warns Americans about the consequences of our huge federal budget deficits generated by inappropriate tax cuts: "When such deficits are incurred to fund a rising transfer of resources from young to old, they also constitute an injustice against future generations." Peterson states that cash-flow deficits for Social Security and Medicare (entitlements for the elderly) are estimated to increase to 783 billion in 2020.[7] Many elderly are very concerned about this injustice; some are donating their Social Security checks to organizations such as the Hope for the Generations Fund to help address the unmet needs of children.

Is it not time to come together and address the nation's intergenerational equity issue? This issue should not be viewed as a competition between the young and the elderly but rather the need for equity and justice for both. We should remain committed to moving forward on the path that provides every child in America with health insurance that delivers quality medical care and ensures that we have a quality educational system across the full continuum from early childhood education to postgraduate university studies. This path requires reforms in Social Security and Medicare that might require people to work a little longer and get a little less in benefits and an approach to government that reduces our structural deficits by a combination of both decreased spending that does not disproportionately impact children and increase in taxes. Our elected officials should reject the "starve the beast" mentality and understand the relevance of a Haida Native American expression: "We don't inherit the earth from our ancestors; we borrow it from our children."

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The Reflective Practitioner: Reaching for Excellence in Practice

ABBREVIATION. ACGME, Accreditation Council for Graduate Medical Education.

Reflection is widely accepted as a tool for learning in higher education. It has been addressed in some areas of medical education but not in the pediatric literature.[1–8] It is considered essential to professional practice. Reflection allows for the interconnections between observations, past experiences, and judgment to come to the fore in clinical decision-making.[9,10] Reflection gives meaning to experience and promotes a deep approach to learning because it encourages trainees to reframe problems, question their own assumptions, and look at situations from multiple perspectives as they analyze their lived experiences.[6,9–14] Reflection fosters lifelong learning because it encourages trainees to recognize gaps in their own knowledge and attend to their own learning needs.[6]

Reflection is particularly important in medicine, in which evidence-based practice and client-centered care require the physician to analyze best evidence while considering his or her values and assumptions vis-à-vis the values, beliefs, and goals of each patient. It enables trainees to recognize their own assumptions and how those assumptions might impact the therapeutic relationship and their clinical decisions. Reflection also helps practitioners develop a questioning attitude and the skills needed to continually update their knowledge and skills, which is essential in today's rapidly changing global health care environment.[6] The importance of the reflective process is further acknowledged by the Accreditation Council for Graduate Medical Education (ACGME) as underlying a number of the expected competencies is the development of reflective practitioners.[15]

Much has been written about reflective practice, particularly with respect to how it can be incorporated into the classroom. However, little has been written about what reflection is, how it can be assessed, or how it can be facilitated in the clinical setting. To enable pediatric academic faculty and practicing pediatricians to facilitate reflective practice, we provide (1) a definition of reflection (including the processes and elements that underlie the development of reflective practice), (2) rationale for its importance in clinical practice, (3) mechanisms to assess competence (including why it needs to be assessed), and (4) methods to facilitate the process.

Accepted for publication Apr 8, 2005.
doi:10.1542/peds.2005-0209
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DEFINITION OF REFLECTION

The terms "reflection" and "reflective practice" have become commonplace. Reflection is a generic term with many definitions. Boyd and Fales[16] define it as the process of examining an experience that raises an issue of concern, as an internal process that individuals use to help refine their understanding of an experience, which may lead to changes in their perspectives. Boud et al[11] define reflection as the cognitive and affective behaviors in which individuals engage that result in new insights and deeper understandings of their experiences.

