</b>	.016
I am certain that I am making a difference in the lives of my students.^	.234	<b>.396</b>	-.092
Effective teachers consider students' prior knowledge or experience.^	.052	.030	.073
I encourage students to constantly check their own understanding while they are studying.^	-.111	<b>.660</b>	.162
I am good at helping all the students in my classes make significant improvement.^	.031	<b>.726</b>	-.083
I feel confident about my teaching skills.^	-.048	.265	.038
I encourage students to work together to solve authentic problems that students help identify.†	-.014	-.138	<b>.733</b>
It is important to help students reflect upon their thinking and learning processes.†	.111	-.015	.152
I provide opportunities for my students to critique each others' work.†	-.226	-.240	<b>.439</b>
Many of my assignments require students to work in groups to arrive at correct answers and solutions.†	.237	.244	<b>.738</b>
I value students' self assessment.†	.072	-.049	.037
I grade students' teamwork skills.†	.077	.284	<b>.659</b>
Eigenvalues	2.22	2.33	3.36
% of Variance	9.68	10.15	14.62

Note. Factor loadings greater than |.35| are in bold.

\* Item originally associated with Teaching-Centered Beliefs

^ Item originally associated with Learner-Centered Beliefs

† Item originally associated with Learning-Centered Beliefs

### From Beliefs to Practice—The Story Unfolds

To begin to make sense of these findings, we return to the findings from the two pilot studies that preceded the AAEEBL adaptation. In these pilots, Brown et al. (2012) conducted random surveys of faculty at two institutions. In other words, unlike the AAEEBL survey, respondents were not necessarily ePortfolio practitioners. Additionally, it should not be surprising that respondents in the pilots at these two institutions were predominantly teacher-centered. Out of the 153 respondents, 18% were exclusively teacher-centered.

This is particularly notable since teaching beliefs are generally a blend of teacher, learner, and learning centered orientations. When the profiles of teacher-centered respondents were combined with those with different blends of teaching-centered beliefs (teacher-learner [11%] and teacher-learning centered [5%] beliefs), more than one-third of those reporting were all or partially teacher-centered in their teaching beliefs.

Further, it is reasonable to assume that teacher-centered beliefs are underrepresented in this number. Most faculty members still lecture (McKeachie & Svinicki, 2005), and we would not necessarily expect

Table 5  
*Retained Constituent Items Comprising Each Teaching Belief Construct*

Item	Factor Loadings		
	Factor 1 (Teacher-Centered)	Factor 2 (Learner-Centered)	Factor 3 (Learning-Centered)
I use a textbook to plan my course. *	.635	-.051	-.039
Lectures are important models of subject matter expertise. *	.813	-.082	.079
I focus primarily on information students will need to pass the exams. *	.560	-.113	-.082
When evaluating student performance, it is important to consider multiple examples of student work. ^	-.078	.348	.190
Instruction should be flexible to accommodate students' individual needs. ^	-.343	.627	.016
I am certain that I am making a difference in the lives of my students. ^	.234	.396	-.092
I encourage students to constantly check their own understanding while they are studying. ^	-.111	.660	.162
I am good at helping all the students in my classes make significant improvement. ^	.031	.726	-.083
My course activities usually require students to work individually. *	.332	.133	-.636
I encourage students to work together to solve authentic problems that students help identify. †	-.014	-.138	.733
I provide opportunities for my students to critique each others' work. †	-.226	-.240	.439
Many of my assignments require students to work in groups to arrive at correct answers and solutions. †	.237	.244	.738
I grade students' teamwork skills. †	.077	.284	.659

Note. \* Item originally associated with Teaching-Centered Beliefs

^ Item originally associated with Learner-Centered Beliefs

† Item originally associated with Learning-Centered Beliefs

that those who respond to surveys about ePortfolios to be significantly different from their peers in their teaching approaches. The sample provided in this report is understood to be indicative of ePortfolio practice—an association rather than a bias.

However, by contrast, in the 2012 AAEEBL survey, not one respondent was uniformly teacher-centered. The difference begins to shape the picture of a population of educators who use ePortfolios and whose teaching epistemology is increasingly more learner and learning-centered than the general population of educators. When individual questions are broken out and responses allocated to the different beliefs (recall that most faculty hold a mix of beliefs), a full 77% of responses were either learner or learning-centered in orientation.

What does this mean in practice? Teacher-centered faculty report they are more likely to present facts to provide a foundation for a subject. Teacher-centered faculty articulate beliefs that they are more and almost exclusively likely to report on focusing their instruction

on the information students will need to pass exams. Most assignments in teacher-centered faculty classrooms focus on individual work in comparison to those who collaborate on cross-disciplinary teams. Also, teams of faculty with stakeholders and peers are, by degree, even less likely to have students work individually than in cross-disciplinary teams.

