

INTRODUCTION

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Learning is both an active and reflective process. Though we learn by doing, constructing, building, talking, and writing, we also learn by thinking about events, activities and experiences. This confluence of experiences (action) and thought (reflection) combines to create new knowledge.... Reflection then is 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.

“Action + Reflection = Learning”

What we really need for citizens and workers of the twenty-first century is people who can conduct a lifelong conversation between their own experience and learning – who can use their experience to enhance learning and their learning to enrich application.

K. Patricia Cross

What does it mean to reflect? How is reflection important to learning? What classroom strategies help students develop the habits of reflection? How could we use reflection to deepen intellectual development inside the classroom and beyond? What makes reflection rigorous, demanding, and effective? How could reflection be central, not marginal, to student work? How could reflection be tailored so that students can make connections between their lived experiences and disciplinary ways of thinking?

These are some of the questions pursued by LaGuardia faculty in this volume of *In Transit: The LaGuardia Journal on Teaching and Learning*. And these questions have been taken up by educators worldwide. The faculty of LaGuardia Community College, including those represented here, are part of a broad global conversation about ways to best utilize reflection in teaching and learning.¹

Before we can examine the questions pursued by our faculty scholars, however, there is a prior question to consider: Why reflection? Why are so many teachers and researchers focused on reflection? Reflection doesn't fit neatly into any discipline – it isn't mathematics or biology or accounting or sociology. Few of us studied reflection in graduate school. It is not commonly required to enter college or to graduate. Why, then, is it important?

Reflection's refusal to fit neatly into a disciplinary or sequential slot is, in fact, part of the answer. As a wave of researchers have shown, reflection is important because it fits *between*, connecting one topic and discipline to another, helping students order, make sense of, and ultimately use what all too often appears to them to be a jumble of disconnected facts and assignments. Used well, reflection can help to address questions that haunt many educators: What are students getting out of this? What does it all add up to? How do I help my students understand the deeper meaning of what we're studying? What can I do to help my students really understand, really care, really grow as self-guided, self-motivated learners?

"The function of reflection," one recent scholar noted, "is to make meaning: to formulate the 'relationships and continuities' among the elements of an experience, between that experience and other experiences, between that experience and the knowledge that one carries, and between that knowledge and the knowledge produced by thinkers other than oneself.... The creation of meaning out of experience is at the very heart of what it means to be human. It is what enables us to make sense of and attribute value to the events of our lives" (Rodgers, "Defining" 848).

The idea of reflection has intrigued thinkers for centuries, of course, going back at least to ancient Greece – where the phrase "Know Thyself" was inscribed on the forecourt of the temple of the oracle of Delphi – and ranging forward through Socrates, Dostoevsky, Thoreau, and Nelson Mandela, all of whom identified the value of the examined life. The discourse around reflection has recently taken a new turn, however. New research on cognition focuses significant attention on reflection and its role in learning. Far from being a fluffy sideshow, reflection is demonstrably central to the most meaningful forms of learning and cognitive growth. Reviving interest in the theories of John Dewey, this research has prompted educators to focus attention on ways to more intentionally and effectively structure the reflective process. At the same time, new digital technologies have begun to offer tools that can be used to facilitate reflection in a range of forms and media, and to make it more visible for teachers and for learners themselves. The articles in this volume suggest ways that LaGuardia faculty have been influenced by all of these developments.

Why Reflection? New Research on Learning

The Oxford English Dictionary defines reflection, in physics and medicine, as the process of “bending, turning, or folding back; recurvation” of waves of energy that rebound from a surface (“Reflection” def. 4a). In cognition, the *OED* defines reflection as “the action of turning (back) or fixing the thoughts on some subject; meditation, deep or serious consideration” (“Reflection” def. 8a). A recent study, in a collection entitled *Reflection: Turning Experience into Learning*, builds on this definition to identify three key phases of reflection: 1) returning to experience – recalling or detailing salient events; 2) attending to or connecting with feelings; and 3) evaluating experience – re-examining experience in the light of one’s intent and existing knowledge, integrating new knowledge into one’s conceptual framework (Boud, Keogh, and Walker 26–31).

