

Formative Assessment and Syntheses in Reflection Journals

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Abstract:

This study aimed to discern the impact of formative assessment upon students' ability to write deep journal reflections. Students in a first year education course were required to keep a reflective journal about their field experience observations and make theory connections. The professor and a peer wrote questions and prompts for students to write written responses to. While these prompts helped some students to write more deeply, the end of semester synthesis was an especially powerful tool for generating deep reflection.

Key Words:

reflective journals, formative assessment, deep learning, synthesis, scaffolding.

Introduction

Reflective journaling is a valued component of most teacher education programs and is increasingly used in other disciplines to help students reflect upon their learning. Researchers believe that reflection helps students to look critically at issues (Bain, Parker, Mills & Ballantine, 1999, 2002; Hatton & Smith, 1994; Jay & Johnson, 2002). However, these researchers also identified the challenge of helping students move beyond shallow descriptive writing to meaningful reflection. This practitioner-focused study aimed primarily to discern the impact of formative assessment upon students' ability to write deep reflections, and secondarily the impact of writing a synthesis of learning.

Theoretical framework

This research project was shaped by research on: 1) knowledge construction and meaning-making, 2) assessment of deep and surface learning, and 3) formative assessment and scaffolding to support deep reflection.

Knowledge construction and meaning-making orientations. Much of the literature in post-secondary education takes a constructivist view of learning which “focuses on the activities of the learner in making sense of the world” (Moon, 2008, p. 16). Moon, who writes about the importance of reflection in learning, rejects the brick wall notion that professors provide bricks of knowledge to learners, often preassembled according to their own view of the knowledge; rather than attending to the learners’ cognitive structures guide as they link new ideas with existing knowledge, what Piaget calls assimilation (1971). Moon distinguishes between external and internal experience; external experience includes new ideas a learner encounters while internal experience is prior knowledge and the related cognitive structure that helps the learner assimilate the new external experiences. For example, education students may learn about Erikson’s stages of development (external experience) and interpret this information in light of their prior observations of children (internal experiences) in field placements in schools.

Moon’s study was also influenced by research on student development by Perry (1970), Belenky, Clinchy, Goldberger and Tarule (1986) and Baxter Magolda (2007). These researchers have documented developmental shifts in the cognitive structure of university aged students who often move from a rather passive acceptance of the knowledge provided by authorities – what Baxter Magolda (2007) calls an external meaning-making orientation – to an internal meaning-making orientation. The latter describes how learners become more open and understanding of differences, learn to think for themselves, make deliberate decisions and take responsibility for their own learning (King, Baxter Magolda, Barber, Brown, and Lindsay, 2009). Journals may be regarded as a tool to prompt this development because students are encouraged to question their assumptions and apply learning to field experiences, particularly if they are encouraged to confront the conceptions of teaching developed through an “apprenticeship of observation” (Lortie, 1975) – their understanding of schools developed through observing their own teachers for many years. The epistemological sophistication of the learners may nevertheless influence their ability to reflect deeply; if knowledge is seen as absolute, then learners often use a surface approach to memorize and reproduce it, but if knowledge is seen as constructed, then learners may use deep learning to shape the knowledge into something that is personally meaningful.

Assessing deep and surface learning. Biggs (2006) writes about the concepts of deep and surface learning, which have parallels to Baxter Magolda’s (2007) external and internal meaning making orientations. While deep learners theorize and make connections between course concepts and prior knowledge, shallow learners are content to memorize with little integration of ideas. Biggs argues that while shallow learners are often able to perform successfully in assessments using memorization, the quality of their learning is inferior to deep learners who carefully synthesize ideas. He suggests that professors can help shallow learners by eschewing assessment tools that invite only memorization, instead engaging them in learning activities that require higher

level thinking. “Good teaching is getting all students to use the higher cognitive processes that academic students use spontaneously” (Biggs, 2006, p. 9). Like Moon (2008), Biggs takes a constructivist view of learning that assumes that what the learner does is important: “Learning takes place through the active behaviour of the student; it is what he does that he learns, not what the teacher does” (Tyler in Biggs, 2006, p. 25). Reflective writing is one such cognitive process because it encourages students to:

1. Transform their knowledge;
2. Question and reflect upon existing knowledge;
3. Theorize about experiences;
4. Apply theory to practical situations (Tynjala in Biggs, 2006).

If students lack the epistemological sophistication to engage in such reflection, teachers need to revamp assignment instructions and feedback to invite such reflection, recognizing that even with the best teaching, some students may not achieve the highest levels of reflection.

