

## Integrating Competency-Based Education With ePortfolio Practice: The ASET Reflection Model

Rebecca Red Wolf

*University of Rochester School of Nursing*

Andrew B. Wolf

*St. Joseph's College of Nursing*

This article introduces the ASET Reflection Model, an innovative framework to support ePortfolio assessment in competency-based health professions education. The model includes four components: analyzing evidence of competencies, synthesizing learning experiences, evaluating achievement of personal and professional goals through the metacognitive cycle, and transforming self and society through critical reflection. Implemented at the University of Rochester School of Nursing, the ASET Reflection Model provides a structured approach to integrate reflective practices into healthcare education, using faculty guidance to support students' competency development, application of theory to practice, professional identity formation, and self-directed learning. The model's adaptability across various nursing programs highlights its potential for fostering transformative learning experiences in the health professions, enhancing teaching and learning via ePortfolio reflection.

The Liberal Education and America's Promise (LEAP) initiative signaled a shift in higher education towards essential learning outcomes to better prepare students for work, life, and citizenship (Association of American Colleges and Universities [AAC&U], 2011). This pivot has been paralleled by a similar transition in the health professions, moving to competency-based education to ensure students are prepared to provide high-quality, safe, and effective patient care. This call has been reinforced by Englander et al. (2013), who endeavored to find common competencies across multiple health professions, including medicine, pharmacy, dentistry, public health, nursing, and others. Many professional organizations and accreditors in healthcare have embraced this call and have initiated a paradigm shift in teaching and learning. For example, the American Association of Colleges of Nursing (AACN, 2021) has adopted a new set of competencies as essential outcomes for practice-ready nurses.

The ePortfolio movement was accelerated by the LEAP initiative because it is a powerful method to promote the integrative learning required to develop professional competencies (Watson et al., 2016). Competency development requires integrating and applying knowledge from diverse sources to solve problems in the ever-changing modern workplace (Wolf, 2022). This process goes beyond the mere acquisition of declarative knowledge that can be learned in textbooks and lectures and assessed on multiple-choice tests. Instead, it requires multiple cycles of experiences enabling practiced application, feedback from mentors, and structured reflection to promote a profound transformation in how students understand and respond to the world (Gervais, 2016).

Reflection and metacognition have been important in teaching and learning for many years. There are multiple models aimed at guiding effective reflection, including those developed by Dewey (1933), Schön (1983, 1987), Kolb (1984), Gibbs (1988), and others.

However, concrete applications of these models focus on learning through reflection on one discrete experience rather than the progressive development of competencies over time. Since a well-designed ePortfolio captures a trajectory of learning across a curriculum or even throughout a career, a reflective model should encourage and support learning across and between multiple experiences. Thus, there is a gap in understanding how to scaffold and sustain deep, critical reflection over time. We aim to address that gap by presenting a reflection model that supports students' progressive learning journeys as they strive to attain competencies or essential learning outcomes during a program of study.

As participants in AAC&U's 2023 Institute on ePortfolios, the University of Rochester School of Nursing implemented a new model to guide reflection and scaffold the development of knowledge and skills required for competency-based education. We designed the ASET Reflection Model to guide nursing students through four areas of critical reflection: analyzing evidence of their competencies, synthesizing their learning across a program of study, evaluating personal goals using the metacognitive cycle, and examining aspects of personal transformation. In our school's application of the ASET model, faculty meet with students at pre-set milestones each semester throughout a nursing program of study. Signature assignments are automatically uploaded into a student's ePortfolio to serve as evidence of competencies and to facilitate the reflection process. A signature assignment is a major assignment within a course designed to directly assess one or more program learning outcomes, serving as evidence of the progressive development of competencies. The ASET Reflection Model has been adapted to align with the expectations for competency-based education in nursing in both undergraduate and graduate programs (AACN, 2021). Reflection prompts guided by this model can be modified to scaffold

students' professional identity development as they proceed through a competency-based curriculum.

### Literature Review on Reflection in ePortfolios

The initial motivation for ePortfolio adoption often begins with accreditation requirements or an effort to provide evidence of student learning to support program-level assessment. However, after adoption, faculty recognize the power of the tool to support higher-order thinking (Landis et al., 2015). Faculty also realize that this depends on a well-designed ePortfolio process that includes opportunities for reflection. However, faculty have acknowledged that the mere opportunity for reflection does not necessarily lead to high-quality reflective outcomes (Buckley et al., 2009).

Developing effective reflective practices within ePortfolios necessitates a well-designed learning framework (Baker & Jankowski, 2020). A practical learning framework provides explicit connections between competencies, learning outcomes, assessments, and learning activities, providing a roadmap for students to make sense of their experiences (Wolf et al., 2025). A competency-based framework promotes the integration of knowledge, allowing students to connect concepts and experiences within and between courses (Harrington & Luo, 2016). The process of making connections also requires students to reflect on their learning, not just in capstone courses immediately prior to graduation, but across their curriculum (Landis et al., 2015).

Structured reflection assignments within ePortfolios significantly improve students' confidence and reflective abilities (Harrington & Luo, 2016). Using structured reflection tied to the curriculum can increase recognition of the value of reflection and its importance for improving competency (Slepcevic-Zach & Stock, 2018). Well-designed reflection assignments provide a scaffolded approach, guiding students in the critical analysis required to learn from their experiences and become reflective practitioners.

Quality reflection also depends on frequent feedback from peers, faculty, or professionals. Hui et al. (2023) found that ePortfolios can provide a structure for a "feedback dialogue" between students and faculty, enabling the development of increased capacity for meaningful reflection. However, feedback may only be valuable if there is a clear structure and process providing a roadmap for both faculty and students (Peacock et al., 2011; Stock & Winkelbauer, 2012).

### Models of Reflection

The field of reflective practice in education has evolved significantly over the past century, with various models building upon and refining earlier concepts. This overview examines key models of reflection, their

interrelationships, and their practical applications in educational settings.

