Reflection

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The purpose of this chapter is to define reflection as an instructional method, discuss why reflection is important, and how to implement reflection in educational settings. Many instructors know reflection can be used after instructional activities; but many are not aware that reflection can be used before and during the learning experience as well. Readers of this chapter can expect a practical guide on how to implement the reflection and reflective activities in their teaching.

Reflection Defined: What Is Reflection?

Reflection is a highly used instructional method in multiple content areas across different educational environments. Rooted in Dewey's (1991) beliefs, reflection is an active, ongoing, circular state where an individual considers their own beliefs, revisiting and revising those beliefs over time (Tracey et al., 2014). Reflection is a concept without an agreed definition. However, similarities exist across conceptualizations such as "the processes of reflection as involving the self, the outcome of reflection as a changed conceptual perspective" (Atkins & Murphy, 1993, p. 1189). Regardless of formal definition, reflection pushes individuals to turn back on an experience and "utilize their experience as a basis for assessing and revising existing theories of action to develop more effective action strategies" (Osterman, 1990, p. 133).

In the broad sense, reflection is accepted as an integral part of education and the learning experience for learners (Beauchamp, 2014; Tracey et al., 2014). As noted earlier, "Reflection is not a one-way, linear process; it is more comparable to alternating current, flowing back and forth between intense focusing on a particular form of experience and outer experience" (Boyd & Fales, 1983, p. 105). Types of reflection typically fall into two categories as defined by Schon (1983): reflection-in-action and reflection-on-action. Reflection-in-action happens when individuals have internal dialogues where they constantly identify and revisit a problem or experience as it occurs to the individual (a current, ongoing event). On the other hand, reflection-on-action looks at an experience, practice, or belief where individuals already constructed an idea or decision in their own minds (a past event).

Typically known as an individualized process, reflection must be considered "both an individual and a social process" (Noffke & Brennan, 2005, p. 74). Beauchamp (2014) notes in her review, "literature suggests a growing acceptance that reflection is not necessarily done in isolation" (p. 130). Learners have varying degrees of prior knowledge and since reflection asks them to individually look at their own learning, it is not surprising that the process of analyzing their own experiences, thinking, and actions would be highly independent (Tracey et al., 2014). However, individualization does not always mean isolation. While many researchers have found that reflection is a highly personal and individualized process (Beauchamp, 2014; Brookfield, 1987; Mezirow, 1990; Williams, 2001), reflection may also be completed with the input of other's views to help one look at their own learning (Beauchamp, 2014; Noffke & Brennan, 2005). This supports the idea that peers in a social learning environment create more meaningful learning experiences when working together (Jonassen

& Reeves, 1996; Wang & Hsua, 2008).

Reflection As a Method: Why Use Reflection?

As briefly mentioned in the definition section, reflection is an integral part of education—but why (Beauchamp, 2014; Tracey et al., 2014)? In general, reflection allows a learner to process and apply new information both to themselves and to the larger community they are involved in (typically known as recall and elaboration) and to review and accept the decisions they made (personal assessment) (Boyd & Fales, 1983). In order to better understand reflection as an instructional method, two main educational environments will be examined: K-12 and higher education.

Reflection and K-12 Teacher Preparation

A major concern among American K-12 environments is the need for school reform (McCombs, 2003; Reigeluth & Karnopp, 2013; Smith & Larimer, 2004). As standardized testing continues to take a large seat in many American educational school systems, many researchers are calling for new ways in teaching practices and asking how "to prepare teachers to teach diverse learners" (Liu & Ball, 2019, p. 69). One potential answer to this call is later described in Liu & Ball's (2019) work:

According to Mezirow (1990, 2000), attitudes and assumptions are important and subject to critical reflection; however, no matter how critical the reflection sounds or how great the apparent change in attitude, real change happens only with the transformation in actions—which we are referring to as "critical reflection for transformative learning." (Liu & Ball, 2019, p. 88).

Dinkelman (1999) defines critical reflection as the "deliberation about wider social, historical, political, and cultural contexts of education, and deliberation about relationships between educational practice and the construction of a more equitable, [just], and democratic society" (p. 332). Therefore, reflection may be an instructional method to help prepare pre-service teachers because theories are useful to frame reflection processes which guide many teaching preparation programs.

