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## Formative Learning in the Classroom

Many seminary faculty can still remember when students' formation happened on the residential seminary campus, guided by interactions among students and faculty who lived and worshiped and learned together. As Professor Jones in the Church Divinity School of the Pacific narrative recalls (2001), "In fact, the traditional . . . seminary approach has been described as 'formation by osmosis,' because so much of it has to do with studying and praying together in community."<sup>1</sup> That community, however real or romanticized it may be, no longer inhabits today's seminaries and no longer supports students' "formation by osmosis" in the spaces between mandatory gatherings such as class meetings or required worship services. Today's seminary communities are fragmented.

As a senior faculty member in the Pacific Lutheran Theological School narrative admits (2001), "We drive up here and teach our classes, then climb back into our cars and flee to our homes." The narrative describes "a community in diaspora, . . . with faculty strung out across the Bay Area and another student residence several miles away . . ." Even if the situation in this narrative is exaggerated for dramatic effect, the hard truth is that formation is not happening adequately for students in today's disjointed seminary communities. The only place and time teachers can ensure that a formative learning community gathers in the seminary is in their very own classrooms during class meetings. The seminary classroom is arguably the most feasible locus for the

kind of gradual, intellectual, and spiritual formation that seems to have happened within the supportive, residential seminary communities of generations past.

Yet many faculty are reluctant to engage issues of personal and spiritual formation in courses that focus on other particular subjects. As a result, some seminaries relegate the responsibility of students' formation to an administrative post or an office that acts something like a guidance counselor. This often isolates rather than integrates formation at seminaries, although formation is essentially a process of integrating one's intellectual, emotional, and spiritual development into a wise, coherent whole.<sup>2</sup> Some seminaries cannot agree even to such a generalized definition of formation. With the advent of increasingly open admissions (primarily for financial reasons), seminaries are struggling to redefine what formation means at their individual schools. When students come from a variety of denominational backgrounds and will go on to serve communities of various denominations, successful formation can no longer mean turning out students whose values and views and knowledge are particular to the specific faith of the seminary's unidenominational founders. Most seminaries have yet to reach a definition of formation for their students that all faculty can accept comfortably. This lack of consensus may contribute to some faculty's retreat from actively supporting formation in order to focus more explicitly on course subject matter. As the representation of denominations among the students changes, so do faculty and administrative opinions on what constitutes formation for those students and how much of it is the in-class responsibility of faculty members.

Increasingly open admissions result in increased student diversity not only in terms of their denominations but also in their social, cultural, political, economic, and educational backgrounds. Unidenominational seminaries of generations past educated relatively homogeneous populations of students who shared a particular system of values and beliefs, similar economic and cultural origins, and similar educational preparation before seminary. In today's seminaries, by contrast, faculty are finding the teaching methods that succeeded with the more homogenous student populations of the past (to which some of them belonged) are no longer sufficient today. Creating an environment for successful teaching and learning in seminary classrooms has become more complicated. At the same time, the importance of what happens in those classrooms has increased dramatically. With seminary communities "in diaspora," more of the work of educating the whole student is left for the classroom. If formation doesn't happen there, where else can it happen? Seminary classrooms are perhaps the single most important and most feasible place for formation to occur.

If the work of formation does not happen in classrooms, then the special task and special value of seminaries is in jeopardy. Seminaries will increasingly resemble masters-degree-granting liberal arts institutions—with a very limited curriculum. Individually, faculty will teach courses that focus intensively on subjects like the Bible or preaching skills or church history, and students will graduate with knowledge about those discrete subjects and with a degree or license to practice. At seminaries where faculty and administration cannot agree about the sort of formation issues they want students to engage, a legitimate choice can be to accept the fragmentation of the seminary community and to declare their position as a degree-granting institution. In this context, students would not be required to pass any sort of integrative examination in order to graduate, although they may independently integrate their learning experiences into a wise and coherent worldview that will make them good leaders and mentors for those whom they will serve.

At seminaries where formation is still a desired part of preparing students for their future work, faculty may wish to create an environment in their classrooms that actively encourages formation in a general sense—even while the definition of formation is evolving at each seminary. While formation is a responsibility that is specific to seminaries, research on teaching and learning outside the seminary, in the broader realm of higher education, offers ideas that can help seminary teachers consider how to create classroom environments that support formation according to their own definitions. This essay considers the pedagogical implications of some of the major research on learning in higher education and offers some suggestions for practices that can encourage formation in the classroom.<sup>3</sup>