John Dewey's (1933) seminal work provides the foundation for reflection on learning. Dewey identified four essential elements for deep reflection:

- **Meaning-making:** Reflection connects past and future learning experiences, allowing for the continuous deepening of understanding through the integration of multiple concepts and experiences.
- **Disciplined method:** Reflection requires a systematic approach akin to scientific inquiry, involving cycles of lived experience, description, analysis, and planning future actions based on generated hypotheses.
- **Social interaction:** Dialogue is crucial for testing and strengthening one's thoughts against others' perspectives.
- **Reflective dispositions:** Attitudes such as thorough engagement, objectivity, open-mindedness, and commitment to action underpin reflective thinking.

Dewey emphasized reflection as a dynamic process that evolves with experience and knowledge, shaping understanding and morals, and ultimately serving societal progress. He broadly defined an experience as any interaction with the world or others, from reading a book to sensory encounters with nature.

Carol Rodgers (2002) expanded on Dewey's work. She defined reflection as

a cognitive and affective process or activity that (1) requires active engagement on the part of the individual; (2) is triggered by an unusual or perplexing situation or experience; (3) involves examining one's own responses, beliefs, and premises in light of the situation at hand; and (4) results in integration of the new understanding into one's experience. (p. 41)

Rodgers added that an experience must challenge the learner's assumptions to instigate deeper reflection and accommodation of new thinking patterns.

Terry Borton (1970) created a process model for reflection based on the questions: What? So what? Now what? This model, though initially developed for high school students, has proven valuable in guiding reflective thinking on experiential learning in higher education (Rolfe, 2014). Borton's three questions can be viewed as a distilled version of Dewey's (1933) systematic method of thought. In the "What?" stage, learners describe the experience they are reflecting upon. The question "So what?" encourages students to analyze the importance of the situation and specify

what they learned from the experience. And the “Now what?” phase is a prompt to apply new learning to guide future action.

Donald Schön (1983, 1987) studied the role of reflection in professionals as they developed and refined “theories in use”—conscious or unconscious knowledge that guides actions. Schön differentiated between two types of reflection. Reflection-in-action involves applying knowledge to solve a specific thorny problem in the moment. Reflection-on-action is when the practitioner uses past experiences to learn from and refine theories for future actions. Schön (1987) also asserted that the ability to reflect effectively within a discipline requires intentional guidance and instruction through structured dialogue with more experienced practitioners. Through this dialogue, novices learn how to effectively frame problems, apply knowledge to solve real-world problems, and eventually use self-reflection to improve practice. While Schön’s work provides a robust theoretical framework for understanding reflective practice, it is abstract and does not lend itself to a simple step-by-step guide to reflection or teaching reflection. However, his ideas have heavily influenced others who have used these abstract concepts to inform the use of reflection in practice and educating reflective practitioners.

David Kolb’s (1984) experiential learning cycle operationalized Dewey’s (1933) conception of reflection into four stages: (1) concrete learning, (2) reflective observation, (3) abstract conceptualization, and (4) active experimentation. Again, one can observe Dewey’s work in Kolb’s process of objectively reviewing a concrete experience to create a hypothesis to guide future actions and experimentation. This model provides a more structured approach to the reflective process based on a discrete learning experience.

Graham Gibbs (1988) expanded on Kolb’s (1984) model. He created a six-step reflective cycle: (1) experience, (2) feelings, (3) evaluation, (4) analysis, (5) conclusion, and (6) action plan. Gibbs notably emphasized the learner’s emotions about the experience, using analysis to make sense of the experience and concluding with a concrete plan for changing actions in the future.

Joyce-McCoach and Smith (2016) developed a contemporary three-stage teaching model for reflective practice in the health professions, synthesizing various reflective theories and concepts. They designed new learning outcomes and assignments to guide students through each stage of reflection over time. At first, students wrote in journals to reflect on their values, beliefs, and attitudes in relation to their professional roles. Next, students engaged in dialogue with classmates, comparing their personal reflections on various ethical, legal, and procedural issues within healthcare. Toward the end of their program, students

read sociology, history, and critical theory to analyze healthcare at a systemic level and how the sociohistorical context influences their assumptions and biases. Students created a reflective portfolio to document each stage of the process. Their final assignment at the end of the program was to write a reflective report on a clinical experience.

### Reflection and Metacognition

Flavell’s (1979) work on metacognition laid the foundation for understanding how individuals monitor and regulate their cognitive processes. He conceptualized metacognition as consisting of both metacognitive knowledge and metacognitive experiences. Metacognitive knowledge encompasses one’s understanding of cognitive tasks, strategies, and personal cognitive abilities, while metacognitive experiences are the conscious cognitive or affective experiences that occur during cognitive activities. Flavell further delineated metacognitive knowledge into three categories: person variables (knowledge about oneself and others as cognitive processors), task variables (knowledge about the nature of cognitive tasks), and strategy variables (knowledge about cognitive and metacognitive strategies). Flavell’s (1979) work emphasized the importance of developing metacognitive skills for effective learning, arguing that learners who are more aware of their cognitive processes are better equipped to plan, monitor, and evaluate their learning strategies. His contributions have been pivotal in advancing our understanding of how learners can become more self-aware and self-directed in their educational pursuits, paving the way for later models of self-regulated learning and metacognitive instruction.

Reflection, a key process in activating and developing metacognition, plays a crucial role in learning by enabling individuals to think critically about their experiences and cognitive processes. As noted previously, Schön (1983) distinguished between reflection-in-action (thinking on one’s feet) and reflection-on-action (retrospective thinking), both of which involve metacognitive processes. Reflection serves as a bridge between experience and learning, allowing individuals to make sense of new information, integrate it with existing knowledge, and adjust their understanding accordingly (Kolb, 1984). This reflective process is inherently metacognitive, as it requires learners to step back from their immediate experience and examine their thought processes, strategies, and assumptions. Boud et al.’s (1985) model of reflection in learning highlights the importance of returning to experience, attending to feelings, and re-evaluating—all of which involve metacognitive awareness and regulation. The application of these theories to

ePortfolio practice is supported by the work of Jenson (2011), who found that ePortfolios can serve as powerful tools for developing metacognitive skills when coupled with structured reflective activities.