Reflection and K-12 Environments

While reflection is a key component in developing teaching practices for pre-service teachers, it can also be used as an instructional method to help prepare K-12 students. In addition to pairing well with certain instructional methods, reflection could potentially help bridge the gap between what is being assessed and how students retain this information. For example, assessment (standardized testing) is typically viewed as a separate process from teaching and learning (Herman et al., 1992). Since this gap between assessment and teaching/learning already exists, a potential solution is creating situations where learners in K-12 environments can reflectively process the information they are learning in the classroom. Albert Bandura (1997) theorized that reflective processes can help learners acquire and retain information from different sources; therefore, reflection is equally important for students in teacher education programs and both K-12 students and teachers.

Reflection and Social Constructivism Theory

Although social constructivism theory is not new, the work of Lev Vygotsky and his zone of proximal development (ZPD) is a standard across all teacher preparation programs. According to Vygotsky

(1978), "the "zone of proximal development") is the level of development that the learner is capable of reaching under the guidance of teachers or in collaboration with peers. The learner is capable of solving problems and understanding material at this level that they are not capable of solving or understanding at their level of actual development; the level of potential development is the level at which learning takes place" (Vygotsky, 1978, p. 85).

The ZPD as described by Vygotsky suggests that social constructivism is meaningful learning that occurs when students are able to exchange ideas, negotiate meanings, and consult with their peers in a social learning environment (Jonassen & Reeves, 1996). Since many new teachers are already familiar with the ZPD, it can be paired with reflection as an instructional method to be used before, during, and after a topic has been introduced to students. During each point, the instructor can provide specific reflection questions to consider such as "What do you know about X?", "What did you learn about X after talking about it with your classmates?", and "Now that you have learned about X, how does it apply to you?" By prompting students through reflection, they can think about and apply what they have learned or what they still want to learn about the topic covered in class.

Reflection and Higher Education

Higher educational experiences, for many college students, allow a safe space to consider and explore a range of topics. In many cases, learners are exploring new topics and concepts they have not yet heard or were exposed to in their previous education. The introduction of new information may be difficult to process; therefore, the role of reflection in learning new concepts allows students to think about what they are learning. Formenti and Jorio (2019) note critical thinking, self-reflexivity, and transformative learning are all crucial when teaching undergraduates (p. 209). Reflection, in an intentional and purposeful manner, can provide students the opportunity to engage in metacognition, often simplified as ''thinking about thinking'' (Miller et al., 1970, p. 613). In addition, Mezirow (1991) states reflection may lead to transformed schemas and perspectives within students. These new schemas can then help them retain and process new information. Therefore, instructors must consistently provide opportunities for learners to consider their own learning—both individually and in conversations with their peers (Formenti & Jorio, 2019).

In addition to learning and processing new information, many college majors stress the importance of reflection when training and preparing students to go into their respective fields (e.g. teacher preparation, nursing, healthcare, etc.). In these programs, Osterman (1990) found that "skilled practitioners are reflective practitioners" (p. 133) and that "practitioners step back and examine their actions and reasons for their actions" (p. 134). As mentioned earlier, Schon's (1983) work describes two reflection practice categories: reflection-in-action and reflection-on action. By using reflection-in-action, students in a career preparation program are able to see "patterns of behavior become clear, habitual responses are identified and insights dawn regarding the nature of our assumptions and motivations" which help determine and justify why decisions were made by the individual (Brookfield, 1987, p. 78).

Reflection as an Instructional Method: How to Implement Reflection?

What Not to Do

In some situations, it is best to know what not to do before trying an instructional method in a classroom. Implementing reflection in any environment should be a meaningful experience and not fall into what Hunt (2013) states as "not just reflection on reflection" (p. 66). In order to create these experiences, one must plan for the implementation of reflection during the learning experience. As Watson & Kenney (2014) state, "Designing what the critical reflection exercise will "look" like, including how you [the instructor] will prompt students for reflection and how the reflection will be assessed, ought to be considered and planned" (p. 59).

First, we must note reflection should not be used if there is a lack of conscious, purposeful thought behind its design and implementation. One common critique of reflection is the lack of clarity and theory-practice gap when it is used (Beauchamp, 2015). The theory-practice gap is when teachers struggle to integrate knowledge learned in an academic environment (in this case, reflection) with real-world situations (e.g., why and how to correctly use reflection in their own classroom or teaching practices). This is because many reflections lack the necessary focus on the individual who is reflecting as well as including ethical-based questions that push the individual to consider questions such as "Is it right or just to accept this result/situation? What will be the best outcome? What is wrong here? Who does this hurt most? Why is this goal better than that one?" (Benade, 2012, p. 341). Along the same lines, reflection cannot occur without any conceptual understanding of what is being reflected on (Boud, 1999). Instructors must purposefully design and develop reflection based around a topic or skill being learned; "relabeling 'free time' in a course as reflection doesn't achieve anything" (Boud, 1999, p. 125).