Medical students, residents, and pediatricians alike are continually faced with unique and ambiguous problems in the clinical setting, during which they are forced to stop, think, and problem solve in the midst of activity. Schön[13] terms this "reflection-in-action." In practice, Westberg and Hilliard[6] note that reflection-in-action requires physicians to function on 2 levels simultaneously: attending to the task of treating the patient while continually questioning, observing, assessing, and adjusting throughout the session. In addition, after each patient/family interaction, pediatricians may reflect on what can be done to improve each child's outcome. Schön refers to this as "reflection-on-action" and posits that reflective practitioners revisit their experiences and further analyze them to help improve their skills and enhance their future patient care. Killion and Todnem[12] extended Schön's concepts to include "reflection-for-action." It is through reflection-for-action that both novice and expert pediatricians can begin to anticipate situations and plan through mental preparation before being faced with different clinical problems.[17] They state that it is not sufficient to reflect-in-action and on-action; rather, reflecting-for-action is also crucial to professional development and quality care. These very skills are integral to competent pediatric practice yet must be learned by novices in the clinical setting.[18,19]

Mezirow[20] states that reflection is not simply stopping to think and problem solve or plan for future action based on what you already know; rather, it is critically questioning the content, process, and premise underlying the experience in an attempt to make meaning or better understand the experience. He contends that reflection is a higher-order, conscious thought process. He suggests that using all 3 elements of reflection (ie, content, process, and premise) will result in changes in behavior that reflect changes in underlying values, attitudes, and beliefs as trainees move toward becoming professionals.

Content reflection involves the analysis of the problem or situation itself.[20] Pediatricians are routinely required to analyze situations from the perspectives of all those involved in a child's care (eg, parents, nurses, third-party payers, etc). Mezirow[20] would term this "content reflection." They then look to determine what strategies they might choose to address the child's situation, which is what Mezirow terms "process reflection." Process reflection requires pediatricians or trainees to analyze the problem-solving strategies they chose, determine the efficacy of the strategies chosen, and perhaps explore what other strategies might be available. Finally, premise reflection is the most difficult of Mezirow's reflective constructs because it requires the pediatrician or trainee to question and analyze his or her own assumptions and the basis for the existence of the problem or the assumptions underlying the problem itself.[20] Assumptions are taken-for-granted beliefs, and as a result it is often difficult to recognize personal assumptions. In addition, premise reflection often requires the individual to question why a particular problem exists. For example, when a pediatrician begins to question why a particular child is not entitled to certain medical treatment or why certain disparities exist in health care, the pediatrician is using premise reflection. For trainees to begin to recognize their own assumptions and biases and how they might impact their clinical decision-making process, as well as their role in social advocacy, significant skill in premise reflection in required.

Atkins and Murphy[21] performed a meta-analysis of the many definitions of reflection present in the literature and noted that there are 3 common elements essential to this process. First is a trigger event, which is typically an awareness of some uncomfortable feelings and/or thoughts (ie, positive or negative). Second is a critical analysis of these feelings and thoughts and the experience itself. Third is the development of new perspectives as a result of this analysis. For trainees, this analysis could mean the development of new perspectives on their lived experiences, which may result in more informed clinical decisions.[21]

Finally, although Kolb[10] defines reflection as an element of the learning cycle, Brookfield[22] suggests that it is the link to critical thinking. Brookfield defines critical thinking as a direct outcome of the reflective process described by both Mezirow[20,23] and Schön.[13,24] Critical thinking is the result of trainees taking time to revisit their experiences and process them from a number of different perspectives before drawing conclusions. According to Brookfield, critical thinking is the trainee's ability to recognize assumptions, beliefs, and values that underlie their decision-making processes as they solve problems, anticipate outcomes, and justify their actions.[22] Critical thinking uses the analytic process of reflection to extract deeper meaning from experiences.

IMPORTANCE IN CLINICAL PRACTICE

Schön[13] asserted that curricula in professional programs often favor technical rationalism (ie, knowledge and skills) over problem solving and professional development. He believed that reflective thinking is critical to problem solving and professional development. Making the reflective process explicit enables the expert pediatrician, both generalists and subspecialists, to teach the novice to reframe problems and view them from multiple perspectives. It encourages both the expert and novice to process ambiguity and not foreclose analysis by drawing conclusions and making decisions too quickly without fully exploring all options.