In summary, the evolution of reflective practice models demonstrates a progression from broad theoretical concepts to more structured, practical frameworks. While Dewey's (1933) foundational ideas remain relevant, later models have added important elements such as the role of emotions, using a reflective process, and explicitly teaching metacognition. As education continues to evolve, particularly in digital learning contexts such as ePortfolios, these reflective models must undergo further adaptation to meet the changing needs of learners and educators.

### Reflection in ePortfolio

Reflection is seen by many authors as critical for learning to occur in the use of ePortfolios. Riedinger (2006) observed that "without reflection, the ePortfolio is merely storage" (p. 91). However, a review of the literature suggests that we have not developed a robust research-based set of practices to guide educators in supporting students' effective use of ePortfolios for learning. Blakely (2016) noted that students often view ePortfolio learning experiences as discrete and even atomized and fail to connect them into an integrated understanding. She pointed out that this atomization is influenced not only by students' pre-existing epistemologies but also by the way instructors structure and communicate assignments and reflection prompts. Blakely stressed the need for effective reflection that invites students to make sense of their learning. Similarly, Landis et al. (2015) found that faculty were often surprised at students' limited ability to reflect meaningfully and found that effective reflection practice is complex and difficult to manage though worthwhile.

Other authors have evaluated the use of reflection in ePortfolios in various contexts, often finding that students are generally satisfied and find value in reflective practices. For instance, Weber et al. (2023) evaluated ePortfolios in a summer internship program and found that structured reflection questions significantly added to students' perceived learning. Weber and Myrick (2018) conducted a qualitative analysis of reflection assignments in an ePortfolio for summer semester college students. They noted that students found value in the assignments, particularly in the ability to look back at what they learned across the semester. Peet et al. (2011) created a structure using six dimensions of integrative knowledge aimed at helping students "identify, connect, synthesize, and demonstrate knowledge and skills" (p. 11), and found significant gains in perceived integrative learning using a pre-post survey.

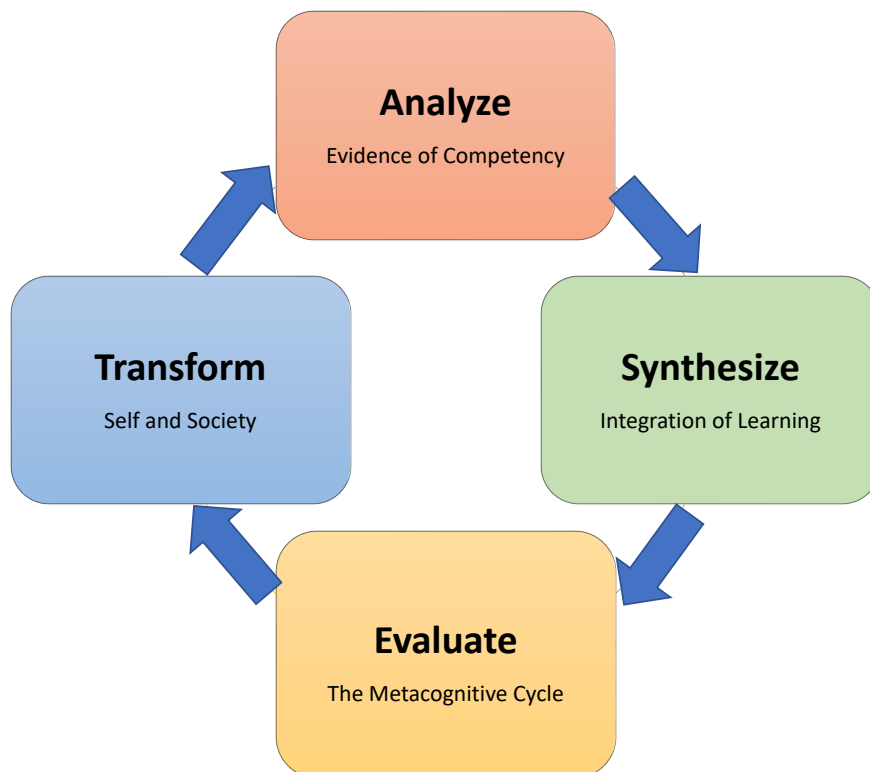
Thus, the literature on reflection in ePortfolio indicates the importance of structured reflective activities to support learning, yet there remains a need for more comprehensive research-based guidance on implementation. Additionally, there is a need for more robust theoretical frameworks or models of reflection that can guide effective instruction and future research. Such frameworks could enhance our understanding of how reflection in ePortfolios contributes to learning outcomes to support professional practice.

### The Need for Reflection in Competency-Based Education

Reflection models have been primarily used in experiential learning to support a specific objective from a discrete experience. Although research exists on developing reflective practice in the clinical setting, we did note a need for more articles on facilitating learner reflection on competency development over time. Accumulated reflection is a vital consideration in higher education, where nursing students prepare for practice or advanced roles. Specifically, we sought a reflection framework to facilitate an ePortfolio implementation of competency-based learning.

We found reflective models focused on discrete experiences (e.g., Galutira, 2018; Gibbs, 1988; Kolb, 1984) or triggered by an unusual experience (e.g., Atkins & Murphy, 1993; Boyd & Fales, 1983; Rodgers, 2002; Ruth-Sahd, 2003) to be valuable for experiential learning but not sufficient alone for cumulative ePortfolio reflection. First, asking students to focus on one concrete experience does not guarantee they will integrate these experiences with others over time. Second, depending on a "perplexing situation" to instigate reflection (Rodgers, 2002) is an unreliable system. Third, with the nursing profession's move to competency-based learning, we required a model that would allow students to move beyond discrete experiences to encompass accumulated reflection over time. Fourth, there appeared to be a lack of structured reflection in helping students consider their role in broader issues at the forefront of healthcare, such as health equity and racially-based health disparities (Wakefield et al., 2021). Fifth, we needed consistent prompts for faculty to use in mentoring students through various aspects of reflection. The ASET Reflection Model was designed to facilitate students' holistic reflection on their cumulative learning experiences within a competency-based curriculum guided by faculty mentorship. Combined with ePortfolio assessment, this model fosters a comprehensive and integrated understanding of each student's professional identity formation and academic growth, providing valuable metrics at the student, teacher, program, and school levels.