Biggs developed the concepts of deep and surface learning into a taxonomy describing five different levels. At the lowest levels, information is simply recited, progressing to deep learning where students relate, apply, theorize, and hypothesize. These levels were adapted specifically for teacher education reflection journals by Bain, Ballantyne, Packer and Mills (1999). Their scale is described as follows:

Table 1: Levels of Deep and Surface Learning
(adapted from Bain, Ballantyne, Packer & Mills, 1999, p.60)

Shallow	Level 1 Reporting	Describes, reports, retells with minimal transformation, no added observations or insights
	Level 2 Responding	Makes an observation or judgment without detailing reasons for judgment, asks rhetorical question but no attempt to answer, reports a feeling (relief, anxiety, happiness)
	Level 3 Relating	Gives a superficial reason for judgment, seeks a superficial understanding of relationships, connects to prior experience, some self-assessment
Deep	Level 4 Reasoning	Integrates observations into relationship with theoretical concepts/experience involving high level of conceptualization/transformation, seeks a deep understanding of why something has happened; explores or analyzes a concept or event, asks questions, looks for answers, considers alternatives
	Level 5 Reconstructing	High level of abstract thinking to apply or generalize learning, draws an original conclusion; generalizes, extracts principles, forms a personal theory, takes a position on an issue, extracts personal significance, plans further learning

There are clear parallels between the taxonomy described by Bain et al. and Hatton and Smith's (1995) three types of reflection-on-action. These progress from simple description, to dialogue (a form of discourse with oneself exploring possible reasons), and finally critical reflection which involves giving reasons for events that consider the broader historical, social and/or political contexts. Hatton and Smith's dialogic reflection is most similar to level four and critical reflection is most similar to level five. Other researchers (Jay & Johnson, 2002; Moon, 2008; Van Manen, 1977) similarly show levels of reflection moving from simple description to judgments and finally a willingness to explore alternative perspectives, theorize, analyze, and seek a deep understanding.

Formative assessment and scaffolding to support deep reflection. Formative assessment can play an important role in guiding learners to deeper levels of thinking. Formative assessment is defined here as guidance or scaffolding to improve the quality of work prior to summative assessment. Assessment based on behaviourist assumptions uses objective measures to test for itemized bits of knowledge while a constructivist approach provides ongoing feedback that initiates the learners into the discourse of the discipline in a social context, fosters deep learning, and engages the learners in metacognition and self-regulation of their own learning (Black & Wiliam, 2010; Boud, 2000; Chang, 2011; Kaplan, Rupley, Sparks, & Holcomb, 2007; Shepard, 2000; Spalding and Wilson, 2002). When students are required to respond to formative assessment, whether in reflection journals or other learning activities, a feedback loop is created in which guidance is used to improve subsequent work (Gibbs & Simpson, 2004-5; Nicol & MacFarlane, 2006).

The current study uses online feedback that can be particularly helpful because of its immediacy. However, Akyol and Garrison (2011) caution that online interaction itself does not necessarily promote deep learning unless the interaction is specifically focused on quality critical discourse.

Shepard (2000) provides several recommendations for assessment to be effective in fostering effective learning that apply to the current study. Instructional conversations can be powerful ways to check prior knowledge and build on what students already know; students should "become accustomed to explaining their reasoning and offering and receiving feedback about their developing competence as part of a social group" (p.10). Instead of focusing on inconsequential errors, feedback should pose questions that help students to reconsider substantive ideas. Teachers should help facilitate transfer: "Good teaching constantly asks about old understanding in new ways, calls for new applications, and draws out new connections" (Shepard, 2000, p. 11). Explicit criteria and the opportunity to assess their own achievement of those criteria help students to take greater responsibility for their own learning.

Formative assessment was one of the strategies that Bain and colleagues (1999) used to enhance the depth of reflection in teacher education journals. The "reflective dialogue" group met with the instructor for fifteen minutes each week to discuss their journals while the "self-analysis" group wrote a commentary that reconsidered their journal in response to written feedback. Those involved in the latter self-analysis group improved more quickly in their ability to write journals at a deep level. Journal writing with formative feedback and the opportunity for students to explain their reasoning provides an appropriate strategy for what Shepard (2000) refers to as "instructional

conversations.” Whether in person or in writing, these instructional conversations are an ideal strategy for promoting deep reflection.

The aim of the current study is to discern the impact of formative assessment on Education students’ ability to write deep reflections and the impact of synthesizing their own learning. It builds upon the preceding research in at least three ways. First, journaling is a prime example of constructivist learning because the students work to make sense of their experiences in schools through the journaling process. Second, the levels of deep and surface learning were used to analyze the depth of students’ reflections, and examine ways to best support those students writing shallow reflections. Finally, this study applied the research on formative assessment to discern ways instructors might guide learners to deeper levels of learning. Although similar to the study by Bain et al. (1999), this project examined first year students who are new to educational theory and not yet involved in student teaching. Furthermore, since the course instructor, not an external researcher, offered the feedback, the feedback therefore built naturally on course content.