Reflection is particularly important in the field of medicine, in which development of a professional identity goes beyond technical knowledge and skill to more abstract constructs such as critical thinking and professional values, attitudes, and beliefs. Pediatricians use self-reflection, personal feelings, and intuition to inform the gathering, analysis, and interpretation of clinical data, which ultimately inform the clinical decision-making process.[25] Constitutive to this process is an element of questioning and self-critique. Self-assessment is critical to professional development, and it is through the reflective process that these self-assessment skills can be honed.[6] Self-critique enables trainees to recognize the limits of their own knowledge, which facilitates additional exploration. It is this ongoing critique that leads to continuous improvement in practice and encourages a quest for lifelong learning. By engaging in the reflective process pediatric residents can achieve many of the established ACGME competencies including quality patient care, medical knowledge, practice-based learning and improvement, communication skills, and professionalism.

Through the reflective- and critical-thinking processes described by Schön, Mezirow, and Brookfield, pediatricians and trainees can begin to recognize their own values, beliefs, attitudes, and assumptions; how they might differ from those of their patients and families; and how each might not only have an impact on the clinical decision-making process but also on how closely the patient and family might adhere to the pediatrician's advice/recommendation.

In addition, evidence-based practice has become integral to contemporary pediatric care. Reflective practitioners recognize gaps in their knowledge; they recognize when they are not in sync with the values and beliefs of their patients/families; and they recognize when their current strategies need to be changed. As a result, they continually seek to update their knowledge and skills.[6] Yet, the research most commonly seen in the medical literature is of a quantitative nature. It presents outcomes, efficacy, and cost-containment strategies; it represents standardization, generalities, and universalisms. What is missing from this perspective is context, people, and personal experiences.[26–28] Having knowledge of the efficacy of a given treatment, along with the validity of the research presented, cannot sufficiently capture the complexities of each plan of care. The reflective process with its concomitant element of critical questioning encourages novices and experts to contextualize the evidence and understand the situation from the view of various stakeholders (eg, child, parent, sibling, teacher, insurance provider, etc). Miller and Crabtree[25] liken good evidence to a DNA double helix, with 1 strand being that of measurement, efficacy, and standardization and the second being that of meaning, context, and individuality. The reflective element provides the pediatrician with the second strand of this double helix. By considering these perspectives, the reflective practitioner is better prepared to arrive at some common ground in establishing an effective plan of care, one that achieves greater "buy in" from all stakeholders.

ASSESSING COMPETENCE

The Why

Journal writing has been used to promote reflection among trainees.[2,14,18,29–37] However, evidence shows that journaling does not necessarily ensure that trainees will use the reflective process in practice. Rather, some may simply describe their experiences and do not take the critical step toward analysis as some have proposed.[21,38–40] Without a mechanism to assess whether trainees are truly reflecting, the medical educator has no way of knowing whether trainees are competent in using reflection to develop deeper meaning and inform their practice. As Pee et al[2] suggest, in keeping with the move toward evidence-based practice, assessment of the efficacy of this strategy in promoting reflection is essential.

Assessment, however, is controversial.[29,38,41,42] Although placing judgment on what trainees write in journals could potentially impact their writing, one cannot effectively determine if a trainee has gained the skills necessary to become a reflective practitioner without a mechanism of assessment. To mitigate these obstacles, Bourner[41] proposed separating content and process in the assessment of journal writing. By solely assessing the process of reflection, competence can be determined without placing judgment on the subject of the reflection. In addition, while assessment allows the medical educator to provide feedback to trainees on their learning, it also provides feedback to medical educators about the efficacy of their teaching strategies. The literature reports on a variety of assessment mechanisms that enable educators to assess the reflective process without making a judgment on the content.[2,33,35–37,40,43]