Second, reflections should not be so prescriptive that learners are essentially checking boxes. This type of reflection is known as "recipe following." As Boud (1999) states, "too often reflection is introduced to students as if it were a simple process of working through a series of prompts" (p. 125). This is a tricky task because reflections should not be left too open nor too prescriptive. One way to avoid this is by creating open ended questions that allow the learner to consider specific topics (typically what the instructor wants the students to learn) and how the learner can apply this new information in their own environment. Learners may be prompted to use writing for reflections, but should be allowed to express their thoughts in different varieties (discussions with peers or instructor(s), audio, video, project, etc.).

Third, the act of reflection should be considered a process and not a task. If viewed as a task or assignment by the instructor, students will view it the same. Atkins and Murphy (1993) states there is a process to this type of learning (see Figure 1). Since reflection is a process, it should be intertwined with teaching and learning, especially since "reflection is not an intuitive act, and must be taught" (Beauchamp, 2005, p. 134). Therefore, teaching students the necessary skills needed to be reflective individuals is crucial. Atkins and Murphy (1993) conducted a literature review and identified five skills needed for effective reflection practices: self-awareness, description (ability to recall key features of an experience or event), critical analysis, synthesis, and evaluation.

Figure 1

Reflection as a Process (Atkins & Murphy, 1993)

Awareness of uncomfortable feelings and thoughts

↓

Critical analysis of feelings and knowledge

↓

New perspective

What to Do

Now that we are aware of potential pitfalls of using reflection, how can we effectively design and develop instruction to implement reflection successfully? Many studies have determined that if not implemented properly by instructors, reflection can become "mere gimmicks whose only potential is further, unnecessary validation of Seymour Sarason's (1971) axiom that the more things change, the more they stay the same" (Kottkamp, 1990, p. 182). Therefore it is important that as instructors, we must first understand and consider a mind-set change if we fall into the category that reflection is a task. As noted by Beauchamp (2005), "We need to shift our focus from it [reflection] as a required tool in programs…and explore more fully its meaning and potential for enhancing professional practice" (p. 137).

Second, we must prepare and develop skills for reflective practice in our learners so that they can effectively reflect on their learning. Tied with the development of the necessary skills mentioned before, we must also explain and teach our learners about what reflection is, why we are using it, and the value it has in their learning. Obviously, for younger learners, this may be a bit more difficult to do. One way to help involve younger students in the reflection process is to have open ended sentences that they complete at the end of an activity (e.g., "Today I learned about ____"). These types of activities fall into what Zhang et al. (2004) label as reflective support that "prompts their reflective abstraction and integration of their discoveries" (Zhang et al., 2004, p. 270). In addition, the idea of game-based, video-based, or discussion-based reflection activities or projects may also gain younger learners' attention. Younger learner's parents or caretakers could also be involved in reflection activities, having students do mini-reflective projects or assignments while at home (e.g., more extensive questioning such as "What did you learn at school today?", "How does that apply to X?", and "Why do you think topic X is important?").

Lastly, and possibly the most difficult, is to develop reflective opportunities that are meaningful (not superficial) but not so restrictive where learners view it as checking off boxes. One way to tailor questions for learners is to create a question bank related to "social, political, and moral issues as well as prompts to draw connections between course readings and student experiences" (Tracey et al., 2014, p. 318). Since the backgrounds of students vary, it is difficult to give a bank of questions for instructors to use. This piece of the puzzle will rely heavily on the instructor knowing their students and providing guiding questions based on their learners' circumstances, upbringings, socioeconomic status, prior knowledge, etc. One example could be if a student is interested in video games, the instructor could ask how a specific physics law plays a role when developing video games. Another example could be how mathematical calculations determine a player's statistics in sports (e.g. baseball, basketball, soccer).

Reflective Practices

As noted above, specific examples of reflection in practice are truly dependent on the topics and what you want your learners to take away from a lesson or experience. As such, Table 1 lists out different types of reflection activities, a general description, a sample illustration, and technology tools that can assist in its implementation. Figure 2 is a list of reflection question prompts.

