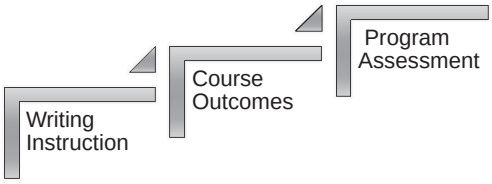
Using Student Reflective Portfolios to Facilitate and Assess Program-Level Outcomes

What is an integrative learning e-folio?

Synthesizes *and evaluates* learning from a variety of experiences:

- Coursework
- Research
- Hobbies & Interests
- Internships & jobs
- Study abroad
- Service

Integrated Learning E-folios provide scaffolding for



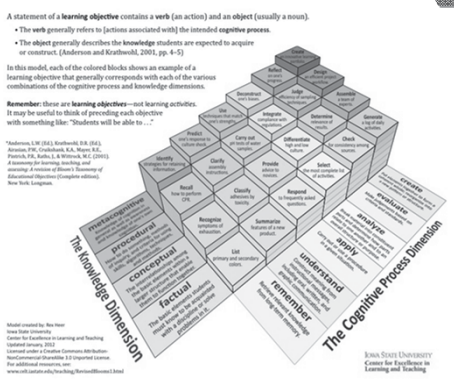
How can an ILEF facilitate program-level outcomes?

Organize portfolio components around PLOs, using guided reflection prompts to elicit where learning and achievements have occurred.

Demonstrated through

- Artifacts
  - Reports or course assignments
  - Videos
  - Slideshows
  - Items specific to discipline
- Responses to reflective prompts

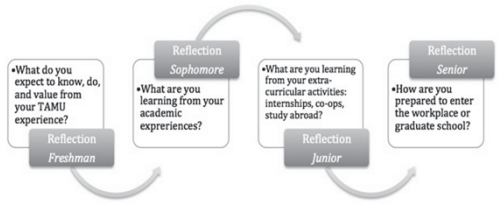
Where does a learning portfolio appear in this hierarchy?



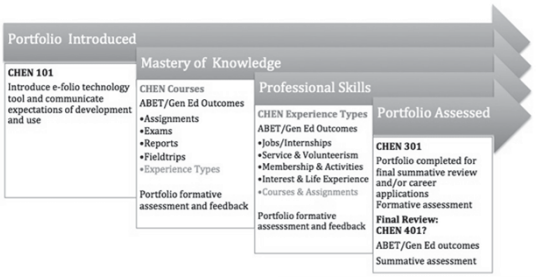
Practice Personal and Social Responsibility (Gen Ed Outcome 4) Possible Reflection Questions:

- How have you *managed your time* or other limited resources to complete a project?
- Has your work on a project required you to *maintain a level of confidentiality*? If so, explain.
- Have you identified *consequences of unethical conduct* or recognized conflict between personal/professional ethics and the ethics of others? If so, explain.
- Sample reflections Mason and Victoria

Reflection throughout the *curriculum*



Integrating the E-Portfolio using a proposed "Bookend Approach"



How do I teach this stuff?

1. Allow pedagogy to drive the technology *(not visa versa)*

- Focus on writing instruction and the outcomes, not the e-folio tool
- Create a template (or clear assignment deliverables) that "frees" students to focus on content over software
- Let the students decide which tool they want to use (Google, Weebly, Wix, etc.)
- Integrate instruction on virtual responsibilities (could even create a reflection assignment)

2. Provide instructional resources

- 10 tips for creating meaningful reflections
- E-folio getting started
- Framing your portfolio reflections
- Rubric that identifies assessment criteria
- Guidelines for setting up a website

3. Lead web workshop (opt)

Guide students through a tutorial that

- Introduces software options
- Assesses key tasks you want them to learn (have them complete a checklist)
- Troubleshoots online issues
  - Privacy settings
  - Accessibility and collaboration
- Provides reviewer access

4. Use scenarios to guide reflection responses

- In what context would this information be valuable?
- What does it demonstrate about the writer?
- What question would this achievement or skill answer?