Figure 1  
*The ASET Reflection Model*



### The ASET Reflection Model

The ASET Reflection Model provides a structured process for ePortfolio reflection and facilitates students' progress toward achieving competencies. The four components of the model include analysis, synthesis, evaluation, and transformation (Figure 1), which together create the acronym "ASET." This model underscores the iterative nature of reflection in learning and practice, although the elements are presented in the order of abstract thought required. It also addresses the need for scaffolded reflection of students' competency development over time using an ePortfolio. The model includes specific prompts faculty can use to guide student reflection on their academic performance, integration of learning, monitoring of goal achievement, and professional identity development. It assumes an initial faculty-facilitated meeting where students set personal and professional goals and determine how their program of study will help them achieve these goals.

#### Step 1: Analyze

*Analysis* is the first step of the ASET Reflection Model. This activity guides students in a critical review

of their signature assignments from the previous semester. This initial phase serves multiple purposes: (a) it facilitates student identification of learning outcomes in their work, (b) encourages the processing of formative and summative feedback from faculty and peers, (c) provides an opportunity to explore emotional responses to academic challenges, and (d) promotes recognition of developing competencies.

Reflection on signature assignments is socially mediated by faculty through individual advising sessions or faculty-guided classroom activities and dialogues with peers. Guided reflection within a social context was emphasized by Dewey (1933), Joyce-McCoach and Smith (2016), Rodgers (2002), and Schön (1987). Furthermore, the Analyze step incorporates Schön's (1987) concept of reflection-on-action, Borton's (1970) "What [did I learn]?" stage, Kolb's (1984) "reflective observation" in the experiential learning cycle, and the "description and feelings" stages in Gibbs' (1988) reflective cycle. These theorists cite the importance of revisiting, describing, and reinterpreting prior learning experiences. By including a review of feedback, students can also consider how experts in the discipline received their work. This analysis lays the groundwork for deeper

reflective practice, fostering a clear picture of academic growth and achievement of competencies. Here are some prompts we used to lead students in their analysis:

1. Briefly summarize the content you presented in your signature assignment from last semester.
2. Describe the process you used to complete the assignment. This could include unexpected challenges and how you responded to them.
3. What formative feedback did you receive from peers, faculty, or clinical supervisors? How did you use this feedback to revise and strengthen your work?
4. What summative feedback did you receive on the rubric?
5. Analyze what you learned:
  - How do you feel about your work on this assignment?
  - What new knowledge, skills, or processes did you learn?
  - What strengths and weaknesses do you see in your work?
6. How does this signature assignment (and other work) demonstrate your progress toward achieving a specific competency or a program learning outcome (PLO)? If you think you have achieved competence, explain why.

In our comprehensive learner record system, signature assignments, rubrics, and feedback will automatically be uploaded to students' ePortfolios. To further support autonomy and creative analysis, students are encouraged to add self-selected artifacts to their ePortfolio and discuss how these demonstrate the achievement of PLOs or personal goals.

## Step 2: Synthesize

*Synthesis* is the second step of the ASET Reflection Model, building upon the initial analysis of signature assignments. This stage encourages students to make sense of their learning by integrating new knowledge with prior experiences and theoretical foundations. The process involves connecting course theory with insights from scholarly sources and real-world experiences, particularly clinical practice for nursing students. Furthermore, students are prompted to relate these synthesized understandings to broader implications within healthcare, such as health inequities, social determinants of health, and patient advocacy.

Theoretically, this step is based on making meaning of one's learning. Dewey (1933) conceptualized reflection as a dynamic cognitive process that facilitates the construction of meaning by integrating past and future learning experiences. This

iterative approach enables learners to progressively deepen their comprehension by synthesizing diverse concepts and experiences, fostering a more holistic understanding of complex phenomena. Dewey's model emphasizes the active role of the learner in continuously recontextualizing and reinterpreting knowledge, leading to more sophisticated cognitive frameworks and enhanced metacognitive abilities.

Carol Rodgers (2002) proclaimed that the goal of reflection is to integrate new knowledge with prior knowledge. Likewise, the analysis stage of Gibbs's (1988) reflective cycle ascribes meaning to novel situations by comparing them to previous experiences. This aligns with Schön's (1983) concept of reflection-on-action and Kolb's (1984) experiential learning cycle, both of which emphasize the importance of connecting new experiences with existing knowledge.

Integration of learning plays a critical role in the high-impact practice of ePortfolios (Eynon & Gambino, 2017; Watson et al., 2016). Integrative learning is defined as "an understanding and a disposition that a student builds across the curriculum and co-curriculum, from making simple connections among ideas and experiences to synthesizing and transferring learning to new, complex situations" (AAC&U, 2009, para. 1). After analyzing signature assignments in step one, we ask students to consider how they are synthesizing new knowledge. We provide students with specific prompts to support their exploration and application of new competencies in other settings. Here are some prompts we used to help our undergraduate RN-BS students make sense of their learning experiences, synthesize new knowledge across courses, and apply these skills to practice:

1. What were the most exciting things you learned last semester?
2. How can you connect what you learned with your clinical or work experience?
3. Describe how you are integrating what you learned in one course with other courses. Explain how your understanding of a challenging concept or idea has developed since you started this program.
4. How can you apply your new knowledge and skills to improve patient and community care? Explain how your understanding of patient or community health issues has grown (e.g., health equity, effects of the social determinants of health, patient advocacy, population health).
5. Describe a situation where you applied theoretical knowledge from your studies to solve a real-world problem in your clinical practice.
6. Compare and contrast a current nursing practice with what you've learned about \_\_\_\_\_ (e.g., evidence-based practice, ethics,

population health). How might you integrate this new knowledge to improve patient outcomes?

By engaging in this synthesis, nursing students develop a more sophisticated understanding of the discipline by integrating new knowledge and skills into practice. This leads to improved patient care and professional growth. This approach not only aligns with established theories of reflective practice but also prepares students for the complex, integrative thinking required in modern healthcare settings.

