

Chapter Seven

CRITICAL-THINKING STRATEGIES

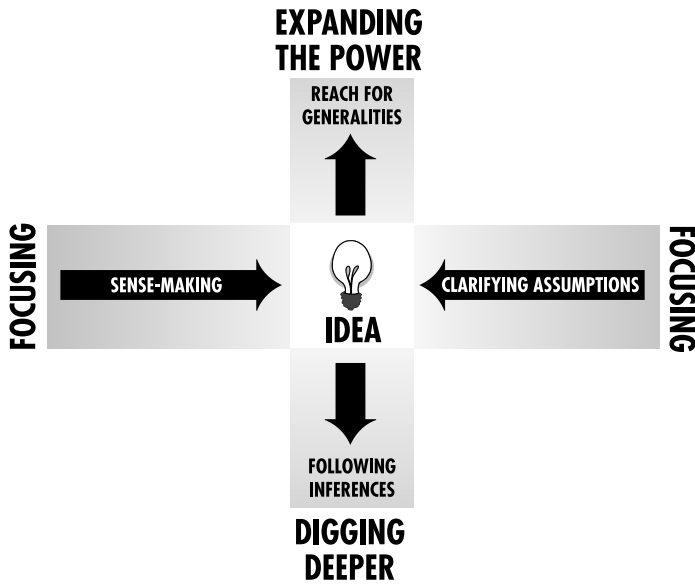


Active engagement in critical thinking is at the core of any learning community, online or offline. While the voice and tone of your entry as moderator can provide an appealing, elegant, or illustrative surrounding for your communication, the *critical-thinking strategy* you select to frame your entry impacts the dialogue most directly.

All moderators contend with two recurring issues: Dialogues that lose focus or are conceptually murky; and dialogues that “wallow in the shallows,” missing areas in which the potential for deeper insight abounds. To help you craft effective posts to address these two challenges, we’ve identified two classes of critical thinking strategies:

- Strategies that sharpen the focus of the dialogue
- Strategies that help participants dig deeper into the dialogue

For each general class, we’ve defined three substrategies targeting specific needs. As you can see in the figure below, *sharpening strategies* focus and constrain by making careful sense of an idea and clarifying it to create common ground. Ideas and directions are sorted out, and consensus on the direction of the dialogue is negotiated. *Digging-deeper* strategies can then build on common understandings, so that the participants reach for more generality or examine consequences. How can participants do this? By following inferences or exploring through analogies to get a wider feel for what’s being said. Digging-deeper strategies, ultimately, shift the plane of the discussion as participants 1) embrace analogies or generalities that resonate, and 2) take on wider, more powerful and useful views of an idea.



Dialogue-focusing strategies — such as *identifying direction*, *sorting ideas for relevance*, and *focusing on key points* — are handy if the dialogue loses direction, becomes too wordy, or becomes so dense that you simply must do some sorting or unpacking of ideas. Such “intellectual clean-up” — which involves putting things in order and making key issues prominent — is necessary in any dialogue.

Critical-thinking strategies that will help you and the discussion participants *dig deeper* include *full-spectrum questioning*, *making connections*, and *honoring multiple perspectives*. With these tools, you can add a deeper dimension to a dialogue that is “wallowing in the shallows” of a satisfactory, conventional approach or an unexamined vocabulary. You can also address critical issues of unexamined beliefs or assumptions that might block the path to productive thinking, or explore the reasons for these beliefs/disbeliefs through analogies, without arousing defensive reactions. By implementing digging-deeper strategies, then, you lay open for examination the rationale and implications of participants’ contributions, and you move beyond advocacy of positions to consideration of the “why” aspect of propositions or claims that are held to be valid.



CRITICAL-THINKING STRATEGIES	
Sharpening the Focus	Deepening the Dialogue
Identifying Direction	Full-Spectrum Questioning
Sorting Ideas for Relevance	Making Connections
Focusing on Key Points	Honoring Multiple Perspectives

Let us now look more closely at the three *sharpening-the-focus* strategies. It's important to note that when you select any critical-thinking strategy, your intervention goal is not to instruct participants in critical thinking, or to reveal your own expertise. Instead, you must model the form and content of pragmatic dialogue, in which a "Guide on the Side" seeks to paraphrase, juxtapose, explore tensions or implications, or extend ideas to new levels of interpretation — all with the intent of finding new meaning. Ownership of the direction of the dialogue and the questions that drive it must remain with the participants.

SHARPENING THE FOCUS

Like face-to-face conversations or interactions in work groups or classrooms, online dialogues will often wander and lose their coherence. Thus, one of your central responsibilities as moderator is to maintain clarity of the discussion's direction and continually sharpen its focus. As such, you must assess the social and argumentative content of the online conversation and contribute — modeling pragmatic dialogue — entries designed to push the conversation forward. Negotiating the sense of space in the course or working group, and making clear its goals and expectations, is a process you must deal with continuously. Your role as concentrator of key contributions and keeper of coherence is essential in maintaining the direction of the dialogue (Bohm 1990).

You won't accomplish this task solely by marking out or moving toward rational ground. Rather, you'll succeed by carefully and collectively examining why a set of ideas or a position is incoherent. At both the start-up phase and within dialogues that are in full swing, sharpening-the-focus strategies are particularly useful (though they're not limited to these time frames). The start-up phase of any online dialogue brings awkward moments for participants and moderators alike. As we've



noted previously, in online learning groups there is no “back rows of the work space or classroom” in which someone may invisibly “attend” the class. Everyone’s contributions are written and public, and they require much more effort than head nods, smiles, or eye contact. As first entrant in a thread, you the moderator may wish to employ the voice of a Personal Muse and focus on key points or possible tensions, so that you can “break the ice” or provide some lines of discussion. Following some initial postings, you might next — now, perhaps, as a Conceptual Facilitator — highlight short, relevant segments from several lengthy responses, prizing gems of expression from a muddy matrix, to guide participants toward crisp language that supports the form of pragmatic dialogue. *Sharpening the focus* strategies inform participants informally of the standards and expectations of discourse, and they identify and highlight productive lines of discussion.

If, on the other hand, participants are fully engaged in a mature dialogue, focusing strategies may again come in handy. In mature dialogues, participants themselves may employ thinking strategies to dig for deeper meaning. As a Reflective Guide, you might bring to the surface intriguing, though ambiguous, ideas by citing key participant comments or even parts of assigned readings. Or, in the voice of a Mediator, you may want to cite different possible directions taken in the thread and negotiate paths in which the participants’ collective energy can be best directed.

Let us now look at the three focusing-oriented critical-thinking strategies — *identifying direction*, *sorting ideas for relevance*, and *focusing on key points* — and study examples of their use in actual dialogues.

Identifying the Direction of a Dialogue

The first challenge you face as moderator is helping participants make sense of the general goals of an online working group or course, as well as the expectations of what it means to contribute to online dialogue. By carefully reflecting upon the entries in a thread, you can assess the general tack of the dialogue, its progress, and what appear to be digressions from the goals for each activity or discussion topic. Common concerns or interpretations give clues as to what participants see as worthwhile, noteworthy, or perhaps urgent. Digressions within individual communications and collective side trips can provide essential clues



to participants' motivations or general lines of thinking. (They can also be unproductive sidebars best left without commentary.)

As the moderator wearing your Reflective Guide hat, you can select the *identifying-direction* strategy to sharpen the dialogue. You can refocus and perhaps redirect discussion to certain points or issues by selectively highlighting or paraphrasing pertinent lines of discourse. Similarly, as the voice of a Generative Guide, you can mull over potential meanings of phrases or topics and suggest possible directions and alternatives. Or, as a Conceptual Facilitator, you can weave and integrate ideas that may seem irrelevant on first reading but, when observed through another perspective, indicate valid and focused lines of thought.

In mature dialogues, you can use the voice of a Mediator and the identifying directions strategy to indicate current progress in the dialogue by highlighting tensions or unbalanced expositions. As a Conceptual Facilitator, you may elect to help identify direction by reviewing wording of assignments or key concepts for threads and citing participant usage, commentary, or possible turning points.

