STRUCTURES FOR FACILITATING STUDENT REFLECTION

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Abstract. The goal of this article is to describe a continuum of levels of reflection. It briefly focuses on Deanna Kuhn’s research into the development of scientific thinking and Robert Kegan’s Object-Subject Theory of Development applied to the problems of inspiring students to be able to reflect. Assignments for improving students’ ability to reflect are presented. Examples of student reflections are provided. These may be especially helpful for faculty in a wide range of courses.

Keywords: cognitive development, metacognition, reflection, self-authorship, transformational learning

Faculty are being called upon by many to encourage students to reflect. It is important to note that though all these researchers use the term “reflection,” they are actually referring to quite different kinds of reflection (Peltier, Hay, and Drago 2005). In this literature, one can note at least four different levels of reflection along a depth continuum: Content-Based Reflection (Hatcher and Bringle 1997), Metacognitive Reflection (Bransford, Brown, and Cocking 2000; Donovan, Bransford, and Pellegrino 1999; Felton, Gilchrist, and Darby 2006; May and Etkina 2002; Zimmerman 2002), “Self-Authorship” Reflection (Baxter Magolda 2001; Kegan 1994), and Transformative (Hatcher, Bringle, and Muthiah 2004; Kiely 2005; Mezirow 1997) or Intensive Reflection (Peltier, Hay, and Drago 2005).

Over the course of thirty years of trying to teach these kinds of reflection in my psychology courses, I have found developmental theories helpful, and, based on these theories, have created a number of structures and frameworks to help guide students. I hope to identify assignments and activities that help undergraduates reflect on their course work. I describe some of the basic structures, or “scaffolding” (Wood, Bruner, and Ross 1976; Vygotsky 1978), that I have used to set the stage for various levels of reflection. To this end, this article introduces research and theoretical frameworks that have helped me design assignments that have led to more productive, reflective papers. It also includes examples of student responses to these assignments from several of my courses.

Some of these structures are easily applied in any discipline. They are especially useful for getting students to reflect on course concepts enough to apply them to their lives. This is one of the best ways to deepen student learning (Bransford, Brown, and Cocking 2000; Donovan, Bransford, and Pellegrino 1999; Zull 2002). This is called the self-reference effect and has consistently been shown to improve memory and enhance learning (Rogers, Kuiper, and Kirker 1977; Symons and Johnson 1997). Structures for more personal reflection, which may be appropriate for courses or exercises that confront students with emotionally dissonant experiences (e.g., study abroad in third-world countries, anthropological field studies, personal explorations in advanced psychology courses) are described. A structure for transformational reflection used by one of my anthropology colleagues is presented.

Content-Based Reflection

Hatcher and Bringle (1997) offer a definition of content-based reflection from
the service-learning perspective: “the intentional consideration of an experience in the light of particular learning objectives” (153). Though this would seem to be quite easy, I found that, as Hatcher and Bringle (1997) and others (Ash, Clayton, and Atkinson 2005, for example) suggest, students needed quite a bit of structure, feedback, and opportunity to rewrite.

I gave students the opportunity to tutor in a local elementary school. To receive credit, they wrote reflective notes about their tutoring session and related their experience to course concepts. This was in a general psychology course (described earlier [Grossman 1994]) covering topics like conditioning, human memory, emotion, and basic brain function. From my perspective there were numerous concepts each week that could be applied to a tutoring session. To my surprise, the first reflections were not really reflections at all. For example, a typical student might write:

The teacher pointed out John and told him to go with me to work on his reading and spelling homework. We went down the hall to a tutoring room and he did his homework. I couldn’t find any course concept that applied to this session. It was fun for me and he seemed to enjoy it so I look forward to helping him again next Tuesday.

This student’s empty conclusion that “he did his homework” had no evidence or observations to support it. I knew the teacher was assigning students for tutoring whom she could not get to do homework. Therefore, I was quite sure that this tutor had done something psychologically important. Unfortunately, this was apparently hidden from my student (Grossman 2005).