Select one scenario and answer each question.

See Sample ILEFs

Chemical Engineering

Master of Land and Property Management

*Portfolios and survey results are used with IRB approval and student permissions.

What do the students think?

End-of-project survey revealed these results:

Do you believe that reflecting in the ChemE-folio has enhanced your learning within your degree program?

- *Reflecting has reaffirmed my desire to become a chemical engineer. It was a great way for me to recall and reflect on my accomplishments and plan for the future.*
- *It made me think about how I wanted to direct my studies and my career.*
- *It made it easier to talk about myself in a recent interview. I just mentioned each reflection point briefly.*
- *It has put a lot of things such as communication and work ethic relating to chemical engineering in perspective and helped me shape my academic goals.*
- *It has made me think about what other skills I should attain in my classes besides technical knowledge.*
- *I feel like I have improved my communication ability from this assignment, and I have a better grasp of new technology.*

In what ways did the template help you create your portfolio?

- *It helped me understand what I was doing. Without it, I would have been completely lost.*
- *It provides valuable insight into the possible content and organization.*
- *It made it easier to worry only about content and not format.*
- *It helped me ask myself prompting questions that made meaningful sections/reflections.*
- *It helped me focus more on my content, design, and formatting rather than having to spend too much time on actually building a site from scratch—i.e., dealing with hyperlinks.*

What did you like most about creating your ChemE-folio?

- *It was a fun and rewarding project. I hope to use it as groundwork for a life-long portfolio.*
- *Got me thinking "What do I really have to offer an employer?" "What I talk about in an interview?" Liked being able to reflect on my academic career and what I have done at A&M.*
- *I think this is a good assignment for this class since it has real world applications.*
- *It allowed me to get feedback from my parents on my writing.*
- *It has shown me the value of written communication in this major.*
- *Getting to tell my stories.*
- *Creating the reflections.*
- *It was actually kind of fun.*
- *I realized after creating an e-folio that I have more achievements and information than I thought.*
- *It really helped me identify my strengths and let me cater to the job I was applying for so it can be used for any job.*
- *I love looking at the finished product after putting so much time and effort into it. It makes me feel better about going for a ChemE degree (from student who opted for print presentation).*
- *I liked being able to share what I feel are some pretty exciting experiences.*
- *It helped me think critically about what I am doing and why the skills I am learning will be useful after graduation.*
- *I liked thinking about which stories/reflections I could write that best show of my abilities.*

What did you like least about creating your ChemE-folio?

- *So much writing ALL AT ONCE.*
- *It's long and forces you to think ahead into it.*
- *The time it takes to fully develop it.*
- *I wish we had more time to work on it.*
- *The freedom was challenging.*
- *Being forced to write it although in hindsight I am glad for it.*
- *It took a lot of time and effort away from other difficult classes.*

Final thoughts--

- Introduce portfolio as early in the semester as possible.
- Create and assess interim assignments in the portfolio.
- Use a template that reduces the technology learning curve.
- Help students understand the value of what they are doing—if they have "buy in," they will spend the time and effort to do the work and do it well.
- Set an example with *your own portfolio*.