The How

Reflective writing has been evaluated both qualitatively and quantitatively and has been shown to be an effective means of facilitating the reflective process.[1,18,33,35–37,43–46] To assess both the depth and breadth of reflection evident, it is helpful to use the elements of reflection as defined by Mezirow and Schön vis-à-vis Bloom's[47] cognitive processes (see Appendix).[33,35–37,43,48]

By looking for evidence of each of the elements proposed by Mezirow and Schön (ie, reflection-in-action, reflection-on-action, reflection-for-action, content reflection, process reflection, and premise reflection) in the reflective thought processes of trainees, medical educators can determine if trainees are using all elements of the reflective process effectively in exploring and critically analyzing the depth and breadth of each clinical problem. Perhaps the trainees are beginning to analyze the problem, but are they effectively considering all perspectives, or have they fully synthesized the information obtained? Perhaps they know of a strategy to use in approaching a patient problem, but have they explored other options? Perhaps they are beginning to

recognize their own assumptions, but do they recognize the impact of these assumptions on their decision-making process? By looking for evidence of each of the elements of the reflective process, the medical educator can better determine what is missing in the reflective- and critical-thinking processes of their trainees. By recognizing which elements of reflective thought are missing, pediatrician-educators are better equipped to facilitate the higher-order thinking processes that are essential to effective clinical decision-making in their trainees.

FACILITATING THE PROCESS

Questions

Questions encourage critical thinking. They promote self-evaluation, consideration of alternative perspectives, consideration of alternative solutions, and exposure of ingrained, taken-for-granted assumptions. Good questions promote higher-order thinking. They not only facilitate a more in-depth analysis of the situation from multiple perspectives, but they also encourage synthesis of these different viewpoints. Questioning not only enables the individual to evaluate what is really happening in a given situation but also his or her perceived role in that situation. The keys to good questioning are to (1) establish a comfortable learning climate, (2) recognize that questioning is an art that needs to be practiced, and (3) understand and apply Bloom's cognitive taxonomy to improve the trainees' depth of processing. Questions are most effective if they stimulate the trainee to use higher cognitive thinking (ie, synthesis and evaluation) rather than just recall. Good questions encourage trainees to use the breadth of reflective elements to fully explore the situation (ie, to facilitate questioning of the content, process, and premise underlying the situation). In addition, pediatricians who are effective facilitators of the reflective process will encourage trainees or novices to reflect-in-action, reflect-on-action, and reflect-for-action. It is through this higher-order reflective process that critical-thinking skills are developed. Sample questions that facilitate both the depth and breadth of the reflective process are provided in the Appendix. The authors believe that questioning skills can be taught in faculty-development workshops, enabling faculty to understand the theory and practical application of the questioning process.

Although questioning is at the heart of the reflective process, different strategies are available for the medical educator who is using the questioning process to facilitate reflection. Individuals can engage in the reflective process in writing or verbally and individually or with others.

Written Reflection

Journal writing is a mechanism for individuals to describe their experiences and begin to use the reflective- and analytic- or critical-thinking processes for learning.* Journal writing encourages trainees to process critical incidents after they have occurred. After seeing a very preterm infant in the neonatal intensive care unit, 1 third-year student wrote about how he questioned the use of limited resources to help an infant with a probable compromised outcome. A shared reflection of this nature can prompt an important discussion about how personal biases can impact the clinical decision-making process. This type of discussion might not otherwise take place in a typical pediatric clerkship.

However, without guidance, journals often become diaries that simply contain facts rather than analytic tools for learning. Trainees may use their journals to record the events of the day rather than to analyze their experiences to construct deeper meaning from these events. Yet, it is this analytic process that is closely linked to the development of the critical-thinking skills that are essential to effective clinical decision-making. For many, reflection and journal writing do not come naturally, and facilitation is essential. Some even struggle with how to begin their journaling process. To assist them, medical educators can pose reflective questions for trainees to ponder (such as those listed in the Appendix). Responding to journals by using the questioning process can further facilitate this process.