Example 7.1 Identifying Direction

Hands-on activities from *Craters!* (1995), a curriculum about craters on bodies in the solar system, were done at local sites. “Where was the inquiry in these activities?” was the assignment. Responses covered a wide range. The moderator sensed incoherence and tried to set out ways to pull the discussion together. The moderator elected to post a simple *identifying-direction* entry to collect ideas around a few strands of interest. The voice is that of a Conceptual Facilitator. The tone is neutral. (Note: The same excerpts are framed in a *making-connections* strategy in a later example to contrast the two types of strategies.)

What a busy time on the boards this week! The postings are numerous and all over the map.

On the ***Do It Yourself Cratering*** activity, some commented:

- “This activity supports the NSES Standard A — teaching with inquiry. The inquiry is the *doing* and just as important as the *discussing*.”

The moderator begins with a social comment, then quickly shifts to six quotes from the discussion area. There are many tensions in the postings and a considerable amount of confusion about terms and expectations for inquiry.

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- “This would be a very structured experience in inquiry. The teacher is a guide, a monitor, to keep them from going too far astray from the goal.”
- “True, pure inquiry would be the way in which the original discoveries of our scientific laws were made, by the original scientists who discovered them. It took years before they knew that their theories were accurate.”
- “The cratering activity was definitely an inquiry-based activity. We brainstormed the list of variables that existed in this activity — the list was incredible!”
- “The activities do not give the students the answers (relationships) they will discover. In that way, the activities are inquiry-based.”
- “It is very structured and is not, in my opinion, inquiry. It is simply repeating a structured experiment.”

Such variety! “Where is the inquiry in *Cratering?*” was the assignment. “In line with the standards,” “definitely not inquiry at all,” “very structured experience,” “not like scientists do inquiry” are our answers. We don’t all have to be on the same page here, at least at this early part of the course. Let’s consider the common elements of the posts to see where our dialogue might be best directed.

Discussing or verbalizing seems central. Is it? And why?

Is inquiry more than “hands-on”? If so, how?

There seems to be a tension between inquiry and structure. Is it an opposition?

The quotes highlight central ideas from posts that were often rather social. The moderator models the terse dialogue expected for pragmatic discourse.

The moderator decides not to pursue a common definition at this time, but to instead work toward clearer understanding of common terms.

Discussion, “hands-on,” and structure seem to need more precise formulation.

The moderator sets out options for direction.



<p>Might “inquiry” be a label given to an activity at one time and with a certain population, and viewed as inaccurate for a different population or at a different time of year?</p> <p>What are the lines of discussion you want to pursue here?</p>	<p><i>That “inquiry” may be a relational term is included in potential discussion threads.</i></p>
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Sorting Ideas for Relevance

Any facilitator of online discussions reads, sorts, and rapidly assigns value to each discussion entry and its components based on the context of the topic or the course goals. The *sorting ideas for relevance* critical-thinking strategy addresses a very different process: Crafting an entry that explicitly, but informally, makes public the sorting mechanism, leaving options open for collective input.

In selecting this strategy, you the moderator make a conscious decision that the group needs to call attention to the sorting of ideas; all are not of equal weight. In a sorting for relevance post, you identify candidates for primary issues. You then identify the issues that might be tangents or digressions, and that, however appealing, the group should leave for another time. It’s critical that you maintain in your posting indications of the participants’ perceptions of relevance and direction. The sorting for relevance strategy focuses on relevance and importance; it differs sharply from a strategy intended to explore what direction the dialogue is taking. At issue is not what direction makes sense to pursue, but the relative importance of the active lines of thought.

In the start-up phase of a dialogue, sorting for relevance postings are often necessary. Like identifying direction postings, they help participants negotiate the sense of space and the expectations of their participation. As a Personal Muse using a sorting for relevance strategy, you may seek to model the process of online reflective dialogue by posing and responding to a sequence of directed questions that explore issues of relevance in concepts or the connections among ideas.

In mature dialogues, individual posts can become complex or lengthy, despite calls for concise expression. Individual posts, or perhaps a series of



responses, often contain real gems trapped in murky or very diffuse prose. As such, you may wish to highlight these tidbits for the group by using a sorting for relevance strategy. Writing as a Conceptual Facilitator or perhaps in a Role Play, you can bring these nuggets to light and indicate the relative importance of lines of thought or concepts through narrative means. You may also seek to distinguish relevant and irrelevant issues by articulating, in crisp tales or metaphors, the directions discussions have taken to date.

Example 7.2 Sorting Ideas for Relevance

The following selection uses a *sorting for relevance* strategy in the voice of a Reflective Guide. The tone is neutral. The intervention came at a point in the dialogue when the participants had established the importance of assessment and students' personal involvement with material. However, the group members were still not clear about what they meant by assessment; nor were they clear on the purposes assessment served for themselves, their administrations, or their students.

MESSAGE SUBJECT: Are All Tools of Assessment Created Equal?

[Participant 1] asks about options beyond “the regular old quiz,” or does that quiz “work just fine?”

[Participant 2] asks students, on a ten-question quiz, to make up two problems themselves and “solve them in whatever method is best for them.” “I was amazed at what some of my students put down, and it really did give me a clear picture of where they were.”

[Participant 3] sees himself more traditionally, and he cites a concern for making students “test ready.” He wants to be sure kids can transfer knowledge from their experiences with manipulatives.

I suppose one needs to step back and sort out what we believe is the purpose and relevance of an assessment tool. We've got three very different takes on assessment here:

The entry starts without a social element — a moderator option. The dialogue is mature. The moderator pulls together important ideas and sorts out different meanings for assessment by comparing the three quotes.

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<ul style="list-style-type: none">• Does the type of assessment have to change when the learning experience changes?• Testing what students think is a problem is as important as testing what they think is an answer. Does it make sense?• Assessments should prepare students for the “real” assessments administered at local or state levels. <p>Are you interested in the answer, the process, and/or the progress of the student, or in the format of the question itself?</p> <p>Are all modes of assessment created equal, and are they relevant in the pursuit of knowledge with regard to these areas? Which are the most relevant for you?</p>	<p><i>Each participant takes a very different tack on the use and importance of assessment. The moderator paraphrases, seeking to concentrate meaning on these different uses and concepts of assessment. The moderator highlights the tensions between traditional views and reform-minded or innovative approaches.</i></p> <p><i>The moderator steps out of the dialogue and inquires about the “equality” of assessments, a purposely ambiguous term. How one would sort out issues is left to the respondents.</i></p>
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Focusing on Key Points

Though you may take the stance of a “Guide on the Side” in your moderating efforts, the process of moderating itself is essentially directive. *Focusing on key points*, as an online critical-thinking strategy, mirrors closely the function of highlighting key contributions — a tactic used by any skilled working group or classroom facilitator.

Using this approach, you the moderator work with participant input and draw on formal structures of the online experience, such as any specific goals for the group or conceptual organizers. The goal of your focusing on key points intervention: To highlight essential concepts and connections made to date. Your posting may also indicate potential omissions or areas of tension.

If you use a focusing on key points critical-thinking strategy in a post, it’s important not to author your message with a view toward summarizing the dialogue or indicating where it might or should go. With this strategy, you simply paint a conceptual landscape of the terrain participants have



visited and commented upon. The images and impressions are in the participants' words or phrasings, not yours. Leave assessments of completeness, value, or accuracy for your students to infer.

Whether it appears early or in more mature phases of a dialogue, a focusing on key points strategy is basically the same. In fact, focusing on key points is the only strategy that fits naturally with all six of the "voices" we described previously.

There are two central features of the focusing on key points strategy. The first is a list of ideas, citations, or contributions from the dialogue. The second is context for the list that articulates the connections or potential connections of the list elements and what these connections might mean.