Instructional Resources

- Association of American Colleges and Universities (2011). Liberal education and American's promise (LEAP). Retrieved from http://www.aacu.org/leap/.
- Eliot, M. and Turns, J. (2011). Constructing professional portfolios: Sense-making and professional identity development for engineering undergraduates. *Journal of Engineering Education*. 100(4), pp. 630-654.
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Technical Communication Learning Outcomes All instruction and assessments will integrate the following technical communication essentials:	CHEN 489 Spring 2012 Assessments								
	Memo Proposal	Man Plan	*Professional Journal Entries*			Mill Rpt.	Che-folio	Case Study Rpts	Quizzes & Short Assignts
			VID Eval	INST	Tech Reflect				
1 Address the rhetorical aspects of the context (audience and purpose) in order to identify the message (content) and approach (delivery).	✓	✓	✓	✓	✓	✓	✓	✓	✓
2 Apply an inside-out approach to the process of writing and organizing the message.	✓	✓	✓	✓	✓	✓	✓	✓	
3 Apply editing strategies that facilitate clear understanding of the message.	✓	✓	✓	✓	✓	✓	✓	✓	✓
ABET The outcomes listed below have been defined using the ABET criteria where clear communication is either explicitly stated or is implied, yet is essential to the success of the outcome.									
c **Problem Solving** Address the needs of a client in order to identify plausible solutions, propose criteria, evaluate options, and recommend a "best" solution.	✓		✓		✓	✓	✓	✓	
Strategic Planning Describe how, when, where, and by whom the problem or need will be addressed, creating a management plan or procedures that document the work according to the specifications of the client and the contextual constraints and present contingency plans that address problems that the context might present.		✓	✓	✓			✓	✓	
Documentation Present research, steps, sources, and other information so that the user fully understands what was done, how, why, and by whom.		✓		✓		✓	✓	✓	
d **Collaboration and Conflict Management** Identify potential threats to effective group progress and define potential solutions to conflict issues. Communicate with team members regularly and, when appropriate, learn and apply collaborative technology to facilitate regular, timely communication.		✓					✓		✓
f **Job-Related Ethical Scenario** Demonstrate a thorough understanding of the context and the implications of various responses. Identify possible courses of action and discuss the pros and cons of each one. Decide on the best course of action and justify the decision.			✓				✓	✓	
g **Communication Strategies** Organize the information in order of importance to the readers/user, including effective paragraph development and coherence. Prepare effective executive summaries. Employ effective document design strategies to set off the most important information. Use a style, tone, and other discipline conventions appropriate for the context. Create graphics that help the reader understand remember the information. Select the genre of communication most appropriate for the context. Incorporate and attribute researched information appropriately.	✓	✓	✓	✓	✓	✓	✓	✓	✓
i **Lifelong Learning** Synthesize new concepts by making connections, transferring prior knowledge, and generalizing. Perform relevant searches for information appropriate for the context, including the use of CHEN databases when needed. Demonstrate willingness to learn new material independently. Reflect on and describe learning style including strengths and weaknesses. Develop strategies for overcoming weaknesses. Participate effectively in a team project and assess the strengths and weaknesses of the individual team members (including himself or herself) and the team as a unit.		✓	✓		✓	✓	✓	✓	✓

Want more information? Please contact us!

- Cindy Raisor, Department of Chemical Engineering, TAMU, at c-raisor@tamu.edu
- Debra Fowler, Center for Teaching Excellence, TAMU, at dfowler@tamu.edu

12th Annual Assessment Conference
Texas A&M University

Please evaluate this session!

1. Use iPhone/iPad, Android or Blackberry to scan this QR code, also found on the resource table:

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2. Scan the QR code located at the IOTA Solutions Booth (Booth #2).

Or:

3. Visit www.tamuevaluation.com and select the title of this session.

Thank you!

Using Student Reflective Portfolios to Assess Course and Program-Level Outcomes

Cindy Raisor, Department of Chemical Engineering
Debra Fowler, Center for Teaching Excellence

What do the students think[1]?

1. **Do you believe that reflecting in the ChemE-folio has enhanced your learning within your degree program?**
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   - *It helped me think critically about what I am doing and why the skills I am learning will be useful after graduation.*
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[1] Survey results are presented with IRB approval and permission from fall 2011 Chemical Engineering Technical Communication (Raisor's CHEN 489) students.

4. **What did you like least about creating your ChemE-folio?**
   - *So much writing ALL AT ONCE.*
   - *It's long and forces you to think ahead into it.*
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   - *I wish we had more time to work on it.*
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Study and Presentation Resources

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ChemE-folio Cases

Choose and read through the a case/scenario in your group to determine the following:
What's the news? In what contexts would this information be valuable? What does it demonstrate about the writer? What question would this achievement or skill answer? What outcome is demonstrated?