In recent decades, a growing number of cognitive researchers and educational theorists have studied the reflective process and concluded that it is a key to enriched student learning. In their widely acclaimed synthesis of new research on cognition and learning, *How People Learn: Brain, Mind, Experience, and School*, John Bransford and his colleagues identified and examined respected research that demonstrated the benefits of reflection for student learning in topics as diverse as physics, writing, and mathematics, as well as for increasing the degree to which students transfer their learning across disciplines and semesters. Based on these findings, Bransford and the National Research Council concluded, in summary, that: “[i]ntegration of metacognitive instruction with discipline-based learning can enhance student achievement and develop in students the ability to learn independently. It should be consciously incorporated into curricula across disciplines and age levels” (National 21).

In her review of the research, in *Reflection in Higher Education Learning*, Jennifer Moon further specifies the ways in which reflection benefits the learner:

- Reflection slows down activity: the learner has time to process the material, linking it to previous ideas;
- Reflection gives learners a sense of ownership of taught material, making it more personally meaningful;
- Reflection encourages metacognition, the awareness of one’s own cognitive processes; and
- Reflection encourages students to challenge their learning, resulting in a greater commitment. (7)

Renewed interest in reflection has led many current researchers back to the seminal work of John Dewey. Active from the 1880s through the 1950s, Dewey is widely recognized as one of the towering giants in American intellectual history. Having shaped the pragmatic school of philosophy and modern democratic theory, Dewey also stands as one of our most sophisticated thinkers about learning and its role in individual and social development. Dewey argued that the dynamic of experience and reflection lay at the heart of learning. In *Democracy and Education*, he defined education as “that reconstruction or reorganization of experience which adds to the meaning of experience and which increases [one’s] ability to direct the course of subsequent experience” (76). Experience, for Dewey, includes not only hands-on learning, but also reading, writing, listening, watching, talking, and creating. The task of educators, for Dewey, is to design powerful experiences that connect to each other, helping students build thinking skills and deepen their understanding of key concepts (*Experience* 14–17).

Reflection is key to making this process meaningful. For Dewey, reflection is the necessary counterpart of experience, “the bridge of meaning that connects one experience to the next, that gives direction and meaning to growth” (Rodgers, “Defining” 850). In *Experience and Education*, Dewey posited reflection as the pivotal component to the growth of intelligence. “To reflect,” he wrote, “is to look back over what has been done so as to extract the net meanings which are the capital stock for intelligent dealing with further experiences. It is the heart of intellectual organization and of the disciplined mind” (87).

Contemporary scholars examining Dewey have clarified the qualities of reflection that can make it most meaningful. One of the most perceptive of recent Dewey scholars, Carol Rodgers, has summarized Dewey’s four criteria for effective reflection:

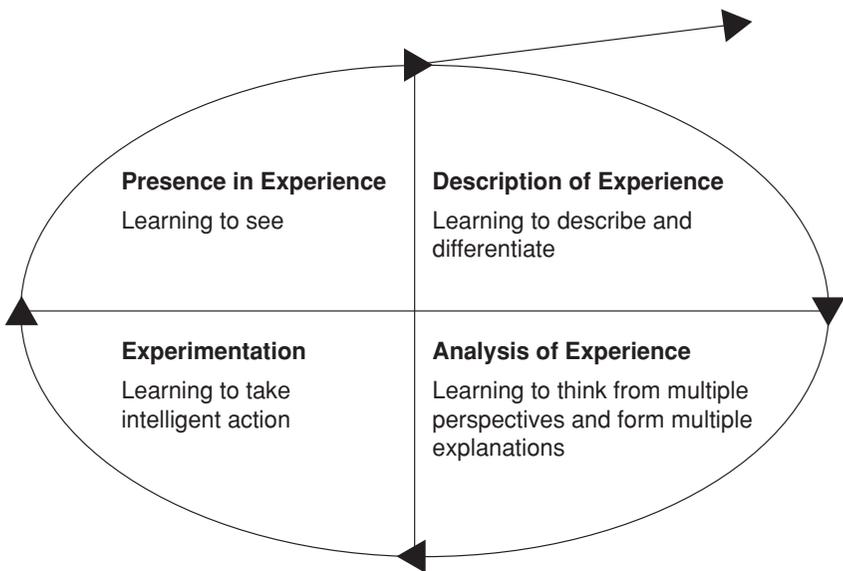
1. Reflection is a meaning-making process that moves a learner from one experience into the next with deeper understanding of its relationship with and connections to other experiences and ideas. It is the thread that makes continuity of learning possible, and ensures the progress of the individual and, ultimately, society. It is a means to essentially moral ends.
2. Reflection is a systematic, rigorous, disciplined way of thinking, with its roots in scientific inquiry.
3. Reflection needs to happen in community, in interaction with others.

4. Reflection requires attitudes that value the personal and intellectual growth of oneself and others. (“Defining” 845)

“Reflection is not an end in itself,” writes Rodgers, “but a tool or vehicle used in the transformation of raw experience into meaning-filled theory that is grounded in experience, informed by existing theory, and serves the larger purpose of the moral growth of the individual and society. It is an iterative, forward-moving spiral that moves from practice to theory and theory to practice” (“Defining” 863).

Rodgers has defined four stages in what she calls the “reflective cycle” (see Figure 1 below). Writing in the *Harvard Educational Review*, she expands on these stages: 1) “Presence in Experience: Learning to see”; 2) “Description of Experience: Learning to describe and differentiate”; 3) “Analysis of Experience: Learning to think from multiple perspectives and form multiple explanations”; and 4) “Experimentation: Learning to take intelligent action” (“Seeing” 235).² Rodgers is particularly focused on the second and third stages, where reflection drives an iterative learning process. Like Dewey, Rodgers connects reflection to further action. New knowledge and deepened understanding lead to new steps forward, re-engaging with experience. Thus, the process is cyclical, a recursive framework for life-long learning (“Seeing”).

Figure 1: The Reflective Cycle



Source: Rodgers, “Seeing” 235

Many education researchers have concluded that the reflective cycle is crucial to deep or integrative learning. Surveying the research on cognition and learning, the eminent K. Patricia Cross – mathematician and psychologist, and former dean of Cornell University – notes that “[i]n the United Kingdom, researchers are likely to refer to ‘deep’ and ‘surface’ learning to distinguish between learning that makes the connections that lead to deeper understanding versus information which rests on the surface, inert and unassimilated” (Ramsden, qtd. in Cross 10). Cross suggests that reflection is often the defining step that moves students from surface learning to deeper understanding (Cross 10).

Reviewing the evolving scholarship on cognition, Cross finds that many cognitive researchers highlight the importance of the prior knowledge and the framework of assumptions and understandings, or “schema,” that students bring with them into the classroom (8). This framework shapes what students take away from any classroom lesson. Understanding and connecting with this framework of prior knowledge is a key task for educators – a task that reflection helps to accomplish. “While there are surely facts that must be learned in any field of study,” Cross writes, “the problem with surface learning is that when the facts fail to become rooted in the [student’s] schema, they cannot be used to build knowledge, and the isolated bits of information are quickly forgotten” (10).

“What these findings seem to boil down to,” Cross concludes, “is that deeper learning needs time to work its way into one’s schemata. Students need time to talk, write, reflect, and otherwise engage in activities that help them make the material their own” (11). Cross highlights the particularly crucial role of reflection in this process: “Perhaps the most significant message – or at least the one that relates most closely to current research and scholarship on learning – is the role of reflection in learning. Learning occurs, not necessarily as a result of the experience itself, but as a result of reflecting on the experience and testing it against further experience and the experience of others” (22).