## RESEARCH ON HOW STUDENTS LEARN

Recent research on learning in higher education indicates what most seminary instructors have already experienced: Students are more diverse than they were a generation ago in terms of class, race, religion, educational experience, and styles and strengths of learning. With this variety has come an increased interest in the variety of ways students learn and an enhanced focus on how students perceive, apply, and internalize course content. Research on these areas, while spearheaded and continued by developmental psychologists, is also pursued now by neuroscientists and by professors in virtually all disciplines who study the learning habits of their current students and thus contribute to a nationally supported enterprise of “classroom research.”<sup>4</sup>

Theological educators have a specialized sort of teaching wisdom that equips them both to resolve the erosion of formation in theological education

and to make a significant, needed contribution in the realm of higher education. Seminary teachers have long concerned themselves not only with teaching course content to their students but also with their students' overall learning experience. They have focused explicitly on the relationships between what happens inside and outside the classroom to shape their students' worldviews and promote the education of a whole person. They have even pondered the role of the seminary in a person's lifelong learning and formation. Until fairly recently, seminary teachers worked as ministers for five years before teaching in seminary and had opportunities to observe the ways people of all ages in a parish community learn. Seminary instructors, more than professors in most colleges, universities, and professional schools, belong to a culture in which the overall educational and developmental experience of students warrants serious consideration.

### PHASES OF INTELLECTUAL DEVELOPMENT

The Lexington Seminar discussions have highlighted the fact that seminary teachers, like many of their colleagues in higher education, notice some learning behaviors that concur with categories of learning and development outlined in the 1960s by researchers such as Arthur Chickering and William Perry. Chickering (1969) identified seven "vectors of development" for college students: confidence, emotions, autonomy, identity, interpersonal relationships, purpose, and integrity. Seminary teachers tend to think of these "vectors" together as students' "formation," and they include in that formation an additional category of spiritual individuation.

William Perry (1970) provided another way of understanding students' development when he identified seven phases of intellectual and moral development that he grouped into three main categories: dualism, multiplicity, and relativism. Perry's freshmen experienced a kind of black-and-white dualistic thinking that new seminary students often encounter in terms of a moral dualism of right and wrong. Kiyoo, the Japanese student in the Church Divinity School of the Pacific narrative (2001), states his firm belief that it is "not right to criticize [the] Bible." Another example is Judith, a student in the Bethel Theological Seminary narrative (2001) whose personal circumstances reinforce her moral dualism by encouraging her to crave certainty. She tries to garner support from her fellow students in the classroom, commenting, "I am sure that we all agree that it is dangerous to stray too far from the obvious, most widely accepted meanings of the text." The Lexington Seminar narratives also describe students whom Perry would place in his "multiplicity" category. In seminary, these students often have difficulty integrating what they learn in the classroom with a consistent worldview that guides their decisions. Julie, a stu-

dent who has just failed her integrative examination at United Theological Seminary of the Twin Cities (2001), voices this perspective.

I really don't have a clue how to do what you are asking of me . . . different parts of me think and feel different things about faith and ministry, and I don't know how to turn them into one person. . . . On the one hand, you want me . . . to have a well-developed theology that informs what I do as a minister. On the other hand, you want me to stay open, "tolerate ambiguity," and allow different contexts to inform my theological perspective. I don't think I can do it. . . . I don't know how to make the connections you are asking me to make theologically between those two principles.

Perry's relativism is a phase in which students have resolved such apparent dilemmas. Relativist students have developed criteria for evaluating and selecting the most convincing or helpful options appropriate to a given context. Clearly, the same sort of guidance that is appropriate for a relativist student is not equally helpful to Kiyo, the moral dualist reluctant to examine the Bible too carefully, and to Julie, mired in the confusion of multiplicity. Yet the three might be classmates in the same course at any seminary. The challenge that this presents for instructors is addressed in the later section of this chapter called "Practices That Encourage Formative Learning in the Classroom."

Recent research has aimed with good reason to problematize the phases of learning and development identified in the 1960s by Chickering and Perry. A number of scholars have drawn attention to the need for studies of more representative groups of learners than Perry's male undergraduates at Harvard College in the 1960s or Chickering's earlier generations of students. Sue and Cross, for example (Sue and Sue 1990; Cross, Strauss, and Fhagen-Smith 1999), have studied the psychosocial development of black and Latino students, primarily before college age, while Treisman (1992) and Steele (1992) have considered the impact of cultural tradition and racial stereotyping on learning by Asian and black students in college mathematics. Gender differences in college learners have been the focus of Belenky et al. (1986) and Baxter Magolda (1992). King and Kitchener (1994) chose an unusually large focus group for their study of students in colleges in the Midwestern United States. Still others are researching the learning practices of more advanced adult students (Merriam and Caffarella 1998).