Now, it's your turn. *What's <u>your</u> story? How would you support your answer to the question addressed by the scenario? What "achievements," work ethic, values, etc., lie beneath the vast array of your experiences?* Reflect on an experience, explaining what skill or value the experience demonstrates and providing clear, relevant details that support your claims.

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1. ***Meeting mayhem***
   You are an active member of an organization of your school and have recently been asked to facilitate weekly meetings. At the first meeting under your supervision, you noticed that members arrived late, chatted, texted, and ate during the meeting, and thus did not contribute much toward accomplishing the goals you had set. You decide to implement new strategies to improve the productivity of the meetings. These include
   - changing the meeting time (as not to fall during the "dinner hour")
   - identifying the meeting agenda and goals up front so that everyone knows what to expect
   - devising a management plan (timeline or calendar) of what needs to be done and by when
   - involving members through group activities that keep them focused on the tasks at hand

   Later in the semester, you conclude that your efforts improved the productivity of your organization's weekly meetings and have a list of "accomplishments" to document the work completed.

2. ***Got a little story for ya, Ags***
   You participate in an organization where in-coming participants will be expected to know and apply Aggie values, including the Aggie Honor Code. You are asked to devise a way to communicate these values to members of a large audience, many who have already attended numerous meetings. You decide to create two skits to communicate your message and keep the attention of the audience. Your idea needs clarity (props, actors, music, i.e., logistical details), approval (from staffers and other administrators), and implementation (organizing and overseeing skit performance). By the participation and approval of the audience members of the skits, as evidenced by their applause, you believe your skits were a success.

3. ***And the beat goes on . . . .***
   You have been involved in two of Texas A&M's "Fish Camps," the largest student-run orientation program in the world, and both times were given the responsibility of DJ. Your preparation for the event required that you ensure all music and other sound-related materials were properly edited before leaving for camp. You were also required to oversee all of the music during the entire four days at camp. More specifically, you were responsible for other technical details such as editing counselor introduction music, arranging any clips that would be needed for the approximately 30 skits performed during the camp, and also acting as the DJ for the end-of-day social mixers lasting over an hour. You were given only three days leading up to camp to arrange all of this music, including the skit clips, which had to be downloaded, edited, and finalized rapidly so the skits could be practiced with music. Your preparation and attention to detail paid off, as the music for each event was successfully delivered.

4. ***Narrowing the field***

During your sophomore year at TAMU, you were selected to become one of 14 counselors in a freshman leadership organization called FLiP (Freshman Leaders in Progress). One of your first responsibilities was to select the freshmen you wanted to represent the organization. From the more than 700 freshmen who applied and interviewed, you and your teammates were required to narrow the applicants to 56. However, not all of your teammates would be available to participate in the interview and selection process of the 56 freshmen finalists. Therefore, you and your teammates decide to create an evaluation and selection process where each counselor evaluates, ranks, and nominates his/her top 10 finalists, giving each counselor a "voice" in the process and requiring that counselors trust the decisions of their teammates.

5. ***Take the Money and Rugby***

You are the president of the Texas A&M Women's Rugby Team, which requires you to prepare a budget allocation presentation for the Sports Clubs Executive Committee. This presentation must persuade the committee to allocate the money requested to our team. By assessing the current year's budget and probable costs and income for the next year, you work with your team's treasurer to determine how much money you hope to receive from the committee in order to meet your financial obligations for the upcoming year. Your 15-minute presentation and allocation request resulted in $3275 out of a maximum $4000.

6. ***Web designer, who me?***

Part of your job as vice president for a school organization was to design and update your club's website using Drupal, a software system that you had never used. After watching several online tutorials provided by the software's makers, you learned the basics well enough to begin designing the organization's web site. Eventually, you learned how to create different types of site content, such as pages and stories, use different fonts and background colors, upload photos, create a rotating header, and insert tables into the site to make the site attractive and clear. In addition, you learned how to use the editing features to keep the site current and easy to read. The site now serves as a resource for current members and interested viewers who want to learn more about the organization.