Making Reflection Work: From Research to Practice

Recognizing the powerful potential of reflection, many faculty want to use it in their classrooms. Implementation can seem like an intimidating challenge. But new scholarship dispels some of the mystique surrounding reflection. “Reflection does not mean that we sit in the lotus position, hypnotically humming meditative chants,” explains one practical

guide. “Reflection should be active and multi-modal. Opportunities for reflection should occur before, during and after activities. That way, students can take note of their own learning starting point, assess their progress in the midst of a unit and critically evaluate their own learning at the end of the activity” (“Combining” 3).

Strategies for incorporating reflection tend to fall into three categories, focusing on writing, technology, and/or group conversation. Writing may be the most common tool for encouraging student reflection. Faculty can use different forms of writing to prompt reflection, including essays, freewriting, learning journals, and letters. In this volume of *In Transit*, several faculty studied the use of writing to support reflection; interestingly, most of them come from outside English and other traditional writing disciplines. For example, Valerie Taylor-Haslip uses guided reflective journals to help nursing students examine and make meaning of their clinical experiences. Drawing on the work of John Bean, she lays out four levels of reflective writing and finds a correlation between student progress to deeper levels of reflection and their improvement on other assessment criteria. Louise Fluk considers ways that reflective research narratives can be used to both deepen and assess students’ information literacy skills. Mathematician Prabha Betne studies the use of reflection in courses shaped by LaGuardia’s Project Quantum Leap, where mathematical concepts are connected to compelling scientific issues such as global warming. For Betne, like Bransford and his colleagues at the National Research Council, reflection plays a metacognitive role that supports the retention and transfer of knowledge and skill. “[I]n a mathematics context,” Betne writes, “reflection involves examining the procedural knowledge used in everyday practice in such a way that its application can be broadened beyond immediate circumstances.”

New technologies offer additional routes for reflection. Discussion boards and blogs can invite student writing. Knowledge mapping software allows students to create visual depictions of their learning processes. ePortfolios offer students opportunities to collect artifacts from their classrooms and attach reflections that are both specific and broadly integrative. Digital storytelling can utilize music, voice, and imagery to encourage student thinking about key moments in their life narratives. All these tools can facilitate the sharing of reflection, the creation of audience and reflective exchange. Studying this phenomenon in a national research project, Randy Bass and I found that “new media technologies promoted the expansion of what we have come to

call *embodied pedagogies*, inducing learning that engages affective as well as cognitive dimensions, not merely through the role of emotion, but through creativity and intuition, through expressions of self-identity and subjectivity as the foundation of intellectual engagement” (Bass and Eynon, “Capturing” 17). Far from simplifying the learning process, or reducing it to “feel good” moments, we concluded, sophisticated reflective uses of new media can reveal “the intricate relationship between emotional and epistemological understanding” (Bass and Eynon, “Capturing” 17).

Several articles in this volume consider the use of different technologies to support and reveal the reflective processes of LaGuardia students, notably wikis and ePortfolios. Jennifer Benichou and Kathleen Huggard used wikis to support reflection by ESL students. While the technology was simple, students found reflection challenging. Refining their approaches, Benichou and Huggard demonstrate that careful scaffolding by faculty deepens students’ reflective process. Other faculty used a technology explicitly designed to support reflection – the electronic student portfolio, or ePortfolio. Gary Richmond and John Silva report on their use of ePortfolio in an English and Humanities learning community, tracing the ways that reflection reveals students’ growing sophistication with language and complex thinking. Deborah Robinson also used ePortfolio, describing the ways students reflect on career goals and experiences in a Co-operative Education course. Deborah McMillan-Coddington used ePortfolio to encourage and document student reflection in her nursing courses, introductory to capstone. In all three articles, student ePortfolios serve not only as a tool for supporting reflection, but also as a way for these faculty to conduct a fine-grained examination of the step-by-step evolution of students’ thinking processes.