Context

All students in the two introductory Education courses at the university were required to keep a reflective dialogue journal where they reflected upon their weekly fieldwork experience in schools (30 hours per semester). During fieldwork, students observed and helped small groups of students but seldom engaged in teaching lessons. Most students were in their first semester of university. The researcher was the instructor for these courses.

The journal was composed in “Google Docs,” an electronic format that provides continual online access to any new entries and feedback. These journals are the primary source of data for the study. Fifty-one of 65 students consented to have their journals used as part of the study yielding approximately 400 single-spaced pages of data. Eight students were male, and 43 were female, comparable to the male-female ratio in the courses. To comply with the expectations of the Human Research Ethics Board, I did not know which students were participating in the study until after final grades were submitted. Each student was assigned a random numerical and letter code (e.g., M1); these codes serve as pseudonyms.

A condensed form of the journal instructions follows:

Retell: I saw... Describe a particular scenario.

Reconsider: This makes me wonder...

- What questions does this episode raise for you?
- What key theories or principles from your readings help you understand this?

Reflect: This matters because... (Respond to at least one of these questions).

- What is important about this scenario? What’s the big idea?
- Why is it important for education or pupils’ well-being?
- What are the ethical implications (moral dimensions of schooling, equality, etc.)?
- How does this influence your own beliefs and values about teaching?

A list of course concepts (e.g., self-efficacy, motivation, emotional intelligence, zone of proximal development, behavioural learning theory, social learning theory, Piaget's stages of cognitive development) was suggested to help the students apply theories to their observations. Each student was paired with a critical friend, a classmate who commented on the students' journal with a goal to help writers reflect more deeply on their writing. As the course instructor, I also commented on each journal entry, asking questions that were intended to prompt deep reflection. I met with the pair of students at mid-semester in the midst of their school observations to discuss the journal entries and to invite students to self-assess their journals so far. They wrote a post-script on each journal entry in response to feedback received and after reconsideration of the experience. The final journal entry was intended to encourage them to synthesize their learning by identifying key ideas and the role of dialogue, course readings, and the journaling process, in the process shaping their thinking about how key ideas connected with their own teaching philosophy.

Methodology

This study was a case-based examination of documents—the reflective dialogue journals in my course—with the intent to achieve a rich understanding of the students' learning process (Creswell, 2003; Stake, 1995). These documents provided the participants' words and ideas as well as a clear record of our written dialogue. Furthermore, the study was action-oriented in that it was designed to examine ways to better scaffold deep learning in reflective dialogue journals. As the professor of the course, I had an interest in understanding students' learning and also my place in their learning, what Stake (1995) calls an intrinsic case study. I have tried to bracket my assumptions and be self-reflective to avoid bias that might impact the interpretation of the data. For example, it would be easy to overestimate my own role in the students' learning; I had to be deliberate about considering how I supported their learning, but also examine student insights that were not related to my feedback.

This case study was undertaken as part of a scholarship of teaching and learning (SoTL) program. SoTL includes studies “in which faculty frame and systematically investigate questions related to student learning—the conditions under which it occurs, what it looks like, how to deepen it, and so forth—and do so with an eye not only to improving their own classroom but to advancing practice beyond it” (Shulman and Hutchings, 1999, p.13). The study was designed and the data interpreted with the support of SoTL colleagues in diverse disciplines who were also examining their students' learning. This program contributed to the validity of the analysis because these colleagues offered their interpretations of the data.

Data analysis

Bain's (Bain et al, 1999) descriptors of deep and surface learning were used to code the journal entries, postscripts, and syntheses; since this paper focuses on the impact of formative assessment on these responses, it emphasizes the post-scripts and syntheses. . After each journal postscript was coded as deep, shallow or absent, each student was given an overall code that best described the quality of their postscripts (i.e., if at least three of the four entries were coded as deep, that student was coded as

deep overall). To increase validity, the data was coded on two separate occasions and then compared. There were few discrepancies between these codings and a review of those discrepant entries helped clarify the appropriate code.

In addition to numerical codes, a qualitative constant comparative method was used to identify common elements of deep and shallow postscripts and syntheses. While reading the journals, I wrote descriptive notes in the margins to track the kinds of thinking I noticed (e.g., “related to course concepts” versus “practical details over significance”). These descriptive notes were transferred to a concept map and grouped to form the themes I will describe under results. Colleagues in the SoTL program provided comments on the preliminary codes and examples to strengthen the analysis.