If you become a Reflective Guide and use a focusing on key points strategy, you may want to highlight similar lines of thought in individual contributions or across multiple entries. As such, you might paraphrase or juxtapose comments or insights so that you can clarify or extend interaction with key points in the dialogue. If you employ a focusing on key points strategy as a Personal Muse, you can list, as part of a personal narrative, key issues or tensions raised within the discussion. You don't need to take a stand or attach any value to the entries or opinions cited.

The focusing on key points strategy will be crucial for you if you put on your Mediator hat. In this case, your posting must not only honor participants' positions or opposition, but also list and compare them, with an eye toward recognizing the common features in participants' reasons for holding assumptions or believing assertions.

A focusing on key points strategy will enable you as a Generative Guide to lay out existing contributions and indicate — by reference to goals or specific assignments, or perhaps to conceptual blocks that have developed — ways to approach potential areas or concepts that participants may have overlooked. Similarly, the focusing on key points strategy you might use in a Role Play could enumerate participants' contributions; an anecdote, a tale, or a character could sharpen perspectives on weakly articulated ideas or perhaps ideas that are missing altogether.



Example 7.3 Focusing on Key Points

This discussion on reform in science education is quite active. Familiar themes have emerged as central: Teachers' personal commitment, system or administrative support, and vision of potential practice. The moderator condenses three key issues in the dialogue, using a Conceptual Facilitator voice.

MESSAGE SUBJECT:

What Supports Reform? Anything?

[Participant 1] offers two thoughts on reform in science: "It's not all that hard in my current district to convince parents, colleagues, and administration that I'm covering the district core curriculum even though I don't follow it the way they intend. ... I've found that if they're well-enough informed, parents are more open to innovation than most schools give them credit for."

And ...

"Any top-down, widespread reform efforts I've seen have failed. I really think it's better to have a few interested teachers pilot new programs and let success speak for itself."

[Participant 2] shares her chat with a lady who did her thesis project on using inquiry and parent volunteers. The materials included "mini-labs for students to take home and use inquiry," involving parents by having "visits in science classes ... a few times a week." This study found "significant differences in the students' learning."

[Participant 3] notes: "We all can use improvement and change for the better; however, sometimes we are feeling like we need to change when maybe just a little augmenting is all we need ... in a different area. Again, I trust myself in

Again, the intervention starts without a social element. The title is crisp.

The first entry exudes self-confidence. Teachers here are seen as sources, implementers, and evaluators of reform.

The second entry is less certain. The participant cites anecdotally that there are other methods that are successful.

The last response sets its trust in personal experience. Small changes will bring people to success on the road of reform.



<p>my decisions. There are so many decisions in the art of teaching.”</p> <p>Here we have three very different approaches:</p> <ul style="list-style-type: none"> • Confidence that bottom-up, teacher-piloted reform is what will work. • Research in other peoples’ classes shows that inquiry works. Parents can be helpers. • Trust in one’s own work and capacity to make minor course-correcting decisions is important. <p>The assignment inquired about your system and the value and support placed on reform. Do you have experiences that are different from those of [Participant 1], [Participant 2], and [Participant 3]?</p>	<p><i>The moderator places the quotes in the context of the main assignment, and invites others to contribute their thoughts and experiences.</i></p>
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Here’s a second example of a focusing on key points strategy. In this case, the voice of a Reflective Guide lets the moderator explore the beliefs and motivations behind participants’ comments:

<p>Example 7.4 Focusing on Key Points</p>	
<p>A very active discussion carried many lines of thought about what it means to teach with inquiry methods. The moderator selected several citations that contained themes of discomfort and crafted a post focusing attention on the idea of value and comfort and how these relate to the central assignment question, “What does it mean to do and teach with inquiry in algebra?” The tone is neutral. The quotes contain sufficient color and interest. The voice is that of a Reflective Guide commenting neutrally on tone and intent.</p>	
<p>MESSAGE SUBJECT: An Uncomfortable Fit. Value and Comfort. [Participant 1], [Participant 2], [Participant 3], [Participant 4]</p> <p>[Participant 1] expresses reservations about returning to a traditional setting:</p>	

Critical-Thinking Strategies



"I don't know if my program could work in a traditional setting." She trusts her fellow elementary teachers, as they can "work with their students in similar ways — having multiple centers going on at one time." She muses: "When I return, I'll be taking my model with me to see if it works."

[Participant 2] sees some unexpected difficulties. "When I have used manipulatives, I've found the 'brighter' students complaining and even having difficulty with the tasks. They just wanted to move along and not spend time 'internalizing' concepts." He feels uneasy with this lack of attention: "They felt it was too elementary, and they also seemed to lack the patience."

[Participant 3] takes a philosopher's long view and notes that "in the end, students respond to your attitude. If you are satisfied with the results of conventional methods, they will sense that you are not sure there's a point to all the fuss about manipulatives or technology, or whatever." He seems to imply that students believe more than your words: "In such a situation, they are likely to resist."

There seems to be common ideas about valuing and comfort in these postings and in several others. Do these qualities always go together?

[Participant 4] writes openly about our own mediocrity: "Maybe we need to quit saying we don't change because of tests, and admit that we don't change because we're not comfortable trying new things. Mediocrity that we're used to is easier to accept in ourselves than the new threat of failure."

The moderator begins with direct citations. She bolds names and includes them in the title to honor contributions. She condenses the quotes from a longer narrative and social context. The dialogue is mature; digging deeper strategies are unnecessary.

Personal doubts, even criticism, show up in [Participant 4]'s note. Its language is quite crisp, and it provides sufficient tension and the potential for disagreement. The moderator places it last, as the type of personal reflection on the meaning of inquiry for a practitioner is particularly relevant.

[Participant 1], [Participant 2], and [Participant 3] comment on professional feelings of uncertainty and surprise regarding the use of inquiry.



Teaching with inquiry brings some burdens, as these responses are telling us. Being uncomfortable and open to failure may be a characteristic of inquiry learning and teaching. Is it?

These changes, and inquiry learning itself, seem to be like walking with ill-fitting shoes. Does this mean we must find ways to help ourselves and our students be comfortable with irritation?

The posting concludes with a metaphor — “ill-fitting shoes” — for the discomfort one might feel using inquiry and approaching change.

DEEPENING THE DIALOGUE

Maintaining forward momentum in a dialogue requires more than sharpening the discussion’s focus and keeping important ideas in the forefront. Dialogues progress because participants feel there are areas they haven’t explored and ideas whose implications and connections they need to follow.

In some dialogues, participants naturally follow conceptual trails into the unknown. In others, however, you the facilitator must help the participants become aware of unseen potential. We’ve identified three critical-thinking strategies that help push dialogue to new areas. These strategies explore or highlight existing tensions or conceptual blocks, challenge or identify assumptions or barriers to new conceptualizations, or approach issues from multiple angles. The strategies are:

- Full-spectrum questioning
- Making connections
- Honoring multiple perspectives

You can use these strategies in either the start-up phase of discussions or within the interactions of mature dialogues, but they are of particular importance in the transition phase. In that phase, participants have some idea of the expectations of online contribution, and they’ve gone beyond social or argumentative formats to a basic use of pragmatic dialogue. However, they’re not yet aware of how sharing reflections publicly online can bring new perspectives and depth to their own thinking. As moderator, using these *digging-deeper* strategies, you can help participants value reflec-

tions and uncertainty as bridges to new levels in their own thoughts and examinations of their personal beliefs and assumptions.

Critical thinking strategies can readily generate questions. But, one must ask, “Are questions the main tools available to facilitate dialogue?” Questions, we have found, are but *one* of the tools available. Moderation techniques focusing on the production or honing of questioning skills run the risk of wresting ownership of the dialogue from its contributors. So as the “Guide on the Side,” you must also avail yourself of techniques that explore tensions without seeking resolution, examine rationale for beliefs or assumptions without assigning value, and interpret at different levels while leaving to the participants the formulation of the driving questions that push a dialogue deeper.