Since LaGuardia’s nursing programs have decided to implement ePortfolio across their curricula, McMillan-Coddington and her nursing colleagues have the opportunity to extend their investigation of reflection across courses and semesters. McMillan-Coddington reviewed reflections generated by nursing students during two years of intensive study and clinical experience and discovered that this longitudinal approach allowed her to more effectively evaluate progress in “student knowledge, confidence, and self-regulation in the clinical area.” Of equal or greater importance, she reports, students themselves look back over this extended record and see tangible and vivid evidence of “their own personal and professional growth in identifying and providing ethical, effective, and empathic care.”

Of course, technology is by no means a classroom necessity. Discussion, particularly small group collaborative learning, can be structured to focus students on what they have learned, and to compare their experiences and insights to those of others. As noted earlier, Dewey highlighted the value of reflection in community: The process of formulating one's experience in order to communicate can have a powerful impact in helping to clarify its meaning. "Speech – our ability to communicate concepts – can shift us from a state of unawareness to deliberate, self-conscious action," agrees one contemporary article. "This helps us internalize and link thought to action, allowing us to problem-solve, create coherence, and form patterns of understanding" ("Action" 2).

Reflection through carefully scaffolded discussion is examined in several articles in this volume. Sreedevi Ande considers the use of reflective class discussions in her engineering courses, helping students extract broader meaning from specific case study problems. Kyoko Toyama reports on her experience using reflective discussion to deepen the work of a peer mentor in her New Student Seminar, an experiment that started with a single student and has evolved into a broader counseling program, the Peer Partners-in-Learning. Similarly, using Rodgers' reflective criteria as a guide, Marina Dedlovskaya and Patricia Sokolski integrated reflective group discussion as a learning process in their Project Quantum Leap learning community that linked basic skills mathematics and critical thinking.

Aiming to help students generalize their abilities to use data to develop analyses and support arguments, Dedlovskaya and Sokolski trace their use of reflection as it evolved over two semesters. The process not only enabled this faculty pair to gradually and thoughtfully improve their skill at guiding reflective discussion; it also permitted a comparative study of the two semesters. Dedlovskaya and Sokolski compared student scores on the required COMPASS exam and, significantly, they found a correlation between increased student sophistication in reflection and improved outcomes on the standardized COMPASS examination. "Scores in our pre- and post-tests," they write, "suggest that learners benefit from deliberate thinking aloud, as well as from a more considered 'stepping back' to regard complicated actions."

Whatever tools are used, faculty play a critical role in structuring the reflective process and linking it to the key concepts and issues of their courses and disciplines. This point emerges again and again from the articles in this volume. Happily, the literature provides a range of

approaches to developing reflective questions and writing prompts. One of the most common is the simple, three-part framework: What?, So What?, and Now What?:

- *What have you learned?* Descriptive review, highlighting key points.
- *So What?* Why is this important? What does it mean? How does it change your thinking about a topic or issue?
- *Now What?* What are the implications of this new insight into particular knowledge or a broader learning process? How can you use this new knowledge or insight? How might it change your approach as you go forward? (“Combining” 3)

Carol Rodgers offers a variation on this framework, one that focuses particular attention on the descriptive phase of the reflective cycle. Her attention to this phase is consistent with her caution about the need to slow down the learning, as well as to create a feedback loop between students and faculty. Her questions can be used to prompt private, individualized reflection, or what she calls “descriptive feedback,” that informs the teacher as well as the students:

- What did you learn?
- How do you know you learned it?
- What got in the way of your learning?
- What helped your learning?
- How did you feel? (Rodgers, “Attending” 219)

Reflective prompts are, of course, most powerful when they are rooted in activities and assignments that are designed to promote critical thinking and active learning. Jennifer Moon lists some of the qualities of assignments that can work best to encourage and support reflection: problem-solving with messy, real-life data; asking questions where there are no clear cut answers; tasks that prompt learners to integrate new learning into previous learning; tasks that demand the ordering of thoughts; and tasks that require evaluation (“Reflection in Learning” 175–76).