Searching the cognitive development literature provided some insight into this problem. The work of Deanna Kuhn (1989) was most the most helpful. Her research suggests that even college students have trouble distinguishing between empirical evidence and mere inference or theory. My student was writing about his inferences and saw no reason to provide any of the evidence on which these conclusions were based. Two other intellectual development psychologists, King and Kitchener (1994), describe an early position of epistemological development, a “pre-reflective” phase, in which individuals do not acknowledge that uncertain conclusions existed and required reflection. These students, therefore, saw no reason to give evidence for their conclusions, as what they saw was “true” to them and needed no further justification. As the above example illustrates, students often believe that their experiences can be matter-of-factly stated, and that there is no need to explain or support their views with evidence or description.

As a faculty member giving an assignment to write a reflective paper, I was assuming that my students were able to tell the difference between inference and evidence. This student showed no sign that he saw the difference.

Most of us want to guide students to a reflective practice that is more meaningful than my student’s was. From a psychological perspective, we need to provide what some call scaffolding (Wood, Bruner, and Ross 1976; Vygotsky 1978). These are structures and activities that students require to move from their present developmental level to their optimum level. The role of faculty is to temporarily and dynamically assist students in achieving this goal. The question, then, is what kinds of structures help students get to the intellectual levels necessary for serious reflection?

Content-Based Scaffolding

Because these studies suggest that students did not naturally cite the evidence upon which they based their conclusions, it was important to develop some scaffolding that encouraged them to focus on evidence. King and Kitchener (1994) suggest that these students were looking to authority figures for the “truth.” Because of this, I thought this student might heed the direct instruction from me to provide evidence even if he did not fully understand the reason for it. In addition, I thought it might be useful to provide him with a definition of evidence in his specific situation, so that he could better understand this new objective. For my beginning students, this involved providing three structures: personal experience described in sensory details, directly quoted definitions of course concepts, and point-for-point comparisons between experience and the concepts.

Sensory Details

I wanted to teach students to report observations of their experience in great detail. My beginning students did not see the difference between evidence and inference, so they gave me their conclusions and did not see the need to include any of the empirical evidence that led them to their inferences. They could, however, understand the instruction to describe their experience in sensory terms (what they see, hear, touch, taste, and smell). In tutoring sessions, for example, if asked, they could usually remember direct quotes of what they said to their tutee and what was said back. Most of them discovered that, once they began this process, their memory for details was much better than they expected. Some students mentioned that this was similar to the instructions they were given in writing courses, i.e., to show what they were writing about rather than just to tell what they were writing about.

When given the opportunity to revise his assignment and to describe tutoring using more sensory terms, this student wrote:

When I opened the book to the assigned page, I said, “John, would you read this sentence to me?” John just sat there and kind of shyly hid his face in his hands. I then asked him, “What if I start out reading this sentence and you try to finish it? If you do that I will do the next one.” I read the first half of a sentence, “Sally said. . . .”

To my surprise, John immediately read, “come here Spot.”

I then said, “Good Job! You can really do stuff, can’t you?!” Alternating sentences, we got through the whole assignment so quickly that we also had time to practice his spelling words.

Thus, the type of scaffolding discussed above greatly helped this student. With its help, he could now judge whether he reported the things he actually saw or heard. Also, we both could judge whether he reported these in factual or sensory terms.

An unexpected by-product emerged in this process; students who described their experience in rich detail were ready to engage in useful dialogue on course concepts. For example, when I asked this student why he thought the shared reading worked when his first request did not, he said, “Well, it must have made it more enjoyable for John.” I could then ask if that
reminded him of anything from lecture on Monday and he quickly said, “That seems like it might be the concept of reinforcement because that is like a reward. Negative reinforcement might also apply because my first question might have put pressure on him, which would inhibit his response.”

Quoted Definitions
The scaffolding was helpful, but was not enough to encourage accurate application of course concepts. The second structure involved prompting students to write directly quoted concept definitions from the text or lecture. Without exact quoting, the students almost always left out the key phrases in the definition and, therefore, misapplied concepts. For example, a typical student might remember reinforcement in terms of rewards and negative reinforcement as punishment. It was only when he found the exact definitions that he recognized his error. He wrote:

My introductory text would define positive reinforcement as “A response is strengthened by the subsequent presentation of a stimulus” (Passer and Smith 2001, 242). The other definition; “A response is strengthened by the subsequent removal or avoidance of a stimulus . . . called a negative reinforcement.” (243)

Point-for-Point Comparisons
A third structure this student needed in order to do effective content-based reflection was to make a point-by-point comparison between the directly quoted concept definitions and the detailed descriptions of the students’ experiences. It was only in this step that students were able to see precisely how to relate the concept to their experience. For example, this student wrote:

My saying, “Good Job! You can really do this stuff can’t you!” was an example of positive reinforcement. He continued to be willing to read the next line after I read.