By paying close attention to this type of interaction — deepening the dialogue by going beyond question formulation to the context and beliefs/assumptions behind people’s assertions — you can model and encourage the kind of thinking and ownership of new ideas necessary to push dialogue deeper.

Let us now look closely at the three specific strategies you can use to deepen the dialogue in online discussions. We begin with *full-spectrum questioning*.

Full-Spectrum Questioning

Who? What? When? Where? Why? We’re all familiar with the questioning strategies employed by journalistic or expository writing. The purpose of questioning in such a context is to gather sufficient information so that a writer can inform the reader of some event or process. A reader of journalistic or expository prose, likewise, seeks out these signposts as indicators of what’s being conveyed in the article.

But in a pragmatic dialogue, as we have defined the term, questions and questioning strategies serve a very different purpose. There is no story to get out, nor are there signposts, in any traditional sense, indicating what the reader might expect the prose to say. In fact, questions that help you facilitate pragmatic dialogue have an instrumental value that goes far beyond delivering or even clarifying facts. As moderator, you can post question-based interventions to help the participants examine their own hypotheses, thoughts, and beliefs, both individually and collectively.



The “five w’s” above elicit answers to be sure. But, however complete or informative those answers might be, they don’t adequately serve the needs of an online learning community. That’s why we offer you the *full-spectrum questioning* techniques described below, which can serve as a sort of scaffold for you as you seek ways to frame questions in a reflective dialogue.

If you’re like most facilitators and participants, you’ve had little experience or training in the models of questioning that go beyond the “five w’s.” As such, you’ll likely bring to your facilitation efforts a highly limited set of tools to explore your own thinking and that of others. And the difficulties can compound for you if you attempt to bring inquiry into your dialogue, since your skill in formulating questions can compete with participants’ seeking to direct their own learning.

That’s why we’ve adapted to the online setting some guidelines for questioning strategies in face-to-face group work devised by Dennis Matthies (1996), Matthew Lippman (1991), and others in the critical-thinking movement. The method presented here, called *full-spectrum questioning*, has been adapted from Matthies’s strategies for face-to-face meetings. Compared with the “five w’s” of journalism, this approach offers you the moderator a much wider palette to frame and conceive questions based on participant responses.

Our treatment of full-spectrum questioning is more detailed than that we afford to other critical-thinking techniques because the material represents a synthesis of approaches not described in current literature on online dialogue.

To the right is a table exploring all five levels of full-spectrum questioning:

Full-spectrum questioning offers five general categories of questions, with each category designed to extract layers of meaning when applied to words, processes, statements, or directions of a dialogue. By modeling these richer modes of questioning, you can help participants find new ways of viewing and questioning their own thinking.

The five categories of full-spectrum questioning are:

- “So what?” questions
- Questions that clarify meaning
- Questions that explore assumptions and sources
- Questions that identify cause and effect
- Questions that plan a course of action



FULL-SPECTRUM QUESTIONING

<p>Questions that probe the "so what!" response</p>	<p>Questions that clarify meaning or conceptual vocabulary</p>	<p>Questions that explore assumptions, sources, and rationale</p>	<p>Questions that seek to identify causes and effects or outcomes</p>	<p>Questions that consider appropriate action</p>
<p>How Relevant or Important? To whom? To what constituency? Individuals or groups? What viewpoint would impart importance? Is that me/us/them? What audience is assumed? If we knew all about this, what good would it do?</p> <p>How Urgent or Interesting? Is immediate consideration needed? Or, is the detail best left for other times or forums? Is the issue compelling, or tangentially related to my or the group's task at hand? Is the issue of intellectual merit?</p> <p>What Context? Is the issue or question part of a larger view or strategy?</p>	<p>Is there Ambiguity or Vagueness? Are terms clear or meanings commonly shared? What alternative meanings might exist? Can quantifiers be made more explicit? How much? How long? How few? To what extent? Can implicit comparisons be made explicit?</p> <p>Are Concepts Held in Common? Are terms relying on professional or technical understandings? Does meaning shift from ordinary usage to technical sense? Is persuasion confused with definition? What might be a similar example in another area?</p>	<p>What Qualities Are Assumed? Is the claim or phenomena assumed to be: Real, unique, measurable, beneficial, harmful, neutral? Might the opposite assumption be equally valid? Are biases or preconceptions evident in gender, audience, categorization? What does the speaker assume about herself or himself or the audience?</p> <p>Can One Be Sure? What evidence supports the claim? How can it be confirmed? What are reasons for belief or disbelief or assigning value? What procedures or processes give evidence for certainty? What supports any analogies?</p>	<p>Primary vs. Secondary? Is the claim/condition a root or secondary cause or effect? Is it a trigger for other mechanisms? What are they?</p> <p>Internal/External vs. Systematic Interaction Is the cause/effect mechanism internal or partly external to the system? What external factors affect interactions? Are reputed "causes" perhaps correlations? At what level might true causes operate? Are consequences long or short term? For whom? What limits or scenarios might apply? What are worst/best cases? What is most probable? Why? If cause/effects are connected systemically through feedback, what are the key feedback controls?</p>	<p>Who Does What, How, When, with Whom, and Why? Is there a quick fix or is a more considered view needed? Should I/we do something? Together, separately, as a group? Should it be done now? When? What is the commitment? Are those involved too close to act effectively? Are outsiders needed? Who can be engaged? What plans or strategies will be effective? What levels/conditions need addressing first?</p> <p>What Comes Next? How is effectiveness evaluated? What ongoing monitoring or re-evaluating of intervention is needed? Is there a backup plan? Who directs it? Under what conditions is it operative?</p>

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Full-spectrum questioning is not a taxonomy or even a hierarchy of levels of questions for you to work through in a specific sequence. Rather, it presents — like an artist’s palette — a more varied, more subtle range of options and potential effects that you can obtain as you pose questions in online discussions.

You may employ full-spectrum questioning at any phase of a dialogue. However, we suggest two main categories of use: “sweeping the decks” and “levering out of a rut.”

In online communities, as in their face-to-face counterparts, participants often assume common understanding of terms, or common assumptions about causes or the need for action. The “building community” aspect of any course encourages such thinking. Thus, dialogue in the initial phases of online discussion can proceed along diffuse, or even muddy, lines of thinking. “Sweeping the decks” by seeking to clarify terms, by teasing apart ideas, or by reframing poorly formed or implicit questions is one way you can effectively use full-spectrum questioning. By “cleaning up” the ground work, you can lay the sound content foundation that is essential for dialogue to proceed meaningfully. How can you do this? Perhaps as the voice of a Personal Muse, you can employ full-spectrum questioning to explore questions before the group and grapple with direction, ambiguity, or possible assumptions. Or perhaps, as a Mediator, you could paraphrase questions or issues and seek commonality at a higher level by resolving ambiguities or misunderstood assumptions or beliefs.

You can also use full-spectrum questioning to guide participants out of a situation that is common in professional dialogues: Conversations confined by a common terminology or set of standard approaches that blocks off paths to new ways of thinking and seeing. We call this full-spectrum questioning strategy “levering out of a rut.” Issues relating to the validity and certainty of particular sources, helpfulness, and the identification of cause and effect may need highlighting and examination from completely different perspectives. As moderator, then, you might ask: “How do we know _____ is true, accurate, measurable, or even beneficial, or that the effect assumed is real or not?” The voice of a Generative Guide or Conceptual Facilitator is well suited to this task of breaking the mold of convention to consider ideas in a new light.



A note of caution is necessary when it comes to using full-spectrum questioning in online dialogue. Full-spectrum questioning is only one of a much wider set of tools for moderation. It is structured, relatively easy to apply, but content-neutral. It focuses on questions themselves. But a question is by no means the only tool you can or should use to encourage inquiry. Questions, particularly good ones, command attention. Thus, overusing a technique like full-spectrum questioning carries potential risks. Among them: competing with participants for ownership of the dialogue's direction; and overly appreciating questions themselves — and not participants' grappling with them — as centerpieces of the dialogue.

Let us now briefly examine the five categories of full-spectrum questioning, beginning with those focusing on the concept of “so what?”