Results

Deep postscripts and syntheses typically included at least one of the following characteristics:

1. Course concepts: Used theory to label and better understand situation
2. Links: Read links for further research and showed impact on thinking
3. Personal philosophy: Showed impact of scenario on personal philosophy or position on issue
4. Reconsidering: Rethinking and problem-solving

Shallow postscripts and syntheses:

1. Lacked theoretical connections
2. Focused on practical details rather than their significance
3. Simply made a cursory reply without engaging with the ideas in the comment.

In this results section, examples from student journals will be used to illustrate these common characteristics.

Although this is primarily a qualitative study, the numbers on the following table illustrate an interesting difference between the depth of thinking achieved in journals and postscripts and what was achieved in the written synthesis. While peer and instructor comments can nudge a student to go somewhat deeper in their postscripts, often the dialogue remained at a simple question and answer level. However, the syntheses were more powerful in prompting deep thinking, perhaps because the students had greater ownership for selecting and engaging in meta-level reflection upon the ideas that were most meaningful to them.

Table 2: Deep and shallow levels in journals, postscripts and syntheses

Code	Description	JOURNALS: Number of students achieving this level in journal entries	POSTSCRIPTS: Number of students achieving this level in postscripts	SYNTHESES: Number of students achieving this level in synthesis
+	Deep	20	20	34
-	Shallow	31	20	14
0	Absent	0	11	3
			51 total	51 total

Deep postscripts. This section documents and illustrates the characteristics of students' deep post-scripts including attention to course concepts, research using links supplied, reconsidering assumptions, and developing a personal philosophy.

Course concepts. Because deep learning is so often characterized by conceptual thinking and theoretical integration, comments and questions often prompted students to make these connections and to recognize the "big idea" central to their observation. In fact, these references to course concepts were the most common type of deep postscripts and demonstrated that students could apply theory to interpret their observations, even if they needed a prompt to do so. Course concepts that students used most often in their postscripts included learned helplessness, constructivism, Erikson's stages of psychosocial development, progressive education, Maslow's Hierarchy of Needs, and Kohlberg's stages of moral development (Naested, Potvin, & Waldron, 2004). One student described an incident when a child was going to forge her mother's signature because her mom was out of town and hadn't signed her homework. The student wrote: *"I began to explain that trust is something that you want to be very careful with and if I was that teacher that I would be forgiving of the fact that mistakes happen. Also, that I would appreciate the truth."* (M5) The young girl's friend reminded her that the teacher would be able to figure it out because she knew mom was out of town. The feedback and response follows:

Professor: As I compare to Kohlberg's stages, it's interesting that her friend was mindful of the fact that she'd get caught (lower levels) while you pointed her to the principle – trust – which involves a higher level of moral reasoning. Each experience like that contributes to students' moral development so they shift from "what will work for me?" to "What's the most moral way to handle this?"

M5: To compare the situation to Kohlberg's stages hadn't occurred to me until I read your response. I guess this situation provides a perfect example of that theory. When I pointed out the moral reason to erase the signature, she didn't respond. However, when her friend pointed out that she may get in trouble from her teacher, she erased it right away. I had connected this to the social aspect, in that she wanted to fit in with her friends, not the actual development aspect of it.

She may be at the stage where her main goal is to avoid punishment, or around stage 1 or 2.

According to the levels of deep and surface learning, deep learning is often characterized by “integrat[ing] observations with theoretical concepts” and “extract[ing] principles” (Bain et al, 1999, p. 60). This is just one example of how directing a student to consider a related theory helped to promote deeper levels of reflection.

Links. In some cases, outside sources could provide information to answer students’ questions or more specifically address their particular observations. I inserted links to the provincial curriculum, school board programs (e.g., ESL programs), assessment tools, or other resources such as descriptions of particular learning disabilities. These links often helped the students better understand the issues they raised in their initial journal entries. For example, one student was concerned that a forensics field trip was too graphic and upsetting to the pupils, especially after one pupil fainted.

Professor: Check out this link. [Health Program of Studies](#) I certainly don’t expect you to read it all but do a search for the word “drugs” and you’ll see three different grade 6 objectives related to drugs. See if you feel this program addressed or perhaps exceeded these expectations. It seems like the emphasis was on the fear factor and not on prevention as you suggest.

M1: That website was definitely interesting to read! I never realized how much kids are expected to learn and comprehend at such a young age when it comes to elementary grades. In this website it says that students in grade 6 are expected to “examine and evaluate the risk, factors associated with exposure to blood-borne diseases—HIV, AIDS, hepatitis B/C; e.g., sharing needles, body piercing, tattooing, helping someone who is bleeding, being sexually active.” However it goes on to say that these learning outcomes are not mandatory and students can be excluded from them if their parents chose to withhold that information....It seems to me that the kids in my class had never been exposed to any of the material shown to them on the field trip which would suggest that they had not been taught things expected in younger grades listed on the website (examine and evaluate the impact of caffeine, alcohol and drugs on personal health).