I’m not sure there is anything I did after his response that removed a stimulus, so there isn’t really an example of negative reinforcement. If after he stumbled on a hard word I pronounced the word and said, “If you have any trouble I’ll help with the hard words,” that would have removed the pressure and would have been a good example of using negative reinforcement.

Is there any term for putting pressure on before the response? That was what my first question seemed to have done.”

This student was clearly beginning to reflect on concepts beyond the basic definitions from the text. The revision of his first report led to a good discussion of how an aversive stimulus could lead to an inhibition of a response due to past conditioning, and how real human learning is often much more complex than our theory. It also helped him begin asking good questions about related concepts that we had not discussed.

These three structures are similar in purpose to those proposed by Hatcher and Bringle, when they describe double-entry and three-part journals (1997), and similar to Ash and her colleagues’ three stages of “articulated learning” (2005). My assignments had the advantage of making expectations even more explicit than they are in the general guidelines that these authors offer.

Metacognitive Reflection
The next level of reflection might be called Metacognitive Reflection. A number of authors call for more focus on asking students to report thoughts about their thinking (Bransford, Brown, and Cocking 2000; Donovan, Bransford, and Pellegrino 1999, 13). In an article titled “Becoming a Self-Regulated Learner” (2002), Barry Zimmerman says, “Metacognition is defined as the awareness of and knowledge about one’s own thinking” (65). Bransford and his colleagues point out the importance of this kind of reflection for developing “adaptive expertise” in applying knowledge to solving new ill-structured problems (2000). In reviewing research on what made “experts” different from “novices,” his group concludes that experts “monitored their own understanding carefully” and this was important in their ability to adapt their knowledge to such problems (18). Felton, Gilchrist, and Darby (2006) recommend that it is also important to encourage students to reflect on their emotions during service-learning. They suggest “that service-learning researchers and teachers explicitly consider the roles emotion may play throughout the reflective learning process” (42).

When I first began encouraging students to reflect on their thoughts and feelings, I would ask them, “Do you have thoughts?” Most would say, “Yes.” However, when I asked them, “How do you tell when you are thinking? What form do your thoughts take? How are they different from your feelings?” almost no one could tell me a single thing. I was again puzzled as to why these students could not easily report on their inner experience.

Robert Kegan’s research suggests this process is more complex than one might expect (1994). His research points out that students need to alter the way they organize their minds if they are to be able to report accurately on their thoughts and problem-solving processes. If this is not achieved, students are likely to report, unconsciously, what they perceive others want them to report rather than what they actually think. As Kegan describes, when our minds are not correctly organized, we are likely to experience “what we should feel is what we do feel” (275; emphasis in original).

In Kegan’s view, reflecting on one’s thoughts and feelings is not a simple process of learning to make new distinctions; it requires a transformation in the way the mind is organized. It is not simply “a matter of getting students merely to identify . . . a distinction between two parts that already exist, but a matter of fostering a qualitative evolution of mind that actually creates the distinction” (275). As Kegan says, “Reflective thinking requires a mental ‘place’ to stand apart from, or outside of, a durably created idea, thought, fact, or description” (27). Asking a student to reflect on her or his thoughts or feelings while working to solve a Rubik’s Cube, for example, is fruitless if she or he has not yet developed this mental place in which to stand apart and reflect. That student is so completely enmeshed in trying out different strategies (thoughts) and in experiencing the excitement (feelings) of achieving a line or side of one color that she or he is unable to stand apart from what went through her or his mind during the process. Only more mature problem solvers have developed a mental place that allows their inner experience to be the object of their observation.

It was clear to me that when I gave my first reflective assignments I was assuming my students’ thoughts and feelings were objects that were available for reflection. Kegan’s model suggests that my students would need a lot of help, support, and challenging encouragement to
develop this reflective capacity that I was assuming they already had. I had been puzzled for some time about why metacognitive and other levels of reflection were so hard for people to learn. Robert Kegan’s theory of development explained some of this for me.

Kegan’s View of the Kind of Help Students Need

Kegan suggests that it is only through a gradual process of support and challenge that students will move into this new way of processing their thoughts. To give an example of how this is done he describes a course that William Perry taught to help students bridge between these states of mind and create a mental place in which to stand apart.