7. ***Takin' Care of Business***

You have served as recruiting officer, vice president, and president, of an organization throughout the past three years. Thus, you have participated in several projects that have required you to work with your fellow officers to accomplish a goal. One project required you to organize the Gareth Jones Tournament, a high school rugby tournament your group hosted jointly with the Texas A&M men's rugby team last year. Working with the men's team, you and the other group coordinated both the boys' and the girls' playing schedules for the day, as well as planned a girls' skills clinic, operated a successful concession stand on the day of the tournament, and facilitated the girls' games during the tournament. Altogether your organization collected over $450 in entrance fees and earned over $1500 in profits from the concession stand.

8. ***The Blob***

Last summer you interned for a natural gas company whose facilities are located in an urban area, so when the local residents, and eventually the mayor of the town, complained about a black oily mist coming out of the company's facility vent stack, it was imperative that the problem be fixed immediately. You were assigned the task, so you went to the facility to investigate the situation. Upon analyzing the situation, you solved the problem by following these steps.

a. You asked the operators in the area what they had seen. They reported seeing the mist and concluded that it came from the compressor.
b. With other engineers you analyzed the compressor and discovered that the used compressor lube oil was being drained and was shooting out the vent stack.
c. You drew up a design detailing a knockout separator you thought should be placed at the stack to prevent future leaking.
d. You presented the design to your supervisor and other engineers who approved it, and the construction project was planned for the end of the summer.

9. ***Hola? Ciao? Salut/Bonjour? Guten Tag?***
   Working last summer as an intern for a large engineering, construction, and project management company, you found that many of your peers were not native English speakers. In this job, you met people from all over the world whose language and culture presented some challenges. For example, at first you found it difficult to work through the details needed to solve a problem given by the supervisor, the problem of lowering the number of PSV's (Pressure Safety Valves) in a liquefaction plant. Though you were tempted to try to work through the problem solo, you soon discovered that you could not do the job alone. Therefore, you made an effort to converse with your peers on and off the job, even meeting with them on breaks and after work, in an effort to improve communication with them. You soon built a rapport with your peers that facilitated the workflow at the plant.

10. ***Summer Project—A Change in Plans***
    During your summer internship you have been assigned a project to investigate and implement a lead-time savings project for a new product line. After keeping constant contact with your manager, bouncing ideas between numerous departments (including the operators, quality team, schedulers, warehouse, and others), and taking tedious time studies, you found a solution that could combine the simplicity of the current material handling method with the reliability of a previously proposed method, which was much more complicated and expensive to implement. However, during the final meeting with your manager before the implementation, you learned that his initial support had dissipated; he redefined your project to require using a more complicated and expensive process. Though unsure of the reasons for the unexpected change, you committed to address the newly revised project as requested. Thus you reinvestigated new ideas for the assembly process, using the earlier data you had collected and scheduled additional meetings with the day- and night-shift operators. The result of your research and final project was an even more effective and efficient work-flow assembly.

11. ***Confronting an Unproductive Team Member***
    In a former laboratory class, you were assigned to be the group leader for the first experiment. Your initial plans to divide the work equally among team members produced an unproductive result from one team member. The work he submitted for the first draft of the report did not meet the quality anyone expected. You later learned that this team member had not performed well on other team projects, as was the "talk" of the team. Instead of making excuses for the team member or completing the work yourself, you decide to confront the team member directly in an effort to help him learn how to be a more productive team player. A bit awkward, the meeting began as you expected, but eventually he appreciated the effort you made to confront him honesty and directly. Over the course of the semester the quality of his work improved, and he eventually took over as group leader, coordinating the workflow productively.

12. ***With a Little Help from my Friends***
    Working one summer at a children's camp, your job was to communicate regularly with the Program Director, whose job was to organize and lead the hour-to-hour events. You soon discovered he spends 5-6 hours per week to coordinate schedules and plan activities using the current software selected by the camp for managing workflow. Knowing a little about coding and wanting to help the director find a more efficient way managing the workflow, you committed to spending several hours to write a program that would organize the data more efficiently. The new program worked so well that the camp continues to use it today, allowing the director to spend more time planning activities, helping campers, and doing other aspects of his job.