### Step 3: Evaluate

*Evaluation* is the third element of reflection, providing an opportunity for students to monitor the progress they are making toward attaining program-level competencies and personal goals established at the beginning of the ePortfolio process. The evaluation component is grounded in the theories of metacognition and self-regulated learning. By incorporating these theoretical foundations into the ASET Reflection Model, we aim to foster not only the successful development of nursing competencies but also the metacognitive and self-regulatory skills essential for lifelong learning and professional development (Wolf et al., 2022). This approach aligns with the broader goals of competency-based education, which emphasizes the importance of learner autonomy and self-direction (Gravina, 2017).

We operationalized these theoretical principles within our ePortfolio system, providing a structured framework for student reflection and taking ownership of their learning process. The evaluation step is based on the three skills of metacognition and self-regulation: planning, monitoring, and assessing (Medina et al., 2017; Zimmerman, 1990). Planning involves setting clear goals and determining the strategies and resources needed to achieve them. Faculty help students develop a plan of study and identify personal and professional goals during orientation to the ePortfolio. The ASET Reflection Model cues students to revisit these goals and update their plans when they review their ePortfolio with faculty each semester.

Monitoring is the ongoing assessment of one's learning. The evaluation step aids students in tracking their performance and ensures learning aligns with previously set goals. Students are encouraged to develop a monitoring plan that includes pre-identified resources and learning strategies to address potential challenges. This approach not only supports ongoing self-assessment but also fosters the development of adaptive learning strategies, a key component of self-regulated learning (Panadero, 2017). Faculty play a crucial role in this process, guiding students to

institutional resources such as our Center for Professional and Academic Success, which offers content-area tutoring and writing support.

Overall, the self-evaluation process instructs students not only in metacognitive skills but also in a personal process of continuous improvement. Essentially, students are guided through assessing their strengths, weaknesses, opportunities, and threats related to their competency development and then make or revise an action plan. Faculty are available to keep the students' reflective examination anchored in their actual performance as they problem-solve, fine-tune their learning strategies, and work to attain their goals. For instance, our DNP faculty guide students to write SMART goals (Doran, 1981) each semester.

Next are prompts for use during the evaluation phase of the ASET Reflection Model. These support students through the metacognitive cycle (setting goals, monitoring progress, and making adjustments based on ongoing assessment) and promote self-regulation:

1. Based on your analysis of signature assignment work, what new realizations do you have about yourself as a learner this semester?
2. How have the signature assignments contributed to your progress toward personal and/or professional goals? Where are the gaps in your competency development?
3. Reflecting on your academic performance in the program so far, what is your assessment of your strengths and weaknesses as a learner?
4. What are current opportunities or threats to your learning progress? What resources might help you manage these threats?
5. How might you adjust your goals or action plan based on this evaluation of your strengths and weaknesses, opportunities, and threats?

By deliberately incorporating metacognitive steps into our ePortfolio system, we aim to cultivate vital professional and lifelong skills such as goal setting, self-evaluation, and self-directed learning. In addition, learners are enabled to recognize patterns in their performance and develop the skills necessary for problem-solving and self-regulation with faculty guidance. In the context of competency-based education (CBE), this type of reflection is instrumental in fostering student awareness of continuous improvement in their own professional development.

### Step 4: Transform

*Transformation* is the culmination of the ASET Reflection Model, embodying Dewey's (1933) assertion that the ultimate product of reflection is the transformation of both the individual and society. This

stage also aligns with Schön's (1983, 1987) concept of reflection-on-action, where learners use past experiences to refine their "theories in use" and guide future actions. Drawing on Kolb's (1984) experiential learning cycle, this stage encourages students to conceptualize their experiences abstractly and plan for active experimentation in their future practice.

The transform step facilitates student reflections on their evolving professional identity, leadership skills, and future career paths. It also encourages exploration of how diverse perspectives and learning experiences have shaped their views on societal issues and their responsibilities as healthcare professionals and global citizens. This deep reflection encompasses changes and challenges related to ethics, personal and professional values, cultural humility practices, acknowledgment of unconscious biases, and their personal response to systemic issues (e.g., structural inequalities, persistent health disparities, and social determinants of health).

In this frame of reflection, students are asked how they plan to use their personal power and developing expertise to effect change at organizational and societal levels. Here are some example prompts to assist in reflections on personal growth and change:

1. Professional Identity Integration: How are you integrating your new competencies into your professional identity?
2. Challenging Assumptions: How have your learning experiences challenged your personal assumptions, biases, values, or ethics? How have you become more aware of your unconscious biases or the importance of cultural humility?
3. Leadership Development: How are you developing leadership skills? This might be via enhanced patient advocacy or more formal leadership roles.
4. Systemic Awareness: How is your awareness of system-based health inequities growing (e.g., social determinants of health; institutionalized bias; and structural inequalities like racism, classism, sexism, homophobia)?
5. Inspired Action: What actions are you inspired to take based on your growing awareness of organizational and societal issues impacting patient care (e.g., community outreach, volunteerism, creating training or educational materials, lobbying, political activism)?

This model is designed to be flexible, catering to various educational programs, learning objectives, and student competencies. It can also be tailored to different learners, allowing customization according to program outcomes and student needs. This flexibility addresses

the gap identified in the literature for models that facilitate reflection on competency development over time, particularly in healthcare education. For example, our ePortfolio pilot included one undergraduate (a fully online RN-BS Completion Program) and one Doctor of Nursing Practice (DNP) program. Both used the ASET model but customized the student support and prompts to suit competency development and program structure. Furthermore, these questions can be adapted at each milestone to promote deeper reflection, integrative learning, and application to practice. By methodically integrating each element of the model throughout the curriculum, faculty ensure that reflection becomes a fundamental component of nursing education. This systematic approach equips students to critically reflect on praxis and become influential agents of change within healthcare.

In conclusion, the transformation stage of the ASET Reflection Model provides a comprehensive framework for deep reflection, bridging the gap between theoretical models and practical application in ePortfolio-based learning. It addresses many of the limitations identified in existing reflective models and offers a structured approach to fostering meaningful reflection and professional growth within a competency-based ePortfolio.