Perry understood that if developmental education is collaboratively building a “consciousness bridge,” then the bridge builder must have an equal respect for both ends, creating a firm foundation on both sides of the chasm students will traverse. Firmly anchoring the bridge on one end by welcoming rather than disdaining “the way they understand,” as Kierkegaard put it, Perry then invited his students to join him in constructing what they would only gradually come to see was a bridge they could choose to walk out on. (Kegan 1994, 278–79)

I have found two conceptual models and several intermediate steps that helped students build such a bridge. Both these models involved teaching students about their minds. The first was a description of mental contents simplified for pedagogical purposes. The second model was a more dynamic one from cognitive therapy. This model emphasized interactions between the mental contents described in the first model.

THE FIRST MODEL OF THE MIND TAKES INTO ACCOUNT PERCEPTIONS (WHICH, IN KEGAN’S MODEL, ALL COLLEGE STUDENTS COULD REFLECT UPON), BUT ALSO ASKS STUDENTS TO IDENTIFY THOUGHTS AND FEELINGS IN OTHERS. IT THEN CHALLENGES STUDENTS TO APPLY THIS METHOD TO THEMSELVES.

A Four-Step Bridge for Metacognition

Step One: A descriptive model of the mind

The first model of the mind takes in account perceptions (which, in Kegan’s model, all college students could reflect upon), but also asks students to identify thoughts and feelings in others. It then challenges students to apply this method to themselves. In my abnormal psychology course, the description of mental contents was embodied in a structure we called a mental status exam (MSE). Our MSE was an outline based on a typical psychiatric diagnostic exam but used for classifying various symptoms in a case study. The categories of this outline were perceptions, thought, affect (feelings or emotions), and actions, specifically expressive behavior.

To teach this, I would begin by asking students about their thoughts. When I got a little response, I would then ask, “How many of you hear yourselves talking inside your head?” Most acknowledged that they did this. I would point out that this was the form that most of our thinking takes, that people will often talk aloud to themselves until it becomes embarrassing. This method is so useful and important to us that we still talk to ourselves when we are thinking, just without making any sound (Vygotsky 1978). I would then mention the phenomenon of thinking in pictures, because many people experience this form of thought. I would ask how many of them dreamed in pictures and most would say that they did. Often, a few students, usually in natural sciences, said they thought in pictures when solving physics and chemistry problems. Others sometimes said that they created mental pictures of maps in their minds while they were driving. Once in a while I would have musicians say they were aware that they created their own music by using a musical form of thought (Gardner 1983). A few potter and sculptors pointed out that they did some of their creative thinking in the kinesthetic or tactile mode.

Next, I would ask how they told the difference between their thoughts and feelings. This was even harder for students. Almost none of them would notice the bodily sensations that usually accompany feelings. When we talked about the autonomic nervous system, most of them remembered being taught in general psychology courses that this system was involved in emotion, but few connected it to their daily experience. Most feelings have a bodily component—such as the heart beating faster or harder, the stomach dropping or causing nausea, the mouth feeling dry, breathing patterns changing, the sensation of muscles tightening, and so forth—that accompanies actions of the autonomic nervous system. I would also talk about “action urges” being involved in emotion. Many of us experience these in bodily as well as pictorial and verbal forms (e.g., “I felt like punching my roommate”). Finally, I would explain that actions are things others could see us do.

Step Two: Applying the model to a case

Once students had a general introduction to this model, we would apply it to a case study. We first took a section from Joanne Greenberg’s 1964 novel, I Never Promised You a Rose Garden. I would put students in cooperative learning groups and have them analyze the selection for the unusual perceptions, thoughts, feelings, and actions the author described. Thus, students would first use the model to analyze written text (see Grossman 2007). This would allow students to learn the categories of the model by analyzing something that was distant from them. They were reporting what they perceived, which Kegan predicts is well within their capacity for reflection, even if they are in the earlier levels of cognitive development.

Step Three: Applying to others

I would next assign students an “application paper.” In these papers, I would
encourage students to apply the mind model concepts to some experience in their life. Students would often describe an encounter with a person who showed some symptom of mental illness (a street person talking to her- or himself) or a character from a television show, movie, or novel. Students often took advantage of this assignment to understand better an encounter with a relative or friend who had had an emotionally disturbing experience.