While these studies have pointed to the limited representativeness of studies published by Perry and Chickering in the 1960s, they still conceive of learning in terms of progressive trajectories of intellectual, social, and psychological development, many of which are close parallels to those established by Perry. For the most part, the pedagogical research and literature on postsecondary learning has yet to adjust for the impossibility of selecting a representative sample of learners, the limitations of conceiving of learning in progressive phases, and the methodological dilemma inherent in categorizing learners. For exam-

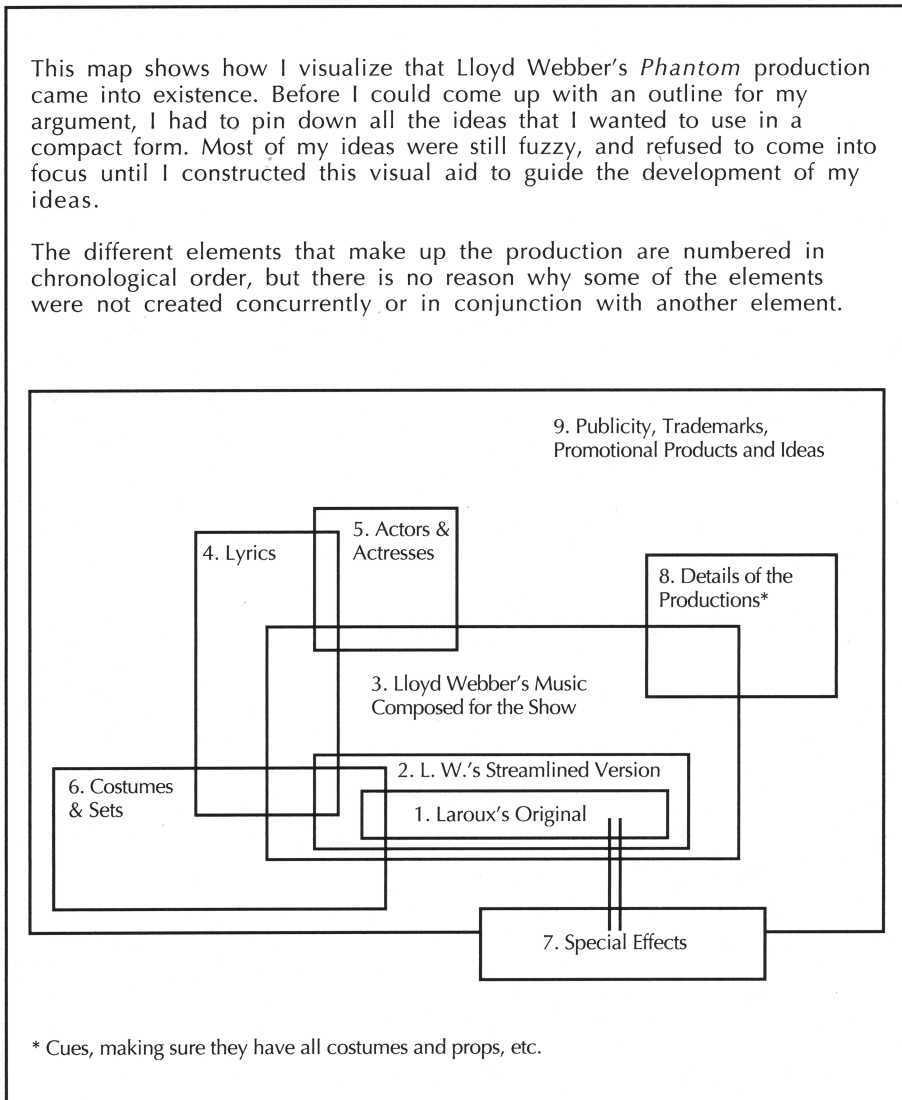
ple, are a student's learning styles and strengths and phase of development intrinsically the student's rather than the result of adaptation to teaching practices which are in turn adaptations to educators' perceptions about learning? Seminars would be a useful focus group for researchers studying modes of learning and teaching because seminary students represent such a diversity of ages and backgrounds—religious, spiritual, social, cultural, political, economic, and educational—and because seminary instructors are particularly reflective about their students' overall formation.

### LEARNING STYLES

In addition to a variety of phases by which we can choose to understand students' development, we can also consider students' different styles and strengths as learners, regardless of which particular phase of development we think pertains to them.<sup>5</sup> Some are strong visual learners, while others learn best by hearing. Some learn best by reading and some by applying new principles in a tangible way. Some understand concepts best when they encounter them in formats that seem chronological, others do better with formats that are typological, while still others organize new information spatially.

