Inquiry, Reflection, and Integration:
Catalyst Design Principles
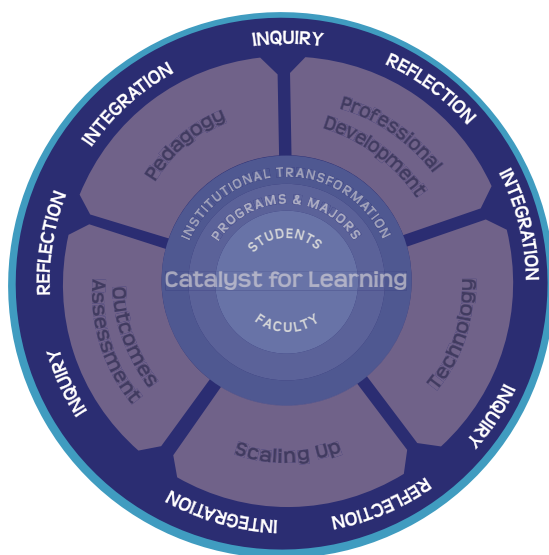### Bret Eynon, Laura M. Gambino & Judit Török

What overarching principles inform the work of successful ePortfolio initiatives? What themes unify their work across all five sectors of the Catalyst framework? Years of research and observation have revealed three complementary principles that inform and strengthen multiple aspects of effective ePortfolio practice: **Inquiry, Reflection,** and **Integration.**

Our experience working with scores of campus ePortfolio projects suggests that Inquiry, Reflection, and Integration (I-R-I) function as design principles, playing a critical role in shaping pivotal practices and strategies of successful ePortfolio initiatives. While informing essential ePortfolio practice with students, the I-R-I principles also help deepen the work of effective ePortfolio initiatives around professional development, outcomes assessment, technology, and scaling up.

> ## What is a Design Principle?
>
> Design Principles are concepts used to organize the discrete elements of a structure or process. The way in which these principles are applied affects the quality, effectiveness, or success of the work.

The Catalyst graphic incorporates the I-R-I principles in the form of an outer circle with connective corridors that link all sectors and layers of dynamic ePortfolio initiatives, from pedagogy and student learning to scaling up and the process of building learning colleges. Using these Catalyst design principles helps deepen the work of ePortfolio initiatives in all of these areas, and can help make the whole of an ePortfolio initiative greater than the sum of its parts. In this way, successful ePortfolio initiatives follow Thomas Angelo's precept: to model in our broader practices the pedagogies we seek to nurture in the classroom. [i]

Inquiry: The concepts of Inquiry, Reflection, and Integration are each well developed in the literature. By Inquiry, we mean the investigative, problem-based learning described by David Kolb[ii] and others – a cyclical process that involves asking questions about authentic problems; analyzing relevant evidence; creating and presenting evidence-based solutions; reflecting on the learning process; and developing new questions and plans for further inquiry.

In contrast to lecture models, where students passively absorb the 'authoritative' viewpoint of a single professor or textbook, inquiry approaches push students to grapple with conflicting points of view and tolerate ambiguity and uncertainty. Encouraging students to take responsibility for their learning and giving them freedom to pursue questions that arouse their curiosity, inquiry practices foster intellectual maturity and self-authorship.

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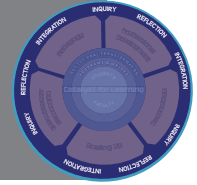
Inquiry-based approaches foster intellectual maturity and cultivate the habits of mind that support lifelong learning.

At its best, ePortfolio pedagogy provides students a way to showcase, value, and exchange the products of their inquiries; at a deeper level, it also engages students in a recursive inquiry into their own learning and their evolving identities as learners. Inquiry also has a rich history in professional development. Professional development programs with an emphasis on collective inquiry ask faculty and staff to raise questions, explore issues, and use their classrooms as laboratories for scholarly experiments with new pedagogies. Meanwhile, the National Institute for Learning Outcome Assessment (NILOA) [iii] has argued that meaningful outcomes assessment engages faculty and staff in a process of structured inquiry into programmatic and institutional teaching and learning effectiveness. Through sustained collective inquiry in ePortfolio-related professional development and outcomes assessment, faculty, staff, and the broader institution construct new knowledge and understandings about the teaching and learning process. (Click here for more on Inquiry.)