Questions that probe the “so what?” response. Any issue or concern must first pass a threshold of critical relevance and urgency before there is any further dialogue upon it. The “so what?” questions you ask may appear curt or overly pointed, but in a pragmatic dialogue they're essential in identifying interest, context, relevance, and urgency within a limited time frame. Thus, you should include a question like, “Why do we really need to consider this issue?” — at least by implication — in the beginning of any interaction.

Relevance or importance is one outlook you can address with the “so what?” question: “To whom is this concern of interest or relevance?” “To what constituency is it addressed?” “Is it keyed to individuals or groups?” “Is that me/us/them?” “What audience is assumed for any response?” “Were we to know all about this topic, what good would it do?” As facilitator, you may want to echo or highlight explicit or implicit tensions in initial responses to these types of questions to help the participants clarify the direction of the dialogue.

Urgency or interest is another outlook you must probe before you and the participants commit your time and resources to a particular discussion: “Is immediate consideration needed? Or is the detail best left for other times or forums?” “Is the issue compelling, or is it only tangentially related to my/the group's task at hand?” “Is this an issue of intellectual merit?”

Questions that clarify meaning or conceptual vocabulary. Ambiguity and vagueness are important features to either clarify or to use in



sustaining the tension that supports dialogue. As moderator, you may see wandering conversations emerge from participants' unclear use of terms or from presumed common meanings. A posting from you in such a situation can explore alternative meanings that might exist, or perhaps look at how quantifiers or comparisons can be made more explicit.

By quoting or paraphrasing participants' responses, you can also highlight or hold up for commentary concepts, professional or technical understandings, or usages that may or may not be held in common among the participants. Differences between ordinary language usage and narrow technical applications may sustain confusion. As moderator, you can bring to the surface for examination and reflection several different meanings used by the participants.

It's important, however, not to appear to be a quibbler or stickler who is demanding and appreciative of precise phrasing. The intent of the usage or definition is central to the illuminating task of moderation. Is the author of a message building new meanings for terms in light of a specific conceptual framework? Or are new meanings being coined using metaphors or extending existing constructs? Or is the author attempting to influence opinion under the guise of crafting a definition in a rhetorical attempt to persuade? By singling out various meaning-making attempts using the voice of a Personal Muse, a Reflective or Generative Guide, or even a Conceptual Facilitator, you can help the group members look more deeply at their own thinking and its implications.

Questions that explore assumptions, sources, and rationale. Participants' entries, both as social dialogue and as contributions to pragmatic discussions, reveal a great deal about the writers' qualities, assumptions, and beliefs. As part of your "sweeping the decks" role, you can explore alternative meanings or possible tensions based on assumptions conveyed in the words of the participants. You could, for example, openly muse about certain assertions, asking if the group has really thought about whether a claim or phenomena is real, unique, measurable, beneficial, harmful, or neutral.

In an effort to "lever a group out of a rut," you might, for instance, suggest that participants consider whether the opposite assumption to a commonly held belief might be equally valid. You could also ask the



participants to consider any biases or preconceptions that might be evident in their thinking based on gender, audience, or categorization.

As a Generative Guide, you could suggest that participants think about evidence for their claims, or about their reasons for belief, disbelief, or assigning value. As a Conceptual Facilitator, you might direct the discussion to help participants ponder the concept of certainty. And as a Mediator, you could attempt to extend participants' thinking with analogies by examining the bases of those offered or seeking new ones emphasizing common goals.

Internal/external vs. systemic interaction. Issues that relate to identifying cause and effect are commonly problematic in online discussions. Participants can confuse the dialogue by neglecting to articulate to the group, or perhaps even to themselves, the assumptions or connections inherent in their viewpoints as either internal or partly external to their conceptual frames. In a clarifying role, you can intervene in this type of situation with paraphrases of people's positions. You can also highlight external factors, reputed causes or correlations, and suggestions on the levels upon which true causes may operate.

To move dialogue beyond well-trodden paths in a discussion in which interpretations or positions may have begun to solidify, you can suggest that participants consider both long- and short-term consequences for each position, as individuals and for the group or associated parties. Perhaps you can highlight best- and worst-case scenarios, or the limits of participants' frames or interpretations, to indicate the wide range of thinking among the participants. If stale thinking is evident, there is very possibly some feedback or assumptions maintaining it. As moderator, you can analyze conversations to look for patterns, so that you can in turn find rules or assumptions that are limiting the dialogue. You can also hold these rules or assumptions up for discussion.

Just as unrecognized assumptions or interactions in physical or fiscal systems can either determine or support repeated unfavorable results, unrecognized feedback loops can also be present in social interactions and can lie at the foundation of recurrent roadblocks or conceptual impasses. As moderator, you can post a message that questions or invites examination of key assumptions or conceptual links that participants see as central to the problems.



Questions that consider appropriate action. If an idea is attractive or a cause seems worthy, a common first step is to consider, “What shall we do now to fix it or help out?” Discussants tend to forge ahead right away, assuming common ground and without first “sweeping the decks” to figure out if there really is agreement about what’s being talked about, or without taking time to question agreed-upon value assumptions behind particular assertions.

By inviting participants to more thoughtfully consider an issue and the potential problems it might entail, you can bring into question the notion that there is a “quick fix” or “something we should do now.” As facilitator using the voice of a Generative Guide or Mediator, you can highlight questions or excitements stemming from the “so what?” category so that they’re juxtaposed with a more detailed examination of their appropriateness: “Are we the ones who should be acting here? Do we work individually or in concert? Are outsiders better choices? And what is the commitment assumed?” Exploring terms and assumptions can bring together an excited but loosely focused dialogue, encouraging participants to reconsider issues related to action.

Discussants who are “stuck in a rut” are not always in static condition. The “rut” can be a direction or an attraction the group can’t resist, but which they still can’t get to for any number of reasons. As the moderator diagnosing such a condition, you can intervene. Citing or paraphrasing participants’ entries, you can question how plans or strategies will be considered effective, or which conditions need to be addressed in sequence. If participants commonly assume that a certain direction is productive or healthy, you can — through Role Plays or as a Personal Muse — wonder “aloud” about monitoring, re-evaluating, or the existence or usefulness of a backup strategy.

The following example illustrates how a moderator might step in when group members have gotten “carried away” on an issue, leaving pragmatic dialogue in the dust as they enthusiastically trade comments about how administrators might become closer in touch with the realities of classroom teaching. This moderator uses full-spectrum questioning to help the group slow down, take a breath, and do a bit of a “reality check” of its own. The moderator uses humor to bring the group down gently, albeit firmly:



Example 7.5 Full-Spectrum Questioning

Here's a model of how you might use *full-spectrum questioning* in your moderating efforts. In a reading, the phrase "principal sharing the same foxhole" captured participants' attention but not their imaginations. The dialogue had circled endlessly about well-trodden paths. New ways to look at the idea seemed out of reach. This post employs a Generative Guide voice using the framework of *full-spectrum questioning* to look at new avenues of thought. The tone of the entry is humorous, the result provocative.

MESSAGE SUBJECT: "In the Same Foxhole." What Does This Mean?

There have been many contributions to this thread on how administrators can support reform in education. We all seem to be charmed by that phrase "in the same foxhole." "In the same foxhole" sounds neat, but what meaning have we agreed upon? [Participant 1], [Participant 2], and [Participant 3] seem to understand it as an administrator coming to their classroom to share experiences, perhaps co-teach, or even take over some classroom duties. [Participant 4], [Participant 5], [Participant 6], and [Participant 7] seem to feel that "in the same foxhole" means some type of mutual experience of the same kinds of frustrations, "to be like us."

How much sharing of foxholes are we talking about during one year? One hour, one day, a week? Even if administrators do come in, what really is shared? Certainly there is potential for shared confusion over what is to be taught and how.

We seem to assume that being "in the same foxhole" is a good thing. Let's assume the war metaphor has some value for the moment. Isn't it possible that a well-intentioned principal

The title challenges the meaning of the attractive phrase.