Table 1

Application of Reflection Activities

Reflection Activity	Description	Illustration in Practice	Technologies
Reflective Journal or Blog	**A record of a particular subject, experience, or professional activity.**	**After reading an assigned document, students are prompted to recall and write how they felt, what they learned, or any lingering/remaining questions.** **In younger populations, this can be prompted by open-ended questions where learners answer a question (e.g. "Today I learned about ___").**	**Pen and paper** **Worksheets** **Electronic journals or blogs** **• Wix** **• Weebly** **• Padlet**
Log Book	Similar to reflective journals or blogs, a log book is typically used in science environments to document specific steps or experiments and the outcomes of those activities.	While conducting an experiment, learners will take notes during each step of the process (goal of the experiment, why they are conducting the experiment, what they predict will happen, what does happen, etc.). Additionally, specific notes of changes during the process should be made to determine if any changes affected the outcome of the experiment.	Pen and paper Electronic journals or blogs • Wix • Weebly • Padlet In an online virtual lab, this may be embedded into the activities or steps learners complete.
Micro-Blogging	Typically associated with social media, micro-blogging is the practice of making short, frequent posts to a microblog. This form of reflection is typically more social and informal.	After experiencing an event, an individual writes a quick, short note via social media in regards to that experience.	Social media • Facebook • Twitter • LinkedIn
Wikis	Collaborative online pages, wikis, allow users to edit information in real time with any individual with access. Wikis are typically used in social, collaborative environments as any user can edit information at any point.	A wiki page is created on a topic of interest to a person or group. As information is gathered regarding that topic, all members are able to edit, add, and remove information from the wiki. The final result is a collaborative document with information from different sources (individuals).	• Wikispaces • Google Doc • Learning Management Systems (LMS) • OneDrive
Group Reflection	As mentioned in the literature, reflection is not typically done alone. Group reflection refers to conversations between peers where particular subjects, experiences, or professional activities are shared among the group.	After experiencing an event, individuals collaboratively reflect and discuss feelings or emotions, new knowledge, or any lingering/remaining questions in regards to the shared experience. Assemblage of individuals for group reflection can be done in a number of ways: 1) whole class, 2) by skill or ability, 3) shared experiences, etc.	Padlet VoiceThread Skype Google Hangouts Zoom WebEx
Video Reflection	Rather than writing, some individuals are able to communicate and explore their thoughts better using the practice of video reflection. Video reflection is a video recording of a specific subject, experience, or professional activity. Video reflection is particularly useful in online classroom environments to help build community between learners at a distance.	After each week or module, individuals can reflect and discuss feelings or emotions, new knowledge, or any lingering/remaining questions in regards to the topic they learned. At the end of the course, learners can go back and watch their previously-recorded videos to see their growth over a certain amount of time. In some cases, seeing rather than reading may be more effective.	Computer webcam Cell phone camera Video recorder Padlet VoiceThread Flipgrid Skype Google Hangouts
Audio Reflection	Much like video reflection, some individuals are able to communicate and explore their thoughts using their voice alone. Audio reflection is an audio record of a particular subject, experience, or professional activity. Audio reflection is particularly useful in online classroom environments to help build community between learners at a distance.	In lab type courses (especially in medicine education), audio reflection allows the individual to capture thoughts and notes while working. Specific examples of this are talking during an autopsy to note things of interest, or to review later, or taking audio notes during a surgery to recall steps taken in a process.	Computer microphone Cell phone microphone Tape (voice) recorder Padlet VoiceThread Flipgrid Skype Google Hangouts
Multimedia Reflection	Multimedia refers to having multiple mediums (text, video, image, audio, animation, etc.) at one's disposal while reflecting on a particular subject, experience, or professional activity.	Some learners are able to associate information they learned in different styles and formats; as such, learners should be able to reflect in similar ways. Rather than limit learners to use one medium for reflection, open the requirements up and allow learners to use multiple media.	Text (typed or written) Microphone (cell phone or computer) Camera (cell phone, computer, etc.) Padlet VoiceThread Flipgrid
Peer Review & Revision	Peer review is a process where individuals review, critique, and assess another's work for summative or formative purposes. When combined with scaffolds, peer reviews allow learners to consider refining their own work during the revision process based on notes from their peers.	In many cases, peer reviews allow for reflection twofold. First, by reviewing work of others, an individual is able to review and see what they would do both differently and similarly to the document they are reviewing. Second, by continuing to receive feedback from peers, an individual is able to identify both areas of weakness and strengths within their own work.	Pen and paper Annotations in Word or Google Docs Video or voice reflection
Exit Slip or One-Minute Paper	Exit slips are informal assessments given to students (typically at the end of a course) to consider a question posed by the instructor. Similar to the exit slip, a one-minute paper is when students are given one minute to write as much as they know about a topic (either before or after the topic is taught).	Exit slips are considered low-stakes and allow the learner to recall and activate prior knowledge. Before discussing or introducing a new module, a teacher may ask students to define or explain a new concept. At the end of a class, a teacher may ask students to write as much as they can on a topic that they learned that day or the day before using a one-minute paper.	Pen and paper Electronic quizzing tools • KaHoot! • Quizzz • QuizMaker Electronic survey (open ended question) • Qualtrics • SurveyMonkey
Portfolio	A portfolio is a compilation of materials that highlights a person's beliefs, skills, qualifications, education, training, experiences, etc. Portfolios require reflecting on particular elements to demonstrate competency.	In order to enter the job market, career preparation students create a professional portfolio in order to demonstrate projects they have developed and competencies they have mastered. Portfolios for some careers are used as part of the interview process for positions after schooling.	Portfolios can either be paper based or electronic • Binder and papers • Wix • Weebly • Portfolium • TaskStream (teacher education) • Portfoliobox • Crevado