### **Implementation of the Model**

#### **Design Considerations Prior to Implementation**

We addressed several foundational elements before we launched our ePortfolio. First, we developed a logic model with outcomes specified for each program. This provided a clear rationale for all stakeholders to adopt ePortfolio. Instructional designers and faculty created a learning framework at the program level, including well-defined professional competencies aligned to signature assignments, rubrics, and learning activities. This learning framework specifies the competencies required for program completion. Part of this planning involved setting milestones for reflection and deciding how the reflection would occur. For instance, in our fully online RN-BS program, faculty advisors met with students individually via Zoom and recorded the initial meetings, asking for written student responses at later milestones. The DNP faculty chose to use class time for semesterly reflections, and students submitted their final written responses two weeks after class.

Second, the faculty discussed and recognized the necessity of providing students with substantive formative and summative feedback on signature assignments since this is a reflection requirement during the analysis phase. The ASET model prompts students to consider what others identify as their strengths and weaknesses to improve self-awareness, inform corrective actions the student can initiate, and

deepen understanding of expectations within the profession. Third, we communicated the rationale for the change and gave all program faculty an introduction to the reflection model, ePortfolio process, and pedagogy underlying the initiative.

Implementation began by communicating the learning framework and reflection process with new students, so they understood the learning outcomes expected at the course and program levels. Then, the faculty guided students in developing personal career and learning goals during their orientation to the ePortfolio. This planning is required for the third step of the reflection model to enhance metacognition and provide individualized metrics for students to use in their self-evaluation process.

### Faculty Development

Faculty play a crucial role in preparing students for the ePortfolio reflection process, providing support, feedback, and assessment of competencies. Faculty reflection and mentorship skills are essential for student learning and an appropriate induction into the discipline. These skills necessitate ongoing training and professional development. Initial meetings with faculty aid students in reviewing expected competencies, creating a professional growth plan based on career goals, and reinforcing how program learning outcomes support students' goal attainment. This enhances student engagement, mentorship, and clear communication of PLOs.

To guide faculty development, we used cognitive apprenticeship theory (Collins et al., 1991) to explain the concept of scaffolding. With this approach, the goal is to coach students toward skill independence. The original theory included four areas for successful coaching: the method used to develop expertise, the sequence of activities, the content, and the social context for learning (Collins et al., 1991). Using this theory, faculty introduce students to structured reflection activities, modeling reflection and coaching students with the aim of progressively diminishing their support and encouraging students to take more of the lead in their reflective process. The ASET Reflection Model provides the sequence of activities and the procedural content for reflection. Professional competencies, operationalized as program learning outcomes, include the disciplinary content. Our social context was initially to take a student-centered approach. In retrospect, we plan to further articulate the importance of the learning environment by introducing faculty to autonomy-supportive teaching methods (Reeve, 2009) based on self-determination theory (Deci & Ryan, 1985).

Furthermore, we dedicate time during program faculty meetings once a semester to discuss how the ePortfolio initiative is progressing, share ideas for

guiding student reflection, and review samples of student work together. We are in the process of developing a rubric based on the ASET model, not necessarily to grade student reflection but to help faculty keep track of student's proficiency with the process. In this way, we are operationalizing the reflection model to support faculty in more effectively scaffolding students' reflective journeys.

### Conclusion

The University of Rochester School of Nursing began a pilot of ePortfolios and the ASET Reflection Model in the fall semester of 2023. This model, along with our participation in AAC&U's Institute on ePortfolios, strengthened our learning framework design as linked to professional competencies, guided faculty in creating reflection milestones and prompts, and helped our students develop their personal and professional goals for learning. Our ePortfolio system will serve as a direct measure of students' attainment of learning outcomes as well as document their transformative journey in becoming reflective professionals ready to meet the challenges of an evolving healthcare landscape.

We plan to continue our implementation of ePortfolio and the ASET Reflection Model in other programs at the nursing school. We will collect data from students and faculty regarding their experiences with this initiative. This plan also provides evidence of students' competency attainment to facilitate evaluation and continuous improvement data at the program and school levels. We invite other institutions to adapt the model to their unique settings. Ideally, nursing students would continue their ePortfolio use with employers as part of a clinical ladder and promotion process. This would provide a seamless connection from education to practice and allow students to continue setting professional goals, developing competencies, and engaging in socially mediated critical reflection of self and society.

The ASET model also has implications for research. First, this model could be implemented and evaluated in other competency-based education programs. Second, research could include methods of assessing students' development of critical reflection skills to measure and improve the effectiveness of this model. For example, Tsingos et al. (2015) created a rubric to measure the reflection practice of pharmacy students. Third, more work could be done to support faculty's reflective practice, feedback skills, and mentorship capacity. Our goal is to share the ASET Reflection Model and contribute to the dialogue on supporting competency development, ePortfolio assessment, and the critical reflection required of today's professionals.