In response to her critical friend’s comment, she went on to question society’s shifting attitudes toward exposing children to “adult” topics and the possible benefits and problems from such exposure. This dialogue helped her to go deeper than her initial feelings of discomfort over children’s reactions. It also helped her to weigh her discomfort with what is considered age appropriate in the prescribed curriculum. Since deep reflection is often characterized by questioning and looking for answers, this extended research seems important for student learning.

Reconsidering. Often I challenged students to consider other perspectives on opinions they offered. When they judged teachers for ignoring students, I suggested the possible reasons for such a response such as discouraging attention-getting behaviour or balancing the needs of the rest of the class. When they questioned why special needs students were integrated with seemingly insufficient support, I urged them to see

how those needs might be accommodated in a regular classroom. The following student described a sharing problem in her kindergarten class and the class meeting that followed where the class discussed how grabbing made others feel. She suggested that if this had been ineffective, the teacher could try rewarding those who shared with stickers. The class meeting seemed such an exemplary response so I urged her to consider the impact of her proposed strategy compared with the actual teacher response.

Professor: So let's compare the 2 possibilities:

- 1. Talk about how it makes you feel when someone shares or doesn't share.
- 2. Get a reward for sharing.
- Which is more likely to contribute to moral development? Which is more authentic?

W11: The first possibility is more likely to contribute to moral development. If a child gets too used to the positive reinforcement they will only do things for the extrinsic motivation. If they learn why they share and the feelings that they retain and that are inflicted on others then the child will learn to share for intrinsic reasons and to develop morally. The more authentic thing to do as well would be to discuss the aspects of sharing and how it makes the students feel.

Not only did she address the issue of moral development but her postscript, but she also integrated the relevant concepts of intrinsic and extrinsic motivation, showing a rich understanding of why the teacher's response was so appropriate for the development of kindergarten students and why her suggestion of rewards could be problematic. This example shows that prompts can help students to look at perspectives that they might not have considered.

Personal philosophy. Analysis of some classroom incidents revealed that students began to shape their own philosophies and values about teaching, particularly when they were urged to compare their observations to their own experiences as young children. This reflection helped them identify key commonalities of powerful learning experiences. One student's initial journal entry described children's apparent boredom in a particular learning activity. When I encouraged her to consider the importance of curiosity, she wrote a thoughtful response about her own emerging teaching philosophy and the role of intrinsic motivation and choice.

Professor: Take a look at the charts in this research summary. (link: [What Did You Do in School Today?](#)) The authors suggest that there is a distinction between academic and intellectual engagement – doing what needs to be done versus being genuinely curious and interested.

W1: That was very interesting to read. I do find a lot of the time students in my classroom are just doing what needs to be done. I talked a little about my opinion on this in my final exam, stating that I think a little movement in the direction of Existentialist/Progressivist teaching would help this. I think that a little choice in the content of the material would allow for more intrinsic motivation. I also think that if students are given the chance to incorporate their passions into the learning equation, they will be more interested. Remember the math teacher in

the video, with the Adidas sneakers? I think sometimes the curriculum caters too much to the masses, requiring everyone to do exactly the same work, not individualizing at all.

This prompt helped the student to move from a disappointed account of students' boredom to articulate her emerging teaching philosophy and ideals. In formulating a personal theory through her response, this student demonstrated the type of depth associated with level 5 thinking mapped out by Bain's levels.

Shallow postscripts. Shallow postscripts lacked theoretical connections, focused on practical details rather than their significance, or were simple cursory replies.

Lacked theoretical connections. The first characteristic of deep postscripts was the integration of theoretical concepts, but shallow postscripts demonstrated a lack of such theoretical thinking. One student described a boy who struggled in the classroom but excelled in physical education. Feedback from her critical friend urged her to think about differences in fine and gross motor skills and I suggested more integration of Multiple Intelligences. She wrote:

M6: Having under-developed fine motor skills is definitely an issue for this student causing him lots of frustration. I feel the teacher is doing the best she can with this individual, as it is difficult to facilitate for every child when it is such a diverse classroom. I feel if more Multiple Intelligences integration would happen it could really help this student.

Her response only acknowledged the feedback in a superficial way but did not show how these ideas could be used to analyze and better understand the needs and appropriate response for this child. This cursory type of response was typical of many shallow postscripts, demonstrating that an invitation to make links to course concepts does not necessarily lead to deeper thinking as it did in previously cited examples.