One illustration of a predominantly spatial understanding is a geometric diagram-outline produced by a Japanese student preparing for her research paper in a college in the United States (Figure 1). A professor drew up the more traditional outline based on the student's completed paper (Figure 2). While the outlines are dramatically different in form, they correspond to the same paper. This particular student conceived of the paper-in-progress in spatial terms and perhaps could not have produced the traditional outline until after she had completed the paper. Crafting a traditional outline in advance, then, would *not* have helped the student *prepare* her paper, although crafting a geometric diagram *did* help the student organize the structure of her paper in advance. But even a teacher attentive to individual students' learning styles might not have predicted that asking students for a preparatory traditional outline would have put one of the most successful students at a distinct disadvantage! A less restrictive request for a descriptive statement, sketch, or outline demonstrating how the main ideas of the paper would be connected might appeal more equitably to different types of learners.

Among today's varied student populations, traditional methods of teaching and testing, such as lecturing and independent or guided research papers, can certainly be effective but also have the disadvantage of favoring certain types of learners over others. "Everything is structured for a certain type of person, and I'm not that person," laments Jean, a single mother and part-time student in the Austin Presbyterian Theological Seminary narrative (1999). This kind

**Figure 1. Mind Map of Lloyd Webber's Production**

Source: Miley Nakamura, *Mind Map of Lloyd Webber's Production*. Reprinted by permission of Miley Nakamura. All rights reserved.

**Figure 2. Sample Outline of Mind Map of Lloyd Webber's Production**

**Topic:** Music in Andrew Lloyd Webber's *The Phantom of the Opera*: How it has made the show popular.

**Argument:** Andrew Lloyd Webber's orchestration relies on conventional Western styles of musical phrasing and instrumentation. It exploits the natural tendencies of music to correspond with the ebb and flow of emotions, and allows the music to reflect the mood and/or tone of a scene, thereby making the musical accessible to a large general audience.

- I. Introduction.
  - A. The popularity of *Phantom* and its music.
  - B. Possible reasons: story, spectacle, characters.
  - C. Success mainly comes from orchestration.
- II. Criticisms of Andrew Lloyd Webber's music.
  - A. What reviewers criticize.
  - B. Why they are wrong.
- III. Why the music does deserve praise.
  - A. Tactics of Western music that Lloyd Webber uses.
    1. Exploits the natural tendencies of musical phrasing.
    2. Orchestrates the numbers with instruments commonly associated with different moods.
    3. Relies on recurring themes, bringing back melodies associated in audience's memories with certain character roles and types.
    4. In scenes with romantic implications, couples orchestration with rhythm of the lyrics to amplify sensuous overtones and transmit amatory expectations.

[outline continues]

**Source:** Sue Lonoff, *Sample Outline Based on Mind Map*. Reprinted by permission of Sue Lonoff, Derek Bok Center for Teaching and Learning, Harvard University.

of alienation from the learning process leads some students to resist and even resent the teaching methods they encounter at seminary. As the library director from the Eastern Baptist Theological Seminary narrative (2000) explains:

Our current students . . . already had a voice in the world from which they came. When they arrive here many have the experience of being silenced. They have been interactive, even leaders, in their old world, and when they come to us, in some classes, they are expected to be passive listeners. . . . It isn't working. Many become angry in their silence. They decide to do what they have to do to get out of here. . . .

Students often feel there is no room for the contributions they might make in the classroom. Julie, a student in the United Theological Seminary of the Twin Cities narrative (2001), explains of her classmate, Clarice:

She gets most angry, she says, over the fact that few people really make an effort to know the truths and realities of her life and the great knowledge that she brings out of that. She doesn't always feel that what she says is taken seriously.

Why should students' own experiences be an essential part of classroom teaching? Recent research in neuroscience suggests an answer.

### NEUROSCIENCE AND THE PHYSIOLOGY OF LEARNING

Neuroscience tells us that thinking is a process of activating synapses in the brain, while learning is a process of growing new neural networks between synapses. When a student actively thinks through a new concept, figuring out how to apply it in a particular context, she is physically growing and rerouting the thinking process through the formation of new neural connections between synapses.<sup>6</sup> Past generations of seminary students would receive information in the classroom and then ponder it and apply it outside the classroom in the context of their interactions in the larger seminary community. Today, few seminaries provide the full-time, residential community that can support this kind of formation, and opportunities for students to think through new concepts in the classroom are needed.

Learning, then, is a process of making new connections—both physical (between synapses) and metaphorical (between ideas or between new information and existing knowledge). When a student encounters new information in the classroom, he connects that information with his previous knowledge. More often than we care to admit, that means connecting new knowledge with previously learned misinformation. Once this happens, the new information will be misunderstood. The subsequent process of unlearning misconceptions is even more difficult than learning new information. This is why it is essential to provide students with an opportunity in the classroom to apply a new concept in a way that requires them to think it through actively, encounter any potential conflicts with their preexisting conceptions or misconceptions, resolve those through questions and discussion, and make new connections. Testing these connections in the classroom provides all students an opportunity to connect and apply new information across a variety of real-world contexts simply by taking advantage of the great variety of students' experience and expertise. All students in the group have the opportunity to learn from experience beyond their own and thus move more quickly toward integrating these experiences into their evolving worldview.