The moderator sets out paraphrases and short citations from seven respondents. She makes two general groupings, based on the participants' interpretations of what is good about being "in the same foxhole." The moderator also points out that there seems to be no common meaning of the phrase.

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dropping into some foxholes in his school might be shot by mutinous troops? At the minimum, such coziness may invite long visits by a union steward. “Foxhole sharing is a form of non-contractual evaluation,” the union says.

Is there a causal connection between being “in the foxhole” and principals being better administrators? A principal can be an excellent, mediocre, or poor teacher. So what? Their content training may be inappropriate, and even if it’s not it may be outdated. There are consequences of the time spent out of her foxhole and in yours that need to be considered.

Even if foxhole sharing does offer all sorts of information and feedback, what are both sides going to do with it? Is there a short- and long-term plan for processing the experience?

Can some of these considerations inform us about what is so attractive about the “sharing a foxhole” idea? The group values this sharing. But what is it about the idea, in a practical sense, that resonates with helping teachers do their jobs better?

Using full-spectrum questioning, the moderator sets out to widen perspectives. She challenges the value of the “foxhole” phrase. Is it good? She then invites quantification of the foxhole “sharing.” She identifies potential problems by using a humorous scenario. Using ideas from the categories of full-spectrum questioning, she explores causal connections

Even if the physical “foxhole” sharing happens, the moderator asks about what’s to be done with the experience.

The post ends with a request for deeper thinking about “sharing.” What can this mean for a team of teachers and administrators?

You need not use the full-spectrum questioning strategy solely to generate questions. The strategy’s classes of questions can guide you in creating a composition that attempts to explore in one narrative many sides of an issue. Think of such a post as a tentative response to a set of full-spectrum questions posed by a Personal Muse.



Example 7.6 Full-Spectrum Questioning

In the following post, crafted using *full-spectrum questioning*, the moderator attempts to engage a group that has been “wallowing in the shallows” about the use of projects and highly engaging activities. A vision of what project work might look like in a classroom has not quite gelled. How does project work personally engage students on lines that support the curriculum? The moderator employs a Personal Muse voice in a narrative style, along with a full-spectrum questioning strategy that lays out all sorts of options for approaching curricular decisions. The moderator also describes what effects these decisions might have. Tentative responses to questions from each of the categories of full-spectrum questioning are central to the posting. The post invites commentary.

**MESSAGE SUBJECT:
Standardized Tests/Inquiry,
Outcomes, Messing Around**

It has been interesting in my honors physics classes this past month. I gave my students a long-term research project, wherein groups of students had to choose a project that would result in a tangible product — build something and then carry out original research with that object. The “Amateur Scientist” column in *Scientific American* contains many ideas on this topic. One girl is grinding the mirror for her eight-inch reflecting telescope. Another group is building a haze photometer and hopes to contribute data to the national data bank. Others are building a wind tunnel, a Ramsden machine, or analyzing the motion of a runner.

The kids got the assignment right after Christmas. Once a week or so, I gave some class time to do research or to work on their project. Everything was sputtering along. Mid-April was my time frame for an exhibition of projects. In my mind, by early March, the constructing part would be done

The message subject links three threads that had significant discussion. A social introduction sets a context — a classroom not unlike those of the participants.

The narrative, in the voice of a teacher/moderator, captures the main assignment and the efforts of several student projects. The moderator explores what a project might mean. He describes mid-course corrections and goal shifts. Students have different meanings for “doing a project.”

The moderator muses on his expectations and schedules as they’re adjusted. He approaches effects of the new meaning for doing projects, leaving the exact time commitment ambiguous.



and the research part would be in full swing. In reality, wheels spun for two months.

So I had to punt. I told students that they could bring in their projects and then do the construction in my classroom. At least that way I could monitor progress and provide periodic momentum boosts. (I can also see my content fly out the window — whoops, did I lose diffraction? ...)

Slowly, the projects are taking shape. What I forget is how important false starts are. It is one thing to run a lab for two days; it is quite another to see something take shape and to have to form it as you go along. A month ago, [Student 1's] mirror focused at infinity. Yesterday, it focused at 50 inches, almost to her 48-inch goal. The rough grind is over, and now the finer grinding begins. I have spent so much time watching in frustration as I saw kids waste the time I gave them in class, but now I also see thoughtful products being assembled. I can almost see the thoughts of the kids as they try one thing after another before the right solution comes along.

I'm still real nervous. What if the senior slide hits and nothing is done with these fantastic products? What if the wind tunnel never sails? What if the video of the runner never gets clearly resolved? My curriculum is like my student's telescope: Noisy, sometimes screechy, very rough, yet I have to start somewhere.

I think I started this post as a comment on inquiry and testing. I have no idea how this last month gets put into a standardized test. I think it has to fit into another assessment.

The moderator reflects on the value of the projects and the initial failure.

The moderator gives examples of student work. He also questions and gives a partial resolution to the frustrations of devoting considerable time to project work. He muses that projects and their processes leave a visible trail of thought. What is the value of such evidence?

In closing, the moderator uses a metaphor to capture the similarities between projects and the process of teaching. He leaves open issues relating to response to testing.



Making Connections

Barriers to deeper thinking can take on many forms. Two general barriers can be characterized as either internal to the ideas or concepts themselves, or internal to the individuals working with those ideas or concepts. Some ideas or concepts contain links or even essential similarities that can remain obscure to participants unless you the moderator expend effort stretching the participants' imaginations or conceptual frames. Using tensions, metaphors, or unusual juxtapositions, you can turn participants' conventional understandings or interpretations into more general ones.

Participants can also hold assumptions or beliefs that block, or make difficult, connections in different contexts or at deeper levels. A *making-connections* strategy on your part can move the dialogue beyond these barriers.

"Making connections," used in this sense, goes far beyond amplifying an idea by finding multiple examples at the same level or in a similar context; such connections are merely associative, and you can address them by using focusing strategies that clarify meaning. A making-connections strategy challenges participants to go beyond "more of the same" to explore, at an individual and a group level, inferences, tensions, and perhaps rationales for statements in the discussion, and to move beyond first-look interpretations. Using the making-connections strategy, you attempt to help participants make shifts to deeper layers of meaning in their communications.

You may also seek to explore patterns of beliefs and assumptions by modeling the willing suspension of belief. One method for doing this is questioning the value of a widely held assumption or offering a supportive commentary that interprets statements from an unusual view. Your goal in this case is to move individuals and the group beyond a stance of advocating personal or collective visions, and toward an open consideration of why they hold their beliefs and see their assumptions as valid.

Making connections differs from full-spectrum questioning in two respects. The goal of a making connections posting is not to set out a suite of intriguing questions, nor is it to explore any particular question type. A making-connections post may not contain a question posed by you at all; instead, the best approach might feature a simple commentary or a tale containing alternative interpretations. The purpose of the making-connections strategy



is to shift the level of discussion, and then let participants take it from there. It pushes participants to higher levels of thinking so that they can examine inferences or explore beliefs or assumptions openly. Thus, the tools of the making-connections posting are analogy, inference, and modeling the suspension of advocacy in the spirit of inquiry.

Using the making-connections approach with a Personal Muse or Role Play voice, you might offer a comical tale or an anecdote to model the suspension of judgments, beliefs, or disbeliefs as potential blocks to seeing a bigger picture. Using the voice of a Generative Guide, you can offer new interpretations or options that seek to expose barriers to inquiry that lie in participants' belief systems or assumptions. A Personal Muse entry in this context can also highlight the tensions between advocacy and inquiry, and point out the potential barriers to searching for solutions.

Making-connections postings are particularly effective in the middle phase of dialogue, when the negotiation of the space and expectations comes to a close. By using this strategy, you model for the participants' interaction through pragmatic dialogue, and the advances to be gained by moving to a different way of approaching beliefs and assumptions.