Practical details over significance. Postscripts were shallow when the student responded to the practical question without considering the broader educational context. A student described a young substitute teacher's lack of control over the class and worried about herself in that position in a few years.

Professor: Do you think the students' responses would have been different if they had been working on projects that they were genuinely engaged with? I agree you need some degree of authority but a more empowered class wouldn't feel the need to set up an "us-them" mentality. Do you see these ideals in some of the philosophies you've been reading about?

M20: I think the teacher would have had an easier time with the class if the students found the work interesting. However, the work they did is what they usually do on Wednesdays and they don't usually act out like this.

Our class had been reading about the distinctions between various philosophies of education including essentialism and progressivism. I hoped my question about philosophies would help her take a broader view of classroom management (i.e., that student engagement and empowerment might prevent behaviour problems) but she chose to respond in a concrete way ("what they usually do on Wednesdays") without the theoretical connection that might have enriched her reflection.

Cursory reply. Some students did not comment on links that were provided or responded in a cursory way. For example, one student wrote, “*I looked at the link and would like to look at it more*” (M12) but she did not discuss what she read (a link on “The Girl Effect”) or how it related to her journal entry (immigrant girls’ apparent ambivalence regarding education). This postscript, like most other shallow postscripts, was only one line while deep postscripts were often at least ten lines long. It seems reflective writing requires some “playing with ideas” and such cursory responses do not provide the space for such reflective play.

No postscripts. Eleven of 51 students wrote no postscripts at all. In a previous semester, I understood similar absences were due to a misunderstanding of the assignment instructions. However, in this case, when students could see the dialogue in their critical friend’s journal and they met with me in pairs to discuss the journal process, this explanation seems unlikely. As busy students juggling the demands of their first year of university, it seems some simply completed the journal entry and forgot to return, or they considered the postscript unimportant. Because of the investment of instructor time in writing the prompts and questions, this result is very disappointing.

Synthesis. While only 20 students wrote deep postscripts, 34 wrote deeply reflective syntheses, suggesting that the synthesis exercise was very effective for prompting deep reflection. In previous semesters, students were invited to summarize their learning but the results were often weak. They wrote generic and simple recounting, but few could be characterized as reflective. As part of this study, I revised the synthesis instructions to help them draw out key ideas and the influences on these by responding to the following prompts:

- Identify 4+/- key ideas you’ve explored in your journal (motivation, student needs, etc.). Quote your journal.
- How did the dialogue/feedback influence your thoughts about these ideas?
- How did readings influence your thoughts on these ideas?
- In what ways has the journal changed your thinking about those key ideas and your plans for future practice?

Even with these prompts, some syntheses remained at a shallow level. Shallow syntheses listed some key ideas as prompted, but did not discuss their significance or how student thinking was influenced. Some said that the journal dialogue and feedback helped shift their assumptions, but did not give specific examples of how their thinking had changed. If students mentioned course readings at all, it was simply to say that the readings helped them understand what they saw in schools, but offered few if any examples. These syntheses were, like their journal entries, superficial. Not surprisingly, none of the students who wrote shallow syntheses wrote deep journal entries.

However, for the majority of the students (34 of 51), these prompts to focus on the key ideas seemed to positively impact students’ ability to look at their learning through a conceptual lens, even those who did not do so in their initial journal entries or postscripts. Rather than focusing on their general impressions as some had in their initial journal entries, they drew out salient points in those incidents. Many described how the journal helped them to make theory-practice connections that they might not otherwise have made; they also clarified course concepts by relating them to their

school observations. The feedback often prompted them to return to their readings or revisit the situation and look at it again. Several also described how when something was unclear, they would do a web search to learn more about the topic, a key characteristic of deep learning. The prompt to consider their plans for future practice helped them to think philosophically about what they valued and to take positions on issues such as special needs integration, motivation, and reward systems. One student described how *“it was amazing how a simple incident could be picked apart and learned from”* (M1). Another wrote, *“Even as you are writing and working through different ideas, more ideas come to you that you didn’t even really realize before you started writing”* (M16). Finally, a student wrote that journaling was helpful in *“untangling my thoughts”* (M7).