Reflection can build upon inquiry, but can also stand alone. From a Deweyan perspective, reflection complements experience; the purpose of reflection is to make connections among experiences, deepening continuities and empowering the meaning-making process. "We learn by doing, constructing, building, talking and writing [and] we also learn by thinking about events, activities, and experiences. This confluence of experiences (action) and thought (reflection) combines to create new knowledge. Reflection is then the vehicle for critical analysis, problem-solving, synthesis of opposing ideas, evaluation, identifying patterns and creating meaning—in short, many of the higher order thinking skills we strive to foster in our students."[iv]

As demonstrated in the Catalyst essay on Pedagogy, most practitioners know that reflection is pivotal to meaningful student ePortfolios, which function as sites for prompting, documenting, and sharing students' reflection on their learning. Students can reflect on specific artifacts and experiences, or on broader processes. Their reflections can be written, oral, artistic, or multimedia in form, and take place individually or in community. In her essay, "Reflection and Electronic Portfolios: Inventing the Self and Reinventing the University," Kathleen

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Blake Yancey defines reflection as the centerpiece of powerful ePortfolio learning.[v] Reflective pedagogy transforms ePortfolio from a push-button technology into an engaging process of connection, linking students' academic learning and life experience to the most profound processes of personal growth.

Reflection also deepens ePortfolio-related professional development and outcomes assessment processes. In professional development settings, reflective activities help participants learn from their experiences and develop

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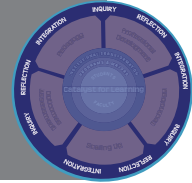
as reflective practitioners. And reflection can help to move outcomes assessment beyond accountability; as individuals and programs reflect on assessment findings and their implications for curricular and pedagogical change. In both professional development and outcomes assessment, reflection takes place in community, as well as on an individual level. The combination of Inquiry and Reflection in ePortfolio-related professional development and outcomes assessment helps colleges transform themselves into learning organizations. (Click here for more on Reflection.)

Integration, or integrative learning, has gained new visibility in higher education. For students, integrative learning involves making connections and transferring knowledge across courses, disciplines, and semesters, linking academic learning with lived experience into a more intentional whole. The Association of American Colleges and Universities (AAC&U) has identified greater attention to integrative learning as a key priority for American higher education. In 2004, the AAC&U and the Carnegie Foundation for the Advancement of

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Teaching issued a joint statement that read in part: "Many colleges and universities are creating opportunities for more integrative, connected learning through first-year seminars, learning communities, interdisciplinary studies programs, capstone experiences, individual portfolios, advising, student self-assessment, and other initiatives…. [A] variety of opportunities to develop the capacity for integrative learning should be available to all students throughout their college years, and should be a cornerstone of a twenty-first century education."

In an ePortfolio context, integration has multiple layers of meaning. Guided by integrative pedagogy, students use ePortfolios to bring together work from multiple contexts, to consider the relation between their classrooms and their lives outside of class, and to construct new identities as learners. In ePortfolio-related professional development, an integrative approach prompts faculty to develop and test strategies that help students integrate their learning; and also helps faculty and staff to transfer knowledge and insight from specific instances to broader contexts and applications. On the Catalyst site, we find integration in professional development practices that move from seminar to classroom, deepening and sustaining innovations, turning creative, one-shot experiments into broadly-adopted changes in practice.

In outcomes assessment, integration can be associated with "closing the loop" – taking action based on evidence-based recommendations. In both professional development and outcomes assessment, integration ultimately means addressing institutional curricula, structure and culture, steps that involve campus leaders,

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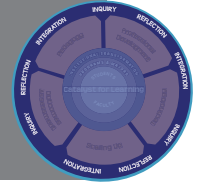
budgets, and governance. As Randy Bass writes, "We must fully grasp that students will learn to integrate deeply and meaningfully only insofar as we design a curriculum that cultivates that; and designing such a curriculum requires that we similarly plan, strategize and execute integratively across the boundaries within our institutions."[ix] (Click here for more on Integration.)

As Catalyst design principles, we see a role for Inquiry, Reflection and Integration in every sector of the ePortfolio initiative. Some principles have particular resonance in specific sectors. In ePortfolio pedagogy, for example, Reflection and Integration are particularly critical. Integration is particularly central to Scaling Up efforts. All three principles combine to deepen the work of professional development and outcomes assessment.

Technology may be a special case. In some sense, the role of technology in terms of the I-R-I design principles is that of an enabler – or an obstacle. Does the campus ePortfolio platform facilitate or frustrate individual reflection? Does it support reflection in community, as a social pedagogy? Does it support or hinder integrative learning by students? By faculty and staff? By the institution? Technology that facilitates the deployment of I-R-I shaped practices canenhance the transformative potential of an ePortfolio project – and vice versa.

I-R-I is not a magic formula that solves all problems or makes all the challenges of building an ePortfolio initiative suddenly disappear. But Catalyst findings suggests that if thoughtfully and persistently employed as design principles, Inquiry, Reflection, and Integration can guide intentional planning and development at all levels, deepen the power and meaning of ePortfolio practice, and help ePortfolio projects become catalysts for the transformative changes needed to help colleges and universities rethink themselves as learning organizations.
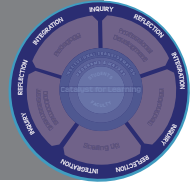
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