Example 7.7 Making Connections

The group had been “wallowing in the shallows” and was not quite engaged in what it means to go beyond their own positions to examine reasons for making statements and examining their own assumptions. The critical-thinking strategy of *making connections*, using a Personal Muse voice and a powerful metaphor, provides a way to look at alternatives out in the open without directly challenging participants' positions.

**MESSAGE SUBJECT:
Looking Around**

The faculty and department meetings are in full swing. Attendance, discipline, schedules, meeting the (totally unspecified) standards, delayed books and supplies ... I confess to letting my mind wander. At one point I looked out the window and spaced a bit, needing some

The moderator starts with a scene-setting paragraph — a musing out the window. Thoughts from the netcourse dialogue appear, appeal, and clash.

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interaction with the real challenges of teaching. Four thoughts from the course dialogue echoed in my mind.



I could agree with each one, even though some might seem contradictory! But something wasn't gelling ... an image about gardening and onions from the course introduction flashed into my mind. A novice gardener asks: "How do I grow bigger flowers on my onions?" For him, the purpose of the gardening is out of focus. He is intrigued by the wrong end of the plant; onions are grown to eat, not to admire their blooms! Where am I perhaps led astray by focusing on the wrong end of the "inquiry onion"?

Putting myself in the role of the master "gardener of inquiry," I tried looking at the comments to see what made them stay with me, and perhaps what misleads — the focus being on the wrong end of the onion:

"Inquiry is the doing and, just as important, the discussing." Had I put much importance on doing? Can the signs of good inquiry be pauses in dialogues — doing nothing? How might I know inquiry is going on?

"The teacher is a guide, a monitor, to keep students from going too far

The imaginative tone and Personal Muse voice, combined with a visual metaphor, permit the moderator to examine areas she could not approach directly without fear of criticism or confrontation.

The moderator models reflection on one's own beliefs and assumptions. She acknowledges the fact that a person can support and deem reasonable contradictory statements.

The moderator turns each of the participants' quotes inward to explore, "Yes, I believe this, but why?"



astray. ...” Teacher as guide/monitor/shepherd is not new; we’ve all done our share of shepherding. What about the “guide” process supports inquiry — or might my guiding, nurturing efforts interfere?

“True, pure inquiry would be the way in which the original discoveries of our scientific laws were made, by the original scientists who discovered them.” That thrill of discovery must have been great, but is “true inquiry” only for original scientists? Does trying to emulate the great names and lauding their achievements keep others from their own inquiry? Does (did?) it keep me and my students from owning our own learning?

“It is very structured and is not, in my opinion, inquiry. It is simply repeating a structured experiment.” The back of my mind echoed, “Can the neat inquiry labs I wrote up this year be replayed for next year’s class? Am I trying to carve inquiry labs into structured experiments? How much serendipity is assumed doing inquiry?”

Looking from the other side — away from the “flowers” that attract us — can you see other seemingly intelligent assumptions or beliefs that may block the path to doing science or math?

[Moderator]

The moderator sets out alternative interpretations to the four statements. But she doesn’t criticize them as incorrect or inaccurate.

The post invites participants to consider alternative beliefs to their postings. The moderator encourages participants to share ideas that something might be seemingly intelligent, even necessary, but, from experience, block the doing of math or science.

Making connections is an important strategy because it gives you the means to move, from one plane to another, a dialogue that is trapped in terminology or expectations.

Another example:



Example 7.8 Making Connections

Though the dialogue has been quite active, beliefs and assumptions behind statements have not been well articulated. The participants have worked with inquiry and manipulative methods in algebra for two months, but they still seem to treat it externally, like a foreign language that has to be translated into traditional procedures to be understood. Using a Role Play centered on a personal anecdote, and a Conceptual Facilitator voice, the moderator attempts to help participants view algebra through different eyes.

**MESSAGE SUBJECT:
Blinded by Vision**

[Participant 1] asks, “Even if we do get an understanding of operations with blocks, will it translate back to symbolic operations on paper?”

[Participant 2] wonders how students “can understand the use of manipulatives in algebra. Isn’t it an added burden? I have to translate this into algebraic notation to understand it at all. ... My bright students just want to memorize the steps to get to the answer.”

[Participant 3] comments that “her very bright, college-age daughter tried the manipulatives and was confused by them.” She questions their use with “weaker students who are confused already.”

Translating from one world view to another seems to be a common concern. I’d like to share one of those “unexpected translations” I had with a blind student in my algebra class. [Student] really challenged what I thought was my strength — my “visual” teaching style. I thought I could show students anything clearly. Well, everything had to be carefully redesigned.

We managed quite well until we got to multiplication of polynomials. I usually

The moderator presents three comments on the use of manipulatives in learning and teaching algebra.

The moderator clearly sets out issues of differences between the use of manipulatives and symbolic representation of algebraic expressions and the use of algorithms.

The moderator brings up a narrative from her own experience. She remarks on her visual style and the changes she had to make to accommodate a blind student. Equity in mathematics education is imminent in the response, but not directly touched upon.



teach this from a trial-and-error approach — requiring vision. We used Algeblocks (algebra manipulatives) with [Student]. I taught him to represent quadratic polynomials by multiplying, say, $x+2$ on one side, $x+1$ on the other, to get a rectangle made of $x^2 + 2x + x + 2$. He experienced trial and error to make the rectangle.

When asked to do a factoring demo for the group, [Student] showed, with the blocks, that factoring was quite literally the reverse process. He used blocks to construct a rectangle, from blocks like $x^2 + 3x + 2$. Then he identified the sides to find the factors. If one had $+3$ instead of $+2$, anybody shuffling around the blocks gets a rectangle, side $(z+1)$ other side $(z+2)$ but one extra block. $z^2 + 3z + 3$ is prime! Never thought of it this way! I had to keep on my toes here!

I thought, at first, that this was a unique perspective. I'd always done factoring symbolically. But [Student] quite easily "saw" that factoring and multiplication were related, just like division and multiplication of integers. I still wonder about the concrete visualizations [Student] made, which he could see but I could not.

[Student] brought me into a new world of seeing algebra.

Does anyone else have similar "aha!" moments to share in algebra or any other area? Does our training, even our expertise, separate us, as much as it helps us, from understanding students' problems and ways of working through them?

[Student's] methods show the teacher a new way of thinking. Prime numbers can't be made into rectangles with blocks. Neither can prime polynomials. The moderator, a teacher herself, lays herself open to new knowledge.

Left unresolved is the issue of what is meant by "seeing" algebra or algebraic expressions.

The moderator invites participants to move outside their own reference frames and recount the "seeing" of algebra differently.



Honoring multiple perspectives. To most topics, including educational ones, people often bring a fixed, or even hardened, perspective. The reasons for this calcification are many, and beyond the scope of this book. But getting beyond the baggage of specific positions and focusing on common goals is central to the process of nurturing dialogue and bringing about understanding in online discussions.

Honoring multiple perspectives differs from other “digging-deeper” strategies in that it builds upon the layers of understanding attained through applying the techniques of making connections and full-spectrum questioning. In general, you use the honoring-multiple-perspectives approach in mature dialogues, in which the participants are comfortable with detaching themselves from particular beliefs or assumptions and are amenable to considering widely differing viewpoints. The multiple-perspectives technique is commonly the last step before a working group, assigned the task of evaluating and recommending particular programs, completes its process. Such a conclusion represents a collective decision and a statement of advocacy, achieved after the inquiry process has revealed all viable options.

Without favoring any particular viewpoint, you the moderator can use the honoring multiple perspectives approach as a Conceptual Facilitator to introduce or validate multiple perspectives on key issues. Your intention should not be to summarize, but to simply lay out a landscape of views.

As a Mediator, you might want to honor multiple perspectives while seeking service to common goals. Or, as a Generative Guide, you may seek to model alternatives to confined thinking by incorporating multiple perspectives as springboards to alternative interpretations.