One student took a broad view of her learning over the semester and identified some important shifts in her assumptions in the synthesis. Her initial journal entries focused on an apparent lack of order in the classroom. For example, a cooperative learning activity seemed to allow the students “too much free rein” though she was intrigued by the teacher’s subsequent self-assessment task that invited the students to assess their group’s functioning and their own contribution to the group. I wrote to her, *“When the students self-evaluate, they take ownership for their actions in ways that they might not if the teacher simply nagged them to persist, take initiative, stay focused, etc.”* It seems this prompt helped her reconsider possible benefits of self-assessment as she wrote in her end of semester synthesis about the benefits of “self-reliance, self-direction and ownership.” An excerpt from this synthesis follows:

W16: I realized that I came into the classroom with quite a traditional predisposition, that the teacher should always have complete control, authority, and respect....Of course I was not conscious of my own bias until later when I understood constructivism. When I knew of constructivism it is like a light bulb went off and I realized my biases, and understood and appreciated how my teacher conducted her class and her teaching. Though I still think there are times where a more traditional form of teaching is needed, I feel that constructivism is perhaps more reliable for yielding many more long lasting benefits such as self-reliance, self-direction and ownership.

Writing a synthesis similarly helped her to self-direct and take greater ownership for her *own* learning. This is a prime example of a higher form of reflection termed reflexivity because the student was able to “interrogate previously taken for granted assumptions” (Taylor & White in Moon, 2008, p. 96).

One student identified a theme that pervaded all his journal entries.

W7: One common element I kept coming back to that involves all four key ideas from my journal entries is the importance of balance. 1) While technology is good, traditional methods of expression and critical thinking need to also have their place. 2) While catering to every individual student’s personal needs is important, it’s also important that all students are taught comparable curriculum and are kept at the same pace as the rest of the province. 3) Discipline is important but so is empathy and expression. 4) And a balanced view of all students’ races is crucial in a multiracial classroom.

It is common for new Education students to take a simplistic and narrow view of educational issues; this student was able to recognize the alternative perspectives that inform these issues and arrive at wise and thoughtful conclusions. The exercise in synthesis helped this student to identify balance as a theme in educational issues and his own teaching philosophy.

Educational significance and implications

The study aimed to show the benefit of formative assessment for prompting deep reflection in dialogue journals. While there is some evidence that this formative assessment played a role in prompting deep reflection, the self-analysis involved in writing a synthesis of learning is clearly a particularly powerful tool. According to constructivist principles of learning, learners build upon prior knowledge. While my prompts attempted to raise another perspective or insert some new concept by building upon the students' journal observations, the insertion was mine – what I considered relevant or important to the scenario. In some cases, the students used these prompts and built upon these new concepts and their prior experience to analyze more deeply. However, in the synthesis, students then pulled together what *they* considered meaningful; often drawing upon insights that emerged in the discussion in ways they may not have in their brief responses to the prompt questions and comments.

Hatton and Smith (1994) suggest that dialogic reflection requires the writer to step back from observations and have a conversation with oneself but that critical reflection, a higher form, was best enhanced by critical friend dyads with whom they “are able to distance themselves from their actions, ideas, and beliefs, holding them up for scrutiny in the company of a peer with whom they are willing to take risks” (p. 41). Perhaps because the students in the current study were first year students, not yet engaged in teaching lessons and solving their own teaching problems, the dialogue with the critical friend often remained at a simple question and answer level.. It was more often in the synthesis that dialogic reflection, the conversations with themselves resulted in deep reflection. Moon (2008) refers to this as cognitive housekeeping, a reordering of what one has already learned in order to generate new ideas. The synthesis prompted this reordering of the semester's learning into a coherent and meaningful whole.

Bain et al (1999) found similar results in their study; students who wrote a self-analysis of their own learning were more effective at deep reflection than those who met with their professor for an oral dialogue about their school experiences.

(This) confirms that the provision of brief written feedback, especially when it involves constructive questioning of the student's thinking, may be a sufficient stimulus to deepen the reflective process....Encouraging students to revisit their journal entries, armed with some new insights provided by feedback, may be a more helpful exercise ... than an oral reflective discussion (Bain et al, 1999, p. 69).

Bain and colleagues suggest that because oral discussion is so time-intensive, it may be more efficient and effective to offer brief prompts that can then later be marshaled in self-analysis, what I refer to as a synthesis. Although I set out to study the impact of the formative prompts, I was pleasantly surprised by the comparatively richer

outcomes associated with writing syntheses. This supports the significant research supporting metacognitive approaches that help students to monitor their own learning (Hattie, 2012) rather than depending upon teacher direction.

As professors in varied disciplines nudge students from external to internal meaning-making orientations that can help students better appreciate the complexity of their disciplines, journal writing with scaffolding prompts seems to be a powerful developmental tool. Since many educators subscribe to a constructivist view of learning which “focuses on the activities of the learner in making sense of the world” (Moon, 2008, p. 16), we must continually remind ourselves that what students actually do that shapes their learning. We can provide learning activities and prompt and encourage, but it is ultimately their activity that determines the quality and depth of their learning.