The following student uses this model to analyze symptoms of a friend who experienced unusual feelings, thoughts, and actions on a spring break trip:

M—— showed symptoms of inappropriate expressive behavior multiple times that night. . . . When she splashed cold water on her face six or seven times repetitively, she showed odd expressive behavior. . . . Her foot tapping on the ground and her knee rising and dropping could also be evidence for inappropriate expressive behavior. She continued the movement again and again, and each time moved faster and faster.

The word affect is described by the Mental Status Exam as, “The mood, feelings, or emotional tone of the person” (Grossman, personal communication). M—— . . . seemed to be anxious and upset, and claimed to still be hot, thirsty, and not able to breathe. As time passed, one can certainly see her anxiety affect when she says that she cannot breathe while holding her chest. She also mentions that she “can’t be here.” Although, she does not elaborate on her feelings, or explain then specifically, one is able to conclude that her emotional tone and mood is one of anxiety. . . .

M—— shows abnormal thought. . . . Her claims that she could not breathe are symptoms of abnormal thought content [or] false beliefs [or both]. Her heart may have been pounding, but she could certainly still breathe. Her face was not blue and I witnessed her inhale and exhale audibly, but functionally. Her claim that she could not breathe was a false belief because she was in fact breathing, even if she felt sure that she could not. (Riser 2003)

In this report, the student was able to describe in sensory detail the action (expressive behavior), feelings (mood or affect), and thoughts (thought content) of her friend. She was able to apply the model accurately by seeing the concepts in another person’s behavior. Even with negative and positive models and advice from undergraduate teaching assistants, however, only one-half to three-quarters of my students were able to accomplish this on the first assignment. It often took extensive feedback and several rewritings for some students to reach this level of observation. This illustrates the importance of iterations to help students make progress in deepening their reflections (Ash, Clayton, and Atkinson 2005; Hatcher and Bringle 1997).

Step Four: Metacognition—reflecting on one’s thoughts and feelings

In the instructions for the next reports, students were encouraged to identify perceptions, thoughts, feelings, and actions in themselves. By this time in the process, students are often able to give vivid descriptions of their thoughts, feelings, and actions. For example, the following student from a sports psychology class is able to describe his own anxiety in great detail:

I envisioned myself standing on the track before the race—the moment in track I hated the most. A feeling of nervousness would wash over my body like a cold shower. I would get goose bumps on my arms and legs and my stomach felt like it would fall through my seat to the floor. . . . I started thinking about the meet again. But I took the worrying to a whole new level. . . . “This could be Doug and Matt’s last meet. . . . I can’t . . . I won’t let them down.” I kept telling myself that if I messed up Matt and Doug were done. They’ve worked hard for four years and they deserve to go out on top.” . . . The whole time I was worrying myself sick. (Bezenek 2006)

Notice that this student reports these thoughts and feelings almost as if they are happening to him. He senses very little power to control them and sees very little interrelation between his intense worrying and his thinking about Doug and Matt’s last race. It was often not until the next level of reflection for students like this that one would able to see more about how their thoughts and feelings interacted.

It is important to note that students must reach this level of understanding to be able to report on their thoughts while solving problems. This is especially important in mathematics, physics, and chemistry, where faculty are encouraged to have students reflect on the problem-solving processes they are using (Bransford, Brown, and Cocking 2000). When students are asked to talk aloud to themselves to make their thought process clear, they must be able to give themselves this distance from their own thoughts. This is important for both uncovering preconceptions (misconceptions) and developing metacognitive skills.

My experience suggests that it might be helpful for faculty in these disciplines to take a few minutes to present a brief model of the mind to help students become aware of their “self talk” as well as their “mental pictures,” and to point out how those are different from their perceptions and actions. A simple stick figure example that could be presented in ten minutes is in our article on group therapy (Grossman and Freet 1987). In addition, faculty should be patient and expect that students will take some time to develop the capacity to reflect effectively on their problem-solving processes. If Kegan (1994) is correct, students will often unconsciously report what they “should think” rather than what they are actually thinking.

This simple four-concept model of the mind was a useful bridge to helping my students to begin to recognize the operation of their minds. This descriptive model is one of the foundation skills I now teach each of my courses. Assignments to reflect go much better if I spend time providing a framework that describes the contents of adequate reflection.