Example 7.9 Honoring Multiple Perspectives

In the following example, the moderator uses the *honoring-multiple-perspectives* strategy to encourage deeper reflection on an exercise in INTEC. The exercise involved inviting students to take web-based conceptual probes on science and math concepts. Responses were anonymous. Questions in the probe were slightly unformed, inviting interpretation by the respondents. Their interpretations revealed their level of understanding. Participants were asked to view summaries of data, displayed anonymously, and to find patterns and comment. The voice



here is that of a Conceptual Facilitator. There is tension in the entries. Mediation is not necessary, as it isn't important for this activity. That all respondents be in agreement on what's said is not foremost. In this particular case, the blasé response is as significant — perhaps more so — as the teacher being troubled by what her students demonstrated. Can a deeper understanding of the rationale behind others' responses be reached? The tone is neutral.

**MESSAGE SUBJECT: Probe Data:
Gold Mine or Slag Heap?**

Participants report that students' responses in the Conceptual Probes Summary page show intriguing patterns. Many different or opposing interpretations have emerged in our discussion.

[Participant 1] is quite certain that the results show nothing. The questions are slightly unfocused by design. He thinks they "confuse students who approach them. Little can be said about what students really know using poorly worded questions."

[Participant 2] says, "I'm horrified. Many talented students made errors they just should not have made. Few got any fully correct." She notes that she had never appreciated the power of the misconceptions the students bring to the class.

"It turned out pretty much as expected," says [Participant 3]. These kids, when approaching the problem, "don't apply concepts they learned in the classroom."

[Participant 4] comments that "middle-school students did as much deeper thinking as [did] high school students." She expected more sophisticated reasoning from older students. But "many older students wrote down a formula and stopped," unable to answer more.

Individual reactions include annoyance and disbelief, horror, a resigned "ho

The message subject is deliberately provocative. The tensions in the responses are brought up for discussion at the start. Opposing views are important for dialogue. The nature of the conceptual opposition should be explored, not necessarily with the goal of resolving it.

In this case, there are several different levels of expectation about the nature of assessment and questions. What does one expect of students from questions? Right answers are an obvious response, but are other levels of understanding possible or even desirable?



<p>hum,” and surprise at unsuspected patterns.</p> <p>Each respondent reveals also his or her own expectation of the student response to the probes. It might be as useful to consider one or more reactions that are not yours and explore what you see as the expectations of assessments and the reasons behind the posted reactions. Do these ideas resonate with your own reactions? Why? Or why not?</p> <p>If these results were the responses to an online version of TIMSS, the international science and math test, would they be different?</p>	<p><i>The moderator concludes by characterizing responses and inviting participants to consider the expectations evident in the response of another person.</i></p> <p><i>To explore common ground, the moderator references standard exams like TIMSS.</i></p>
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USING STRATEGIES AND VOICES: WHY AND HOW?

Perhaps you see this system of voices and strategies to frame communications as rather complicated. After all, there are six strategies, six voices, with thirty-odd combinations. Can't simply responding directly to issues be more effective and efficient?

Variety is central to the rationale for using the different voices and strategies. We've found that most facilitators bring to online discussions one, two, or at most three different approaches. By having more options — including options you can use for specific effects or to address certain difficulties — you can shorten your compositions as well as the time you spend composing. Just as a counselor approaches a counseling situation with a wide variety of professional strategies like those formulated by Jung, Rogers, Skinner, Burn, or Dreikurs, you the moderator can also enter into dialogues with valuable skills in recognizing recurrent patterns, and a variety of strategies to choose from as determined by the evolution of a given dialogue. Using these strategies and voices provides three advantages: Professional distance, a framework to construct or recraft postings, and a model for clarity and effectiveness.

Your stance as “Guide on the Side” does bring added reflection. And some moderators find that it constrains the range of methods of interchange. But the personal tutor or lecturer modes do not transfer well to web-based



media. The strategies we've described in this chapter offer you multiple ways to gain a professional distance from participants' exchanges, identify patterns, and compose interventions. Using strategies you normally may not employ, or that may seem awkward in face-to-face discussion, helps you reconceptualize and broaden your role as an engaged nurturer of others' thinking.

These strategies can also provide scaffolding for criticizing and revising draft interventions. The rationale and frame for intervention design emerge from context. As the moderator, you can reshape and refine the container for the intervention using appropriate strategies (as well as voices and tones).

Additionally, these strategies place helpful constraints on you as an intervention author. You must use one voice and one critical thinking strategy throughout a single intervention. The attention of readers is a precious commodity. The framework of the strategies and voices offers you guidance on what parts of a communication carry important information and which ones do not. Guided by the selection of a voice and a critical thinking strategy, your interventions will wander less, and you can make clearer the purpose for their presence in the dialogue.

There are two general methods for using the voice and critical thinking strategy framework. One might be termed the from the ground up method. To use a "ground up" construction in an intervention, you read recent entries in the dialogue and determine a rationale for your intervention. You then formulate a desired effect for the intervention. The method is similar to a traditional composition. Possible voice and critical thinking strategies guide the construction of your intervention.

Here's a brief summary of the process steps for a *from-the-ground-up* intervention:

1. Rationale	What is the rationale for the post? What purpose does it serve? Is the group getting socially focused? Are focus and direction unraveling? Are the participants "wallowing in the shallows"? Given an intervention now, what might be the result? Is the timing sensible?
2. Dialogue elements	What dialogue elements (citations, paraphrases, or quotes from participants' postings) might fit into your post? How

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2. Dialogue elements (continued)	do these elements relate to rationale for the post, the assignment, and the direction of the dialogue?
3. Voice	Given your rationale and selected dialogue elements, which voice best reflects your diagnosis of what the dialogue needs?
4. Critical-Thinking Strategy	Given your rationale, the dialogue elements you've selected, and the voice you've chosen, what critical thinking strategy will best support your purpose? Do you need to help the group sharpen the focus or dig deeper? Consider an alternative voice and perhaps an alternative strategy to clarify your choices.
5. Tone	Consider what tone fits best with your rationale, dialogue elements, strategy, and voice. Is a social frame or introduction needed?
6. Outline the post	Roughly outline, perhaps mentally, the proposed posting, including elements you've drawn from the dialogue.
7. Craft the intervention	Compose the post. The purpose of the note should be clearly reflected through the critical-thinking strategy and voice you've selected. You may wish to try out an alternative voice or strategy to see if it might fit better. Remind yourself that questions are not the only tools at your disposal; you can paraphrase, seek clarification, cite tensions, introduce a metaphor or tale, or use a drawing or cartoon.
8. Reflect participants' contributions	Participants' thoughts and questions should be prominent in the body of your composition. The post should be a reflection of their ideas, not yours.
9. Craft a message title	Compose an opening and title (subject line) that catch participants' interest, honor participants' contributions, and crisply transition to the content of the post.
10. Review and revise	Review the composition process, starting with your rationale. Can the composition achieve your intended purpose? Is it too broad, too narrow, too complex, too simplistic? Does it effectively weave and focus participants' ideas or open them to a deeper level? Revise your post to answer these questions.

In an alternative, *craft-and-polish*, approach, you simply draft your posting without considering voice or strategy. Then, you go back and rewrite your message, guided by the voice and critical-thinking strategy that seem optimal given the goal of your intervention. In this case, you essentially go



through the same initial steps, settling on a rationale and identifying material you'll include in the composition. Next, you choose a general frame for the intervention and decide whether your composition will sharpen participants' focus or push them to a greater depth of engagement. You then compose your intervention to suit your vision, your fancy, and the need disclosed in the dialogue. As a separate step, you can then apply a specific voice and critical-thinking strategy.

Whichever way you apply the voice and critical-thinking strategy framework, it will help you move from a central position in online discussion to a "Guide on the Side," so that you have multiple ways to craft interventions and guide discussions for clarity and effectiveness. You'll also be disciplined in sticking with just one rationale for intervening at a time. While your natural tendencies might lead you to unwittingly interrupt progress, sticking with a clear purpose for leveraging a dialogue to a more focused or deepened target will maximize your effectiveness as facilitator.