## References

- American Association of Colleges of Nursing. (2021). *The essentials: Core competencies for professional nursing education*. <https://www.aacnursing.org/Portals/0/PDFs/Publications/Essentials-2021.pdf>
- Association of American Colleges and Universities. (2011). *LEAP vision for learning: Outcomes, practices, impact, and employers' views*. Author.
- Association of American Colleges and Universities. (2009). *Integrative Learning VALUE Rubric*. <https://www.aacu.org/initiatives/value-initiative/value-rubrics/value-rubrics-integrative-and-applied-learning>
- Atkins, S., & Murphy, K. (1993). Reflection: A review of the literature. *Journal of Advanced Nursing*, 18, 1188-92. <https://doi.org/10.1046/j.1365-2648.1993.18081188.x>
- Baker, G. R., & Jankowski, N. A. (2020). Documenting learning: The comprehensive learner record. Occasional Paper No. 46. *National Institute for Learning Outcomes Assessment*. <https://www.learningoutcomesassessment.org/wp-content/uploads/2020/08/OccasionalPaper46.pdf>
- Blakely, B. J. (2016). Voicing the E in WOVE: Improving reflection in ISUComm Foundation Courses ePortfolios. *International Journal of ePortfolio*, 6, 139-146. <https://www.aacu.org/ijep/archives/volume-6-number-2>
- Borton, T. (1970). *Reach, touch and teach*. McGraw-Hill.
- Boud, D., Keogh, R., & Walker, D. (1985). *Reflection: Turning experience into learning*. Kogan Page.
- Boyd, E. M., & Fales, A. W. (1983). Reflective learning: Key to learning from experience. *Journal of Humanistic Psychology*, 23, 99-117. <http://dx.doi.org/10.1177/0022167883232011>
- Buckley, S., Coleman, J., Davison, I., Khan, K. S., Zamora, J., Malick, S., Morley, D., Pollard, D., Ashcroft, T., Popovic, C., & Sayers, J. (2009). The educational effects of portfolios on undergraduate student learning: A Best Evidence Medical Education (BEME) systematic review. BEME Guide No. 11. *Medical Teacher*, 31(4), 282-298. <https://doi.org/10.1080/01421590902889897>
- Collins, A., Brown, J. S., & Holum, A. (1991). Cognitive apprenticeship: Making thinking visible. *American Educator*, 15(3), 6-11.
- Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. Plenum.
- Dewey, J. (1933). *How we think*. Prometheus Books.
- Doran, G. T. (1981) There's a SMART way to write management's goals and objectives. *Journal of Management Review*, 70, 35-36. <https://community.mis.temple.edu/mis0855002fall2015/files/2015/10/S.M.A.R.T-Way-Management-Review.pdf>
- Englander, R., Cameron, T., Ballard, A. J., Dodge, J., Bull, J., & Aschenbrenner, C. A. (2013). Toward a common taxonomy of competency domains for the health professions and competencies for physicians. *Academic Medicine*, 88(8), 1088-1094. <https://doi.org/10.1097/ACM.0b013e31829a3b2b>
- Eynon, B., & Gambino, L. M. (2017). *High-impact ePortfolio practice: A catalyst for student, faculty, and institutional learning*. Stylus.
- Flavell, J. H. (1979). Metacognition and cognitive monitoring: A new area of cognitive-developmental inquiry. *American Psychologist*, 34(10), 906-911. <https://doi.org/10.1037/0003-066X.34.10.906>
- Galutira, G. D. (2018). Theory of reflective practice in nursing. *International Journal of Nursing Science*, 8(3), 51-56. <https://doi.org/10.5923/j.nursing.20180803.02>
- Gervais, J. (2016). The operational definition of competency-based education. *Journal of Competency-Based Education*, 1(2), 98-106. <http://dx.doi.org/10.1002/cbe2.1011>
- Gibbs, G. (1988). *Learning by doing: A guide to teaching and learning methods*. Further Education Unit at Oxford Polytechnic. <https://thoughtsmostlyaboutlearning.files.wordpress.com/2015/12/learning-by-doing-graham-gibbs.pdf>
- Gravina, E. W. (2017). Competency-based education and its effect on nursing education: A literature review. *Teaching and Learning in Nursing*, 12(2), 117-121. <http://dx.doi.org/10.1016/j.teln.2016.11.004>
- Harrington, K., & Luo, T. (2016). ePortfolios: Supporting reflection and deep learning in high-impact practices. *Peer Review*, 18(3). [https://digitalcommons.odu.edu/stemps\\_fac\\_pubs/27/](https://digitalcommons.odu.edu/stemps_fac_pubs/27/)
- Hui, L., Ippolito, K., Sarsfield, M., & Charalambous, M. (2023). Using a self-reflective ePortfolio and feedback dialogue to understand and address problematic feedback expectations. *Assessment & Evaluation in Higher Education*, 49(3), 334-347. <https://doi.org/10.1080/02602938.2023.2232960>
- Jenson, J. D. (2011). Promoting self-regulation and critical reflection through writing students' use of electronic portfolio. *International Journal of ePortfolio*, 1(1), 49-60. <https://www.theijep.com/pdf/IJEP19.pdf>
- Joyce-McCoach, J., & Smith, K. (2016). A teaching model for health professionals learning reflective practice. *Procedia—Social and Behavioral Sciences*, 228, 265-271. <https://doi.org/10.1016/j.sbspro.2016.07.039>
- Kolb, D. A. (1984). *Experiential learning: Experience as the source of learning and development*. Prentice-Hall.
- Landis, C. M., Scott, S. B., & Kahn, S. (2015). Examining the role of reflection in ePortfolios: A case study. *International Journal of ePortfolio*, 5(2), 107-121.