Trainees often have mixed opinions about journal writing. Some find the process very effective in helping them to delve into their experiences, whereas others consider it time consuming and tedious and feel that it has no relevance. However, there are definite benefits to maintaining a reflective journal.[29,31] It is a record over time, which allows the writer to revisit not only experiences but his or her reflections on those experiences. It becomes a recursive process that allows for deeper learning each time it is revisited and explored. Nonetheless, it can be time consuming. Alternatively, other less time-consuming forms of written reflection such as summative essays, critical incidents, and structured questions have also been used successfully.[2,22,46,49]

Written forms of reflection are performed most often in isolation; this can be problematic, because the writer processes the experience strictly from his or her own perspective. Although a more experienced reflector will consider multiple perspectives in the analytic process, it is often difficult to question your own thought processes, recognize your own assumptions, or pose alternative solutions without prompting. Thus, interactive journals have been advocated in the literature. The role of the journal reader is to pose questions to the writer and act as a "critical other" or "devil's advocate." The reader's role is not to give advice but rather to pose questions to extend the writer's thought processes, encouraging broader and higher-order critical thinking. By posing questions (using the theories of Mezirow, Schön, and Bloom), the reader can facilitate the depth and breadth of reflection noted above.

Verbal Reflection

An alternative to written reflections is the use of verbal reflective techniques such as reflective questions, reflective dialogue, after-action reviews, and action learning sets.[20,50–52] Each of these techniques

* Refs. 2, 17, 18, 20, 29, 31, 36, 39, 43, and 45.

uses dialogue to facilitate cycles of reflection and action. The reflective component encourages each individual to share thoughts, feelings, and reactions, as well as an analysis of his or her experience. The role of the facilitator or other group members is to pose questions that encourage the individual to think more broadly and more deeply about his or her experience. The challenge of the facilitator or group is to encourage each other to think critically, uncover taken-for-granted assumptions, consider multiple perspectives, and explore multiple strategies before coming to a conclusion. The conclusion reached by the individual, which is based on a complex analysis of his or her experience, then becomes the basis for future action. This is an iterative cycle of reflection and action, with members of the group supporting each other in developing the complex critical-thinking skills essential to quality medical practice. Again, this can only happen in a safe learning environment established by those in charge.

FUTURE IMPLICATIONS

Although experience is at the core of learning in medical education, reflection is integral to deeper learning from experience. Reflection is more than just stopping to think and act based on what we already know; it requires pediatricians and trainees to view situations/problems from many perspectives. Reflection can occur in isolation or with others and in writing or verbally. Viewing situations from multiple perspectives becomes the basis for critical thinking. Pediatricians who are skillful questioners can facilitate the reflective process in others. Skillful reflectors are critical thinkers, and critical thinking is the basis for effective clinical decision-making, which is at the heart of quality pediatric practice. The skill of reflection is not innate; it is learned over time and with practice.

Here we have identified strengths and gaps in teaching and learning the reflective process. It is evident from this review that the reflective process is of critical importance for pediatricians to be able to make informed evidence-based decisions in a client-centered treatment milieu. Incorporating the reflective process may enable trainees to more effectively attain those competencies that the ACGME considers essential to quality care such as doctor-patient interaction and lifelong learning. However, reflection is an analytic skill that must be mastered as well. Toward that end, our recommendations are actually challenges that need to be met both head-on and collaboratively.

To begin, we propose that the reflective process be incorporated into the continuum of medical education, from undergraduate through continuing medical education. The curriculum should include the theoretical foundations of the process and its practical application in the clinical setting. Using clinical cases enhances relevance to trainees and will serve to make the process both authentic and of interest to medical students, residents, and physicians alike. In addition, the development of effective questioning skills is essential for facilitating the reflective process both in writing and verbally. However, an assumption being made is that faculty members understand these issues and can teach them effectively. If knowledgeable faculty members are not available, identifying resources on academic campuses such as schools of education, organizational development, or human resource development would be essential for facilitating effective teaching and learning of this content. Although introducing reflective practice into medical school education is a start, raising awareness at the residency and clerkship levels would further reinforce the centrality of this skill in effective clinical decision-making and quality patient care.