The articles in this collection provide interesting examples of prompts grounded in specific disciplinary and course contexts. Benichou and Huggard examine student reactions to their initial reflective assignments, and the steps they took to make reflection effective. Dedlovskaya and Sokolski provide rich examples of their reflective discussion prompts, documenting the evolution of their own pedagogical skill in making reflection effective for students. McMillan-Coddington

highlights the importance of her carefully prepared prompts and, at the same time, her need to deal with the unexpected, the “teachable moment” when students encounter the messy, unpredictable realities of clinical practice. While being a student nurse presents particular challenges, this tension is, in fact, revealed in other articles as well. Faculty find they must carefully scaffold the reflective process and yet retain the flexibility to respond to specific experiences and perspectives of the individual learner.

Double Loop Learning: Becoming Reflective Practitioners

One last point drawn from the literature about reflection is highly relevant to this collection and, more broadly, to the work of educators at LaGuardia and elsewhere. While most researchers focus on student reflection, a small but significant group focuses on the role of reflection for professionals, including faculty. One of the best known studies of reflection is *The Reflective Practitioner: How Professionals Think in Action*, by Donald Schön. A philosopher, director of the Institute for Applied Technology in the Kennedy administration, and, from 1972, Ford Professor of Urban Studies and Education at MIT, Schön’s work focused on the ways that reflective professionals learn from their practice:

The [reflective] practitioner allows himself to experience surprise, puzzlement, or confusion in a situation which he finds uncertain or unique. He reflects on the phenomenon before him, and on the prior understandings which have been implicit in his behaviour. He carries out an experiment which serves to generate both a new understanding of the phenomenon and a change in the situation. (68)

The work of Schön, Rodgers, Moon, and others have highlighted the particular value of reflective practice for faculty. Observing and reflecting on what actually happens in the classroom – not only what the faculty member does, but also what the students do, say, write, and create – is crucial to the growth of our pedagogical skill and effectiveness. “The power of the reflective cycle,” writes Rodgers, “seems to rest in its ability first to slow down teachers’ thinking so that they can attend to what is, rather than to what they wish were so, and then shift the weight of that thinking from their own teaching to their students’ learning” (“Seeing” 231).

Across the board, the faculty seminars of the LaGuardia Center for Teaching and Learning (CTL) focus on the cultivation of reflective practice. Whether the subject is experimenting with new technologies, improving math education, exploring diversity, or redesigning capstone courses, CTL seminars ask faculty to pause and examine their practice, to be more intentional, and to consider carefully the evidence that indicates the effectiveness of their pedagogical experiments. In recent years, the emergence of the Center's Carnegie Seminar on the Scholarship of Teaching and Learning and this journal, *In Transit*, have extended this process, helping scores of LaGuardia faculty move from reflective practice to reflective scholarship. This development is still in its early phase at LaGuardia and elsewhere, and key academic structures have yet to fully adjust to it. The articles in this issue provide a window into an emerging community of discourse, in which reflective inquiry is increasingly meaningful. The extent to which LaGuardia and other higher education institutions find ways to officially recognize and validate this effort will play a vital role in shaping our long-term success as colleges that learn.

NOTES

1. This essay has benefited from dialogue with countless colleagues at LaGuardia and nationwide, including members of the Integrative Learning Project, the Connected Learning seminar, the Visible Knowledge Project, the Making Connections project, the Carnegie Foundation for the Advancement of Teaching, and the national faculty of the Association of American Colleges and Universities. Special thanks to those who read and commented on early drafts, including Max Rodriguez, Carolyn Henner Stanchina, Gail Green-Anderson, Rachel Theilheimer, and Randy Bass.
2. This cycle is similar in many ways to the Experiential Learning Model defined by David Kolb, which also has four steps: Concrete Experience, Reflective Observation, Abstract Conceptualization, and Active Experimentation.

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