The research in neuroscience that points to the necessity of providing opportunities for students to process and internalize information as they encounter it in the classroom is supported by further research in the area of cognitive stress.

## COGNITIVE STRESS

Most of us would envy the seminary instructor who has not encountered the point in a semester when even successful students inexplicably seem to forget knowledge and skills they have already mastered. This phenomenon often occurs when students approach a task or topic or discipline that seems unfamiliar to them. Research on this sort of cognitive stress indicates what at first seems counterintuitive: reviewing the previously mastered course content and/or retraining the forgotten skills is not needed because the lapsed knowledge and skills reappear once students feel familiar with the modes of thinking and the terminology of the new context (Colomb 1988).<sup>7</sup> While cognitive stress can never be completely avoided, it can be minimized. The more course content that is delivered in class without an opportunity for students to apply, test, and internalize that content, the more quickly and often cognitive stress will manifest itself. Cognitive stress can be minimized by encouraging students to process and internalize new content in class as it is presented. Students who work to understand and internalize concepts as they are introduced in class will have *learned* the course content and will understand what to *do* with that content in their personal and professional lives.

## IMPLICATIONS FOR TEACHING

This kind of learning, application, internalization, and deep understanding of course content is increasingly difficult for students in today's seminaries, most of whom do not live in a residential campus community that constantly stimulates and supports the out-of-the-classroom thought that alters their worldviews and enhances their formation. Too often the expectations of what and how students can learn in their fragmented seminary experience outside the classroom are unrealistic. How likely is it, for example, that Jean, a single parent and part-time student in the Austin Presbyterian Theological Seminary narrative (1999), will have the opportunity to follow Dean Dunn's prescription:

I think it's great, Jean, when students from different traditions have the opportunity to teach each other. Please keep working on those relationships. After all, we want you to have a certain ownership in your education. We want you to take your share of responsibility in making your educational experience work.

If our goal is to help diverse learners understand the relationships between what they learn in the seminary classroom, how they navigate the larger seminary community, and how they function in the world, we must provide opportunities for them to practice making those sorts of connections as a regular part of their training in seminary—not just through accidental (and increasingly rare) out-of-class interactions at the seminary, but purposefully in the classroom.

Yet many seminary instructors fear that time spent providing such opportunities during class meetings sacrifices time the professor could use to deliver course content to students. A professor in the Bethel narrative (2000) claims:

Do you realize . . . that once I set a foundation for what we're doing, I only have time in a quarter to spend about ten minutes on each chapter of the Gospels? If I start stealing time from that to deal with all these "process things," the students will leave here under-prepared.

And in the Eastern Baptist Theological Seminary narrative (2000), a Bible professor complains:

[M]aybe we need to do a better job of getting students more involved with their own education at the beginning, this finding your own voice, or whatever. But some of us are so content-oriented and have so much content to impart, that we need to . . . get a lot of it out there in the beginning.

Coverage of important content, however, is no guarantee of students' retention of that content. Nor does covering this content guarantee students' ability to analyze it and use it in their professional and personal lives. Even the most successful graduates, like the four alumni in the Calvin Theological Seminary narrative who hold positions as ministers in the Christian Reformed Church, struggle after graduation to apply their classroom learning to their work as pastors. These four claim that their "spiritual formation" in seminary was inadequate and that they received too little training in the "skills needed to do the job of ministry." They see their Bible and church history courses as unconnected with "issues faced daily by pastors." And these are the *successful* graduates! These four face a problem that would not have been helped by coverage of additional course content in their Bible and church history classes. The value of the course content they learned has been reduced by the fact that they lacked guidance and practice in what to *do* with that course content.

The experiences of graduates like these, along with our own observations of students' learning and formation inside our ever more fragmented seminary communities, point to the classroom as the locus not just for presenting course content but also for students' application and integration of that content. This necessity is underlined by neuroscience research that tells us learning is a process of making connections between new and old ideas, and by research on

cognitive stress which suggests that efficient mastery of content comes with processing and integrating that content as soon as it is encountered. Because our students' styles and phases of learning are so varied, we must use varied modes of both presenting material and encouraging students' understanding of how to make use of that material. Ideally, we aim to educate in a way that appeals fairly to students' diverse styles of learning without excessively favoring any particular style or phase of learning over others.