References

- Akyol, Z., & Garrison, R. (2011). Understanding cognitive presence in an online and blended community of inquiry: Assessing outcomes and processes for deep approaches to learning. *British Journal of Educational Technology*, 42(2), 233-250.
- Bain, J. D., Ballantyne, R., Packer, J., & Mills, C. (1999). Using journal writing to enhance student teachers' reflectivity during field experience placements. *Teachers and Teaching: Theory and Practice*, 5(1), 51-73.
- Bain, J. D., Mills, C., Ballantyne, R., & Packer, J. (2002). Developing reflection on practice through journal writing: Impacts of variations in the focus and level of feedback. *Teachers & Teaching: Theory and Practice*, 8(2), 171-196.
doi:10.1080/13540600220127368
- Baxter Magolda, B. M. (2007). Self-authorship: The foundation for twenty-first-century education. *New Directions for Teaching and Learning*, 109, 69-83.
- Belenky, M. F., Clinchy, B. M., Goldberger, N. R., & Tarule, J. M. (1986). *Women's ways of knowing: The development of self, voice, and mind*. New York, NY: Basic Books.
- Biggs, J. (2006). *Teaching for quality learning at university* (2nd ed.). New York: Open University Press.
- Black, P., & Wiliam, D. (2010). Inside the black box: Raising standards through classroom assessment. *Phi Delta Kappan*, 92(1), 81-90.
- Boud, D. (2000) Sustainable assessment: rethinking assessment for the learning society, *Studies in Continuing Education*, 22(2), 151–167. Retrieved from http://www.education.uts.edu.au/ostaff/staff/publications/db_28_sce_00.pdf
- Chang, N. (2011). Pre-service teachers' views: How did e-feedback through assessment facilitate their learning? *Journal of the Scholarship of Teaching and Learning*, 11(2), 16-33.
- Creswell, J. W. (2003). *Research design: Qualitative, quantitative, and mixed method approaches* (Second ed.). Thousand Oaks, CA: Sage Publications.
- Gibbs, G., & Simpson, C. (2004-5). Conditions under which assessment supports students' learning. *Learning and Teaching in Higher Education*, 1, 3-31.
- Hattie, J. (2012). *Visible learning for teachers: Maximizing impact on learning*. London, UK: Routledge.
- Hatton, N., & Smith, D. (1995). Reflection in teacher education: Towards definition and implementation. *Teaching and Teacher Education*, 11(1), 33-49.

- Hutchings, P., & Shulman, L. (1999). The scholarship of teaching: New elaborations, new developments. *Change*, 31(5), 10-15.
- Jay, J. K., & Johnson, K. L. (2002). Capturing complexity: A typology of reflective practice for teacher education. *Teaching and Teacher Education*, 18, 73-85.
- Kaplan, D. S., Rupley, W. H., Sparks, J., & Holcomb, A. (2007). Comparing traditional journal writing with journal writing shared over e-mail list services as tools for facilitating reflective thinking: A study of pre-service teachers. *Journal of Literacy Research*, 39(3), 357-387.
- King, P. M., Baxter Magolda, M. B., Barber, J. P., Brown, M. K., & Lindsay, N. K. (2009). Developmentally appropriate experiences for promoting self-authorship. *Mind, Brain, and Education*, 3(2), 108-118.
- Lortie, D. C. (1975). *Schoolteacher: A sociological study*. Chicago: University of Chicago Press.
- Moon, J. A. (2008). *A handbook of reflective practice and experiential learning: Theory and practice*. London: RoutledgeFalmer.
- Naested, I., Potvin, B., & Waldron, P. (2004). *Understanding the landscape of teaching*. Toronto, ON: Pearson Prentice Hall.
- Nicol, D. J., & Macfarlane-Dick, D. (2006). Formative assessment and self-regulated learning: A model and seven principles of good feedback practice. *Studies in Higher Education*, 31(2), 199-218.
- Perry, W. G. (1970). *Forms of intellectual and ethical development in the college years: A scheme*. New York, NY: Holt, Rinehart and Winston.
- Piaget, J. (1971). *Biology and knowledge*. Chicago, IL: University of Chicago Press.
- Shepard, L. A. (2000). The role of assessment in a learning culture. *Educational Researcher*, 29(7), 4-14.
- Spalding, E., & Wilson, A. (2002). Demystifying reflection: A study of pedagogical strategies that encourage reflective writing. *Teachers College Record*, 104(7), 1393-1421.
- Stake, R. E. (1995). *The art of case study research*. Thousand Oaks, CA: Sage.
- Van Manen, M. (1977). Linking ways of knowing with ways of being practical. *Curriculum Inquiry*, 6(205-228)