“Self-Authorship” Reflection

Kegan proposes that it is not until students reach a new “order of consciousness,” or “self-authorship” (which corresponds to the Contextually Relative Position in the Perry scheme [1970]), that they are truly able to reflect on their inner states. This is where inner states become observed objects rather than lived subjects. Kegan gives an example of a student moving from one order of consciousness to “self-authorship”:

Her discovery is not just that she herself has different ideas, but that she has been uncritically, unawarely identified with external sources of ideas (her husband, her church, and her culture). To be uncritically, unawarely identified with these external sources is to be unable to question, or weigh the validity of these ideas; it is to take them as The Truth . . . . It is not the same self now listening to its own drummer rather than stepping to the beat of another. This is a wholly different way of constituting what the self is, how it works, what it is most about. (Kegan 1994, 110; emphasis in original)
For my students to move to the next level of reflection, where they could get enough distance from their thoughts and feelings to see how the mental contents were dynamically interrelated, they would need a second, more sophisticated, model of the mind. This second model of the mind was one that emphasized understanding the effects the aspects of the mind described in the first model have on each other. It emphasized understanding the effects different thoughts about perceptions have on emotion and subsequent action. Students were aided in moving to this next level in both abnormal and sports psychology courses when I covered cognitive theory’s view of the mind (Beck et al. 1979; Burns 1999; Ellis and Harper 1975). The students learned how one’s exaggerated or irrational thoughts intensify one’s feelings of depression and anxiety.

In this model, they were taught that if someone saw a ‘C’ on an exam that was returned by their instructor, she or he could generate several different thoughts. If the thought she or he generated was something like, “I’m going to fail this course. I’ll never be able to get into medical school. My life dream is lost,” the student was likely to feel quite depressed. If, on the other hand, the student thought, “I passed, even though I did not study much!” she or he might feel quite relieved and even pleased with the outcome. Being able to separate the thoughts and feelings one had from the sensory input that generate them helps the process of reflection and aids the realization that there is often more than one possible interpretation of most experiences. Being able to see that different thoughts sometimes generates different feelings is also a crucial step in the reflective process. Some students are able to see how their thoughts about events often have more effect on them than the events themselves. An example of what a student is capable of after learning the more interactive cognitive therapy model is shown in an excerpt from this next student’s report:

This assignment was very informative for me because I was able to systematically see the monstrous cognitive distortions that I was making. I turned an academic struggle in one class into an event that signified my complete and utter worthlessness as a human being. I now recognize that most of my cognitions regarding this situation were not even close to accurate. For example, I immediately began blaming myself. I knew that if the person had found a proficient, more intelligent study buddy they would have done much better on the exam. I felt terrible. Blaming myself for another’s poor performance on a test is ridiculous. I did not take the test for them, nor did I make them come study with me. Considering it now, it was really not my fault at all. I found that through completing this assignment, I was able to “identify” all of the other faulty cognitions mentioned in here and reinterpret each event more realistically. This truly helped me get a better perspective of the situation and feel a great deal better about it. (Jacobson 2003)

He first described his sensations, thoughts, feelings, and actions in detail. Then he used the cognitive therapy model to gain enough distance from his feeling and thoughts to see their interaction. They have become mental “objects” that he can reflect on. He was able to see how responsible for some of his feelings, or, in Kegan’s terms, how he is a “self-author” of his feelings. The distance is so great that he is able to “re-author” his thoughts and change the way he feels about himself and this event. From Marcia Baxter Magolda’s definition of self-authoring, he is reframing his thinking and developing a new way of making meaning (1998, 2001).

**Transformative and Intensive Reflection**

Another level of reflection has been called transformative by some and intensive by others. Transformative reflection might involve an even deeper level of reflection. Transformative reflection was defined by Jack Mezirow as “The process of effecting change in frame or reference. . . Frames of reference are the structures of assumptions through which we understand our experiences” (1997). According to Richard Kiely (2005), “The ideal end result of transformational learning is that one is empowered by learning to be more socially responsible, self-directed, and less dependent on false assumptions” (7). Pettier, Hay, and Drago define Intensive Reflection as where the “learners become aware of why they think, perceive, or act as they do” (2005, 253).