### **PRACTICES THAT ENCOURAGE FORMATIVE LEARNING IN THE CLASSROOM**

In seminary classrooms populated by a wide variety of learners, what teaching practices encourage students' retention and thoughtful integration of course content? First of all, it is important to recognize that formative teaching/learning environments can exist as well in lecture courses as they do in small discussion seminars, in one-on-one tutorials, or in mentoring partnerships. In each context, the considerable challenge is to know something about students' learning styles, phases, and preparatory experience, and then to employ a variety of teaching/learning techniques that will appeal to students as equitably as possible. This helps to ensure that course content is accessible to all students and also that students multiply their methods for acquiring and internalizing course content.

The framing of course content is a sometimes overlooked method for making information more equally accessible to students of varied learning styles, phases, and levels of preparation, all in the same classroom. At the beginning of any class meeting, a fraction of the students arrive knowing what to expect, understanding the relationship between the content of the readings, the focus of any additional assignment, and the announced topic of the day's lecture or discussion. The majority of students will not make all of these connections independently. This is not necessarily an indication that they have not read or written what was assigned. It only means that they do not think about the organization of the course and the syllabus in the same way the professor does. An explicit introductory comment by the professor about the purpose of each class meeting, its main goals and main issues, its place in the design of the whole course, and its relationship to any readings or other assignments benefits all students in the group—from those whose ample understanding is affirmed and perhaps enhanced to those who see for the first time exactly how the general course themes and particular day's assignments and topics are connected. Some professors accompany this oral explanation with a written diagram or agenda on the blackboard or on a handout, where it is visually accessible to students (some of whom are stronger visual learners) who can refer to it through-

out the class meeting to help them contextualize any part of the lecture or discussion. An explicit comment at the end of the class meeting that summarizes these connections and introduces the next topics to be examined further clarifies and affirms the students' efforts. In lecture courses as well as in smaller discussion seminars, professors can even involve students in the brief introductory exercise of contextual framing for the class meeting by inviting them to add the subtopics they most want to consider to the professor's basic agenda. This can give students a greater sense of ownership of the class meeting that follows, an increased sense of the importance of their own role, an added incentive to focus primarily on those issues the group has agreed are the most important, and an increased sense of responsibility and control over their own learning.

This sort of contextual framing that can help to focus and define the purpose of each class meeting can be applied to each assignment and each of the required readings as well. A professor's explicit statement about the purpose and focus of each piece of work required of students in the course not only helps students make the connections necessary for internalizing course content, it also encourages students to be more aware of their learning across the course of the semester. Making the purpose of an assignment transparently clear to students can also allow the professor some flexibility in determining *how* students can acceptably fulfill that purpose. For example, if the professor creates an assignment whose purpose is to help students prepare their papers by making them describe how the main ideas of the paper will fit together, then the professor is free to allow students to do that in a variety of ways. For example, the Japanese student who organizes her thoughts spatially (and not in traditional outline form) could submit a diagram (Figure 1) or a diagram accompanied by a brief written explanation (making the diagram accessible to a professor who doesn't think about ideas spatially) in fulfillment of the assignment. The assignment thus fulfills its purpose of helping the student prepare her paper while making that preparatory thought accessible to the professor who can then provide guidance. When professors make the purpose of assignments transparent to students, then students can measure what they have learned against the professor's stated purpose for that assignment and then become more aware of the success of their work.

Frederick Mosteller (1989) asks his students to take this kind of measurement in a different context—at the end of each class meeting. His “minute paper” assignment requires students to spend a minute before the end of class answering two questions in writing: (1) what main ideas are you taking from this class meeting; (2) what question do you still have? Like most teachers who use this device, Mosteller is often surprised at how much students' main ideas and questions about the class differ from his own. At the beginning of the very next class meeting, or even in a between-class communication, he can clarify

**Figure 3. Sample Peer Response Sheet**

<b>Peer Response Sheet</b>
Writer: _____
Reader: _____
RECORD YOUR RESPONSES TO THE FOLLOWING QUESTIONS EITHER IN THE SPACES BELOW OR ON SEPARATE SHEETS OF PAPER.
Read the paper through once, rather quickly, without pausing to write comments. Then put the paper aside and answer the following questions without looking back. (If you can't answer the question, write "I don't know.")
1. What single feature of the paper stands out to you as a reader?
2. What do you think is the writer's main point?
3. Was there anything in the paper that seemed confusing to you? (If so, explain briefly.)
Now reread the paper, making any comments in the margins you feel would be helpful. Try to comment on development and organization of ideas: Do you understand the points the writer is trying to make? Do ideas seem well-connected?
<b>Remember, you are not being asked to evaluate the paper: you are being asked to respond to it with an eye toward helping the writer improve it.</b>
4. Underline the thesis statement. Is it clearly stated? If not, what seems confusing?
5. Is there any place where the writer needs to support an idea with more concrete details or explanations? If so, where?
6. How well does the writer make transitions between his/her main ideas? Identify places that need better transitions.
7. List at least two ways in which the essay could be improved.
8. List at least two things you like about the paper.
9. What would you like to know more about? What questions do you still have?
10. Ask of the essay "so what?" after you finish reading. Write a sentence or two paraphrasing the point of the paper, answering the question, "in what way(s) is this interesting, surprising, intriguing, etc.?" If the paper lacks a "so what?" point that out and discuss the possibilities.