- <https://www.aacu.org/ijep/archives/volume-5-number-2>
- Medina, M. S., Castleberry, A. N., & Persky, A. M. (2017). Strategies for improving learner metacognition in health professional education. *American Journal of Pharmaceutical Education, 81*(4), Article 78. <https://doi.org/10.5688/ajpe81478>
- Panadero, E. (2017). A review of self-regulated learning: Six models and four directions for research. *Frontiers in Psychology, 8*, Article 422. <http://dx.doi.org/10.3389/fpsyg.2017.00422>
- Peacock, S., Murray, S., Scott, A., & Kelly, J. (2011). The transformative role of ePortfolios: Feedback in healthcare learning. *International Journal of ePortfolio, 1*(1), 33-48. <https://www.aacu.org/ijep/archives/volume-1-number-1>
- Peet, M., Lonn, S., Gurin, P., Boyer, K. P., Matney, M., Marra, T., Taylor, S. H., & Daley, A. (2011). Fostering integrative knowledge through ePortfolios. *International Journal of ePortfolio, 1*, 11-31. <https://www.theijep.com/pdf/IJEP39.pdf>
- Reeve, J. (2009). Why teachers adopt a controlling motivating style toward students and how they can become more autonomy supportive. *Educational Psychologist, 44*(3), 159-175. <https://doi.org/10.1080/00461520903028990>
- Riedinger, B. (2006). Mining for meaning: Teaching students how to reflect. In A. Jafari & C. Kaufman (Eds.), *Handbook of research on ePortfolios* (pp. 90-101). IGI Global.
- Rodgers, C. (2002). Defining reflection: Another look at John Dewey and reflective thinking. *Teachers College Record, 104*(4), 663-877. <http://dx.doi.org/10.1111/1467-9620.00181>
- Rolfe, G. (2014). Rethinking reflective education: What would Dewey have done? *Nurse Education Today, 34*, 1179-1183. <http://dx.doi.org/10.1016/j.nedt.2014.03.006>
- Ruth-Sahd, L. A. (2003). Reflective practice: A critical analysis of data-based studies and implications for nursing education. *Journal of Nursing Education, 42*(11), 489-497. <http://dx.doi.org/10.3928/0148-4834-20031101-07>
- Schön, D. (1983). *The reflective practitioner: How professionals think in action*. Routledge. <https://doi.org/10.4324/9781315237473>
- Schön, D. (1987). *Educating the reflective practitioner: Toward a new design for teaching and learning in the professions*. Jossey-Bass.
- Slepcevic-Zach, P., & Stock, M. (2018). ePortfolio as a tool for reflection and self-reflection. *Reflective Practice, 19*(3), 291-307. <https://doi.org/10.1080/14623943.2018.1437399>
- Stock, M., & Winkelbauer, A. (2012). ePortfolio implementation in the master's program of business education and development. *International Journal of Business Education, 152*, 48-55.
- Tsingos, C., Bosnic-Anticevich, S., Lonie, J. M., & Smith, L. (2015). A model for assessing reflective practices in pharmacy education. *American Journal of Pharmaceutical Education, 79*(8), Article 124. <http://dx.doi.org/10.5688/ajpe798124>
- Wakefield, M., Williams, D. R., & Le Menestrel, S. (2021). *The future of nursing 2020-2030: Charting a path to achieve health equity*. National Academy of Sciences. <http://dx.doi.org/10.17226/25982>
- Watson, C. E., Kuh, G. D., Rhodes, T., Light, T. P., & Chen, H. L. (2016). ePortfolios—The eleventh high impact practice. *International Journal of ePortfolio, 6*(2), 65-69. <https://www.theijep.com/pdf/IJEP254.pdf>
- Weber, K., Cai, T., & Elliston, Z. (2023). I can see clearly now: Using ePortfolios to support reflection and engaged learning in a summer internship program. *International Journal of ePortfolio, 13*, 55-67. <https://www.aacu.org/ijep/archives/volume-13-number-1>
- Weber, K., & Myrick, K. (2018). Reflecting on reflecting: Summer undergraduate research students' experiences in developing electronic portfolios, a meta-high impact practice. *International Journal of ePortfolio, 8*, 13-25. <https://www.theijep.com/pdf/IJEP287.pdf>
- Wolf, A. (2022). Adapting nursing programs to competency-based education. *Nursing 2022, 52*(2), 12-13. <https://doi.org/10.1097/01.NURSE.0000806200.13094.90>
- Wolf, A., Carbonaro, S., & Wolf, R. R. (2022). Empowering metacognitive learning in a competency-based curriculum in health professions through comprehensive learner record. *Intersection: A Journal at the Intersection of Assessment and Learning, 3*(2). <https://files.eric.ed.gov/fulltext/EJ1359487.pdf>
- Wolf, R. R., Greene, R., Brophy, L. A., Czurzynski, S. M., Rosario-McCabe, M., Serwetnyk, T. M., & Rotondo, L. D. (2025). Navigating a transition to competency-based nursing education with a systematized ePortfolio assessment. *International Journal of ePortfolio, 15*(1). <https://www.aacu.org/ijep/archives/volume-15-number-1>
- Zimmerman, B. J. (1990). Self-regulated learning and academic achievement: An overview. *Educational Psychologist, 25*(1), 3-17. [https://doi.org/10.1207/s15326985ep2501\\_2](https://doi.org/10.1207/s15326985ep2501_2)

---

REBECCA RED WOLF, EdD, MEd, BEd, BA, is the Writing Center Coordinator and an Associate Professor

of Clinical Nursing at the University of Rochester School of Nursing. She leads initiatives supporting student writing outcomes, ePortfolio assessment, and faculty development. Her interests include scholarly writing, organizational change management, high-impact practices for student success, and the scholarship of teaching and learning. Dr. Red Wolf holds a doctorate in organizational change and leadership from the University of Southern California. An enrolled member of the Mohawks of the Bay of Quinte First Nations Reserve, she draws on her multifaceted background as a K-12 reading specialist, instructional designer, Quaker, and entrepreneur to enrich her academic work. Dr. Red Wolf can be reached via LinkedIn.

ANDREW B. WOLF, EdD, RN, AGACNP-BC, CNE, is the Dean of St. Joseph's College of Nursing in Syracuse, New York. With over a decade of experience in online education and curriculum development, he has been a pioneer in advancing health professions education through technology-enabled innovations in teaching and learning. Previously, Dr. Wolf led the implementation of one of the nation's first online Doctor of Pharmacy programs at St. John Fisher University and served as Director of Institutional Effectiveness at the University of Rochester School of Nursing. He maintains an active clinical practice as an adult-gerontology acute care nurse practitioner, specializing as a surgical hospitalist. Dr.

Wolf holds a Bachelor of Nursing degree from Johns Hopkins University, a master's degree in nursing, and a Doctorate of Education from the University of Rochester.

#### Acknowledgements

The authors sincerely thank the RN-BS and DNP faculty at the University of Rochester School of Nursing for their enthusiastic participation and invaluable contributions to the ePortfolio pilot. We are particularly indebted to Michael Rosario-McCabe, director of the RN-BS Completion Program, and Lydia Rotondo and Susan Ciurzynski, director and assistant director, respectively, of the Doctor of Nursing Practice Program. Your leadership in implementing the ASET Reflection Model with faculty and students has been exemplary.

We also wish to acknowledge the ePortfolio team for their unwavering support in testing this model. Your collective commitment to innovative educational practices and willingness to embrace new methodologies have been instrumental in the success of this initiative.

Our deepest appreciation goes to the students who have engaged with the model and shared crucial insights. Your participation has been integral to the development and success of this project. Thank you for contributing to the evolution of our ePortfolio journey!