At the end of my courses I assigned a paper in which I asked students to reflect over the whole term. In particular, I asked them to reread all their previous reflective reports and pick out the most important things they personally learned in the course. I pointed out that on the final exam I would test them for what I expected them to learn and that this reflection summary was an opportunity for them to get credit for what they thought was important. The only thing I graded was how well they gave detailed examples to illustrate their learning. With this assignment, a few of my students were able to move to a level of reflection that seemed to be above the metacognitive level, but I don’t know if it quite met the definition of a transformative reflection. For example, one student wrote:

I recently re-read my application report from the start of the quarter, in which I talked about the difference the detail oriented tools that I was given in this class made for me, both personally and academically. In the report, I talked about using the Mental Status Exam (MSE) as a way of working through and understanding my high school experiences with a friend who was dangerously suicidal and self-abusive. Using the MSE allowed me to break apart and examine in detail an experience that over time had become too big and consuming and frightening for words, allowing me to really look at her problems objectively for the first time. I realized, after writing the paper, that using the MSE had allowed me to look at her again as a human being, as more than a fearful, awful Thing from my past, an awful bundle of Problem. And I also realized how important it is in the mental health field to have tools that provide a more objective view of a person and the difficulties he or she is having in life—a tool that keeps you from becoming overwhelmed by your subjective responses, as I had become by mine to my friend. (Connors 2003)

In this case one can see that this student has gained a new point from which to view her mind. She appears to develop a deeper level of awareness than the student described as being metacognitive in that she seems to see her mind and our course concepts from a new perspective. First, she understood how she was emotionally engulfed by her friend’s suicidal episode and that by using an intellectual structure she could gain enough distance to see her friend as a person again. Second, in what seems like another step in abstraction, she can generalize this to the problem of subjectivity and objectivity in the whole field of abnormal psychology. She seems to see both the tools that she was taught
to use and her own mind in a newer and broader context.

This type of reflection would seem to be most applicable in courses and experiences where students come into contact with strong enough dissonances that they are prompted to examine their assumptions and perspectives (Kiely 2005). This transformational reflection is perhaps likely to be most useful in service-learning and anthropology courses, where students are involved in cross-societal class situations; experiences studying abroad, especially in third world nations; and advanced, clinically related psychology courses, where deeper self-reflection is required of students. More generally, it might be expected in any other course that deeply and effectively challenges students’ worldviews or definitions of themselves. For some, these courses might be in religious studies; for others, in political science—or even in the consideration of topics such as relativity or evolution in natural science courses.

In fact, my colleagues who encourage reflection in such courses all use a reflection structure that has an implicit model of the mind similar to the one I teach. For example, Kiran Cunningham (2007, personal communication) asks students to use what she calls a DIVE approach for their field notebooks. This acronym stands for Description, Interpretation, Validation, and Evaluation. It is based on the DIE exercise developed by Janet and Milton Bennett, with Kathryn Stillings (1977), where Description is similar to the perception aspect of the model of the mind and Interpretation corresponds to the thoughts. The Evaluation distinction asks that students separate their feelings about their experience from their descriptions and interpretations and, thus, corresponds with the affect part of the model I teach. Validation was a category that Cunningham added that involves checking one’s interpretation of events with others, preferably a member of the community the student is studying. According to her, this system points students toward the transformational kind of reflections described above.

**Conclusion**

In reading the literature on reflection, I found that though many researchers were using the same term, it had a wide range of meanings. This article took a look at four different levels of reflection in the context of the intellectual development research of Kuhn (1989), King and Kitchener (1994), Kegan (1994), and others. This research helped explain how and why it was so hard for students to do reflections. It also influenced the creation of structures used to encourage students to bridge the difficulties involved in developing effective reflections.

Structures began with guiding students in how to recognize the difference between evidence and inference for content-based reflections and led to models of the mind that were helpful in learning to do metacognitive, “self-authorship,” and transformational reflections. The content-based and metacognitive reflections were presented as potentially useful in a wide range of courses, even though deeper self-reflective levels were more likely to be applicable only for more personally intensive courses and experiences.

**REFERENCES**


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**THIS TYPE OF REFLECTION WOULD SEEM TO BE MOST APPLICABLE IN COURSES AND EXPERIENCES WHERE STUDENTS COME INTO CONTACT WITH STRONG ENOUGH DISSONANCES THAT THEY ARE PROMPTED TO EXAMINE THEIR ASSUMPTIONS AND PERSPECTIVES (KIELY 2005).**