**Source: Derek Bok Center for Teaching and Learning, Harvard University. Sample Peer Response Sheet. Reprinted by permission of the Derek Bok Center for Teaching and Learning, Harvard University, and the President and Fellows of Harvard College.**

any misconceptions and address any questions that, left unaddressed, would quickly lead to students' cognitive stress and their less effective learning. This simple diagnostic tool allows Mosteller to monitor students' understanding in the context of a lecture course, an environment in which a teacher often does not discover student misconceptions or confusions until exams or papers are submitted.

Students who become accustomed to considering their comprehension at the conclusion of class meetings or assignments can begin to take on greater responsibility in evaluating their own work and that of their peers. A professor who makes his or her definition of the characteristics of a successful piece of student work accessible to students can encourage them to evaluate their own work and that of their peers according to commonly understood standards. Students who are aware of the standards of evaluation can understand a teacher's comments and grades as constructive feedback rather than inscrutable, personal judgments. Many professors find that engaging students in a peer evaluation exercise before they submit the final version of an assignment can help students both by honing their critical thinking skills and by providing them with helpful suggestions (from their peers) for revising their work. A careful set of guidelines for peer evaluation exercises (like the one shown in Figure 3) is usually enough to ensure that students are neither too flattering nor too harsh in their evaluations. Peer feedback also provides students with at least one other response to their ideas in addition to that of the professor. These responses will differ at least in style if not in content, thus providing an additional stimulus to the student's critical evaluation of the message.

Opportunities for students to practice their critical, evaluative skills can be provided in large lectures as well as in individual comments on assignments. A lecturer can stimulate students' active thinking by beginning with a dilemma or problem that cannot be adequately addressed without the content that the lecture will provide. First, students recognize that particular information is needed to solve the problem, and they listen for that information. Second, while they listen, they may apply the new information to the dilemma that requires it and even begin to evaluate the results. To further enhance this process of applying and processing the new information, a short amount of time can be allotted during the lecture for students to engage their peers in the process. Eric Mazur (1997), for example, includes three such exercises in each hour-long lecture, allowing two minutes for each one. He invites students in groups of two to apply the concept he has just described in his lecture to a new situation he proposes. Not only does this provide his students with an opportunity to form new neural networks during the lecture meeting, it also enlists the classroom community's diverse perspectives to help the professor reach learners with various strengths at different phases in their intellectual develop-

ment. No single professor could provide as many possible ways of understanding and explaining new material as Mazur's students provide for each other.

Of course, seminar-style discussion classes provide additional opportunities to enhance students' learning and their critical thinking. An example is case-based discussion teaching—common in many professional schools and also in The Lexington Seminar. A written narrative or case describes a situation to be discussed. Participants identify the topics raised by the case and examine those topics in discussion together, both in the context of the particular situation and also beyond it. The group eventually deduces principles and lessons to be learned, applies those to other scenarios, and refines them. This method maximizes students' access to the many informed perspectives in the class group and to varied styles of understanding. It not only encourages participants to make new connections (a necessary condition for learning, according to neuroscientists) but also allows for the essential step of voicing misconceptions. These can then be understood and corrected, thus minimizing students' opportunities to internalize misinformation along with new concepts. Case-based teaching also provides an opportunity for metacognitive awareness of how learning is happening, because the processes by which content is explored and understood are on display and could be introduced as a topic for the group's consideration. Often case discussions can provide an array of rich and varied means for addressing complicated, real-world questions like those posed to the job candidate in the Pacific Lutheran Theological Seminary narrative (2001):

“How can you help me make Philippians come alive to the adult Bible study group that meets at my teaching parish? It's a community of Chinese Americans, and I need to contextualize my approach.”

“What do you think Paul meant in Romans 1:26, and how would you explain that in a classroom that included straights, gays, lesbians, and bisexuals?”

A carefully guided classroom discussion can address such relevant questions in ways more imaginative, varied, and broadly accessible to all students in the group than any single professor could offer by herself.

For peer learning to succeed in lectures, case discussions, or written feedback, three criteria must be clearly understood by all participants: the purpose of the exercise (what are the teacher's goals and what should students gain), the exact procedure that will be used (including precise details of timing and roles and responsibilities), and the characteristics and proposed uses of any product participants must create (like a written comment, list, diagram, or spoken argument). These three essential preconditions for peer learning—a commonly understood purpose, procedure, and product—can be applied just as well to all pedagogical practice. Before a professor provides a lecture or requires any

work of students, the purpose, procedure, and product must be thoroughly defined and commonly understood for the project to succeed.