What else pertains? One-way MANOVA results in particular are indicative of how ePortfolios are significantly altering the teaching landscape. Compared with teacher-centered traditions, learning-centered ePortfolio practitioners are significantly more likely to evaluate student work collaboratively, often on cross-disciplinary teams. They consider multiple examples of student work and value students' work over time.

### Future Directions

There is more beneath the surface of this work with respect to the considerations of developing a valid and reliable survey instrument that has the potential to



contribute to and advance the research on ePortfolios. From a practical perspective, future administrations of the AAEEBL membership survey will focus on more effective and strategic subject recruitment, particularly of individuals with experience with ePortfolio initiatives in Student Affairs, the disciplines (such as STEM) and other subareas. We are also interested in exploring how common features across ePortfolio technologies (such as scaffolding for reflection, the use of multimedia, personalization, and the ability to maintain a social presence) might correlate with various demographic characteristics of programs as well as students. We plan to continue our efforts to develop and validate scales such as the teaching belief constructs that are associated with ePortfolio practices and could be used by other researchers to better understand the impact of other forms of learner-centered educational technologies.

We are only now beginning to excavate the implications and surface more and better questions to inform future administrations of the AAEEBL membership survey. What seems clear from these preliminary findings is that ePortfolio practitioners are indeed transforming their teaching practice. Whether this transformation represents practice that promotes critical reflection and learner agency remains to be determined. The evidence is nonetheless clear—a new practice is emerging.

### References

- Batson, T. (2011, October 12). A survey of the electronic portfolio market sector: Analysis and surprising trends. *Campus Technology*. Retrieved from <http://campustechnology.com/articles/2011/10/12/a-survey-of-the-electronic-portfolio-market-sector.aspx>
- Batson, T. (2012, September 19). 12 important trends in the ePortfolio industry for education and for learning. *Campus Technology*. Retrieved from <http://campustechnology.com/articles/2012/09/19/12-important-trends-in-the-eportfolio-industry.aspx>
- Brookfield, S. (1995). *Becoming a critically reflective teacher*. San Francisco, CA: Jossey Bass.
- Brown, G., Cho, Y., & Ater-Kranov, A. (2012). Faculty teaching beliefs, ePortfolios, and Web 2.0: At the cross roads. In D. Cambridge (Ed.), *E-Portfolios and global diffusion: Solutions for collaborative education* (pp. 170-182). doi:10.4018/978-1-4666-0143-7
- Campus Computing Project. (2011, October). *The 2011 national survey of information technology in U.S. higher education: Gains in going mobile; Slow movement to cloud computing*. Retrieved from [http://www.campuscomputing.net/sites/www.campuscomputing.net/files/Green-CampusComputing2011\\_4.pdf](http://www.campuscomputing.net/sites/www.campuscomputing.net/files/Green-CampusComputing2011_4.pdf)
- Campus Computing Project. (2012). *Home page*. Retrieved from <http://www.campuscomputing.net>
- Comrey, A. L., Lee, H. B. (1992). *A first course in factor analysis* (2nd ed.). Hillsdale, NJ: Erlbaum.
- Downes, S. (2006, October 16). Learning networks and connective knowledge [Online forum comment]. *Instructional Technology Forum*, 92. Retrieved from <http://it.coe.uga.edu/itforum/paper92/paper92.html>
- Dahlstrom, E. (2012, September). *ECAR study of undergraduate students and information technology, 2012* (Research Report). Louisville, CO: EDUCAUSE Center for Applied Research. Retrieved from <http://net.educause.edu/ir/library/pdf/ERS1208/ERS1208.pdf>
- Fosnot, C. T. (1996). Constructivism: A psychological theory of learning. In C. T. Fosnot (Ed.), *Constructivism: Theory, perspectives, and practice* (pp. 8-33). New York, NY: Teacher College Press.
- Kane, R., Sandretto, S., & Heath, C. (2002). Telling half the story: A critical review of research on the teaching beliefs of university academics. *Review of Educational Research*, 72(2), 177-228. doi:10.3102/00346543072002177
- Kolowich, S. (2012, June 6). Paying for performance. *Inside Higher Ed*. Retrieved from <http://www.insidehighered.com/news/2012/06/06/mcgraw-hill-wgu-announce-deal-would-shift-accountability-content-provider>
- Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. Cambridge, UK: Cambridge University Press.
- McKeachie, W., & Svinicki, M. (2005). *Teaching tips: Strategies, research, and theory for college teachers* (12th ed.). Boston, MA: Houghton Mifflin.
- Siemens, G. (2004). *Connectivism: A learning theory for the digital age*. Retrieved from <http://www.elearnspace.org/Articles/connectivism.htm>
- Trigwell, K., & Prosser, M. (2004). Development and use of the approaches to teaching inventory. *Educational Psychology Review*, 16(4), 409-424.
- van der Schaaf, M. F., Stokking, K. M., & Verloop, N. (2008). Teacher beliefs and teacher behaviour in portfolio assessment. *Teaching and Teacher Education*, 24(7), 1691-1704. doi:10.1016/j.tate.2008.02.021

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