Finally, although much is being written about reflection and its importance in the learning process, what is yet to be fully explored is the impact of reflective practice on clinical practice. Additional research by practitioners who are competent in the reflective process and can both facilitate and assess excellence in practice is needed to determine the impact of this process on practice.

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APPENDIX. Reflective Questions

	Reflective Element	Typical Questions/Requirements
Time dependent: Schön[13,24]; Killion and Todnem[12]	Reflection-in-action occurs while the novice is in the midst of an activity	Is this what you want to happen now? How might you change what you are doing to make it more effective? Are you achieving your desired outcome?
	Reflection-on-action occurs after the novice has completed the action/encounter	What happened? How did you feel about your interaction? What was the impact of your actions on the situation? Was the outcome what you wanted? Why/why not?
	Reflection-for-action occurs when the novice begins to anticipate situations before being faced with them and/or begins to plan for the future to improve the present situation/outcome	What might you do differently if you were faced with that situation again? What might you do next time to improve the outcome? What would you do if. . . ? What plan can you put in place so that it does not happen again?
Content dependent: Mezirow[20]; Cranton[53]	Content reflection occurs when the novice attempts to explore the problem to better understand it	Typically answers "what" questions: What is the real problem here? What do you know about the problem (describe the problem)? What do you know about yourself in this situation? What do you know about others in the situation? What would you like to change about this situation?
	Process reflection occurs when the novice begins to explore the strategies and/or processes involved in an experience or problem-solving situation; the novice might begin to explore other possible strategies	Typically answers "how" questions: How do you learn best? How did you solve the problem? How effective was the solution you chose? How else could you have solved this problem? How else can you look at the problem? How did your actions influence the outcome? How did you decide you needed to do something?

APPENDIX. Continued

	Reflective Element	Typical Questions/Requirements
	Premise reflection occurs when the novice recognizes and begins to explore or critique his/her own assumptions, values, beliefs, and biases; the novice may begin to seek multiple perspectives and alternative explanations	Typically answers "why" questions: Why do you think you reacted so strongly? What made you think that (ie, what assumptions did you make about this situation)?
Bloom's taxonomy: Bloom[47]	Level I: knowledge and comprehension—the novice might describe the experience for the purpose of understanding or making meaning, explain what happened, describe his/her thoughts, feelings, and/or actions, and state the results of his/her actions; the more skillful reflector would begin to articulate gaps in knowledge (ie, surprise, confusion, etc)	Describe your encounter with the last patient. Describe the etiology of the disorder. Interpret the laboratory findings. Organize your presentation for rounds. Explain your rationale for the plan of care. Describe a typical presentation of an individual with this disorder. Describe your feelings about this situation.
	Level II: analysis and application—the novice may attempt to deconstruct the experience, analyze what happened, differentiate between perceptions, feelings, thoughts, facts, etc, examine alternative explanations, explore something about the experience that stands out as interesting, different, confusing, or unique, raise questions, and explore why this particular experience stands out for him/her; the more skillful reflector analyzes the experience from multiple perspectives beyond the self	What else might be affecting this situation? What have you ruled out in this situation and why? What might the parents be thinking? Why are you feeling that way toward that particular patient? How might your feelings be affecting the situation?
	Level III: synthesis and evaluation—the novice may begin to draw conclusions based on an analysis of the experience, hypothesize different strategies for the future, recognize learning beyond the description of the experience, and articulate personal learning from the experience; the more skillful reflector would base conclusions on synthesis of multiple perspectives	What conclusions might you draw from having analyzed this situation? Based on your analysis, what is the differential diagnosis for this patient? Predict the outcomes of your plan of care. What is the prognosis for this patient?