This sort of clarification requires a greater transparency with students about teaching and learning strategies than many seminary professors are accustomed to providing. While seminary faculty can be exceptionally thoughtful and precise when discussing their teaching and learning goals with colleagues, surprisingly few are as forthcoming about their teaching strategies with their own students. Greater transparency invites students' greater awareness of their learning practices and encourages students to take a more responsible role in their own education. Transparency about pedagogical aims and practices also enables teachers to treat their students as junior colleagues in the pursuit of satisfying teaching and learning experiences in the classroom. For example, once teachers have established with their students a transparency about teaching and learning goals, students can provide useful and informed feedback about the effectiveness of teaching methods and particular assignments. Professors can then adjust accordingly. Frederick Mosteller's "minute papers" are a valuable example. This sort of informal assessment allows teachers to benefit from the prompt and frequent feedback that is so beneficial for students.<sup>8</sup> In this context, students are cast as the experts on which aspects of a professor's teaching are most effective for their particular learning, and teachers take on the role of learners as they gather data about which aspects of their teaching work best for their diverse students.<sup>9</sup>

## CONCLUSION

By making pedagogical goals and methods transparent to students and by valuing students as junior colleagues and experts on their own learning experiences, seminary instructors can create a classroom environment that encourages the kind of integration essential to formation. This symbiosis of teaching and learning offers even more than a place for formative learning. It also allows a teacher to model the kind of formative educator and mentor his seminary students will need to be—one who enables learners to educate themselves.

Seminary teachers and administrators who have participated in The Lexington Seminar discussions engaged each other in just such a symbiotic, formative environment for learning. As peers, they provided for one another a variety of perspectives and different styles of explaining and understanding. They guided one another in forming new conceptual connections. They experienced as learners many of the teaching practices that research on learning in higher education suggests are most effective for today's diverse populations of students. They also recognized that students can be helpful colleagues to professors in their efforts to provide a satisfying seminary education. One common

resolution among participants was to prioritize at their seminars discussions of learning and teaching among teachers and between teachers and students.

Just as The Lexington Seminar participants have experienced formative learning, so seminary students must learn in their own diverse styles how to understand and adjust to information that comes not only from their professors but from a variety of sources in many different forms. With our guidance, students in increasingly fragmented seminary communities can provide this for each other and themselves in the classroom. With their guidance, we can learn increasingly effective ways of providing them with classroom environments that encourage their formation.

## NOTES

1. All narratives cited in this book can be found in the Archives section of the Seminar's Web site: <http://www.lexingtonseminar.org/>.
2. For more on formation, see the essay in this volume by Victor Klimoski.
3. In the case of virtual, online classroom communities, or actual classrooms that incorporate some online students, the principles considered in this chapter are equally helpful, while the teaching techniques may involve a variety of tools that allow for communication with and inclusion of off-site students. The challenges of including off-site students in the learning community are examined in a separate essay by Richard W. Nysse.
4. On this scholarship of teaching program, see Hutchings and Babb (2002) and Hutchings (2002).
5. On learning styles, see Kolb (1984), Gregorc (1998), Gardner (1983), and Schmeck (1988).
6. Several accounts of the brain physiology of learning that are accessible to non-neuroscientists are Bloom, Lazerson, and Nelson (2001), Sousa (2001), Wolfe (2001), and Zull (2002).
7. Colomb's research on college students writing for the first time in an unfamiliar discipline demonstrated that efforts to review basic skills are almost always wasted because students recover apparently forgotten writing skills as soon as they understand the new context in which they must use them. Furthermore, focusing on the ideas students wished to communicate rather than on the mechanics of their papers helped students gain familiarity with the new context quickly.
8. Richard Light's Assessment Seminars (Light 1990) indicated that students learn best in college when they receive frequent and prompt feedback on their ideas (in the form of oral feedback from peers in small study groups or other peer assessment exercises, or prompt feedback from a teacher), when they have frequent small assignments, and when they have opportunities to revise their work.
9. This kind of student-faculty communication about teaching and learning accomplishes many of the goals for good educational practice outlined by Chickering and Gamson (1998). They maintain that good practice in undergraduate education (1) encourages contact between students and faculty, (2) develops reciprocity and cooperation among students,



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(3) encourages active learning, (4) gives prompt feedback, (5) emphasizes time on task, (6) communicates high expectations, and (7) respects diverse talents and ways of learning. For more on the constructive, formative kind of assessment described here, see Angelo and Cross (1993), Banta and Paloma (1999), and Gordon Smith's essay in this volume.