Figure 2

Reflection Question Prompts

HERE ARE A FEW OF OUR FAVORITE REFLECTION QUESTIONS TO USE IN YOUR INSTRUCTION.
ADJUST OR EDIT THESE QUESTIONS TO MEET YOUR STUDENTS' NEEDS.

BEFORE STUDENTS BEGIN THEIR WORK:
- What do I know about this topic or subject?
- What would I like to learn about this topic or subject?
- Where will I find the information I need for this assignment?
- What kinds of research do I need to do?
- Do I fully understand the question or prompt?
- How can I break down the assignment into smaller parts?
- Did I give myself ample time to really think about this assignment and brainstorm possible solutions?
- Who can help me get what I need to complete this work?
- What tools or supplies should I use for this assignment?
- How will I be assessed for this project?
- Do I understand all parts of the rubric or scoring guide?
- What are my goals for this assignment?
- What do I need to do in order to meet those goals?
- How will this assignment be turned in to my teacher?
- Do I know the due date for this project, and am I able to meet it?

WHILE STUDENTS ARE WORKING:
- What have I learned so far?
- What else do I need to know in order to finish this task?
- Can I make a few predictions about what will happen next?
- How well am I using my time?
- Am I answering all parts of the questions completely?
- Which parts of this assignment are easy for me?
- Which parts of this assignment are challenging for me?
- Does my work reflect my effort thus far?
- Am I putting forth my best effort in my work?
- Are the sources I am using valid and reliable?
- Am I citing my sources properly?
- How close am I to achieving my original goals with this assignment?
- Are the goals I set before I began this assignment still reasonable? Do I need to readjust them?
- If possible, can I ask my teacher or a classmate for feedback on my current progress on this assignment?
- Am I learning interesting information as I work on this project?

AFTER STUDENTS FINISH THEIR WORK OR ASSIGNMENT:
- What new information have I learned from this assignment?
- What surprised me about what I learned?
- How quickly was I able to finish this work?
- Where were my roadblocks?
- How did I move through roadblocks or challenges?
- Is my work adapted for the correct, appropriate audience?
- How closely did I follow the parameters of the assignment?
- Using the grade rubric, how would I score my own work?
- What would the teacher say about my work?
- If given the opportunity, one thing I would change about this assignment is . . .
- How does my work compare to what my classmates did on this assignment?
- Does my work truly reflect my effort?
- Have I achieved the goal I set for myself with this assignment?
- What would I do differently next time, if given the chance?
- Am I proud of my work?

WE ARE TEACHERS

Note. Retrieved from https://edtechbooks.org/-KVmN

Conclusion

This chapter focused on the use of reflection as an instructional method for teaching and learning. The main takeaways from this chapter are to use reflection effectively and not to use reflection for the sake of using it. This chapter first addressed what reflection is and how it is defined. Next, it covered elements of why reflection should be used as an instructional method. Lastly, this chapter presented how to use reflection by listing different reflection activities, an example in practice, and different technologies that could be used when implementing reflection. While examples of reflection in practice are given, instructors must understand, plan, and prepare questions to elicit in-depth responses considering individual concerns and beliefs regarding a particular subject, experience, or professional activity.

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