Reflections in Experiential Learning: A Literature Review

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Introduction

Reflection is known to be a key component of experiential learning and career development (Lucas, 2017; Niagara College, n.d.; Sattler, 2011, as cited in HEQCO, 2016; Madhavan, Oakley, & Kun, 2008; Sinche, 2016; Norman-Burgdolf & Vanderford, 2016); however, it is not always embedded within post-secondary curricular or co-curricular experiential learning courses or programs. During a 2018 inventory of experiential learning courses offered at the University of Guelph that met at least four to six of the Ontario Ministry of Colleges and Universities, it was found that of the 166 courses submitted that did not meet all six Ministry criteria, 87% were missing reflection. Despite decades of research on reflections in experiential learning and career development, many educators do not feel comfortable with leading reflection, do not know what constitutes reflection, do not know why reflection is important, or how reflection can be integrated into their course or experience. The aim of this brief literature and resource review is to distill existing research and information on reflection into the key components that make up strong reflection practice in order to help support the addition or re-design of reflection within experiential learning courses and experiences.

So, what exactly is reflection? While many commonalities exist in the understanding of reflection across different researchers, there is currently no standardized definition of reflection (Atkins & Murphy, 1993, as cited in HEQCO, 2016; Moon, 2007). One of the "definitional aspects" of reflection, suggested by the Higher Education Quality Council of Ontario (HEQCO), is "thoughtful retrospection and judgment about experience, feelings or knowledge, that provides new understanding and informs future actions" ([Kember et al., 2001; Schon, 1983; Sullivan & Rosin, 2008], as cited by HEQCO, 2016). This definitional aspect relates greatly to the application of reflections in experiential learning, as observed throughout this literature and

resource review. Delving a little deeper, reflection seems to be a way of learning and developing by processing existing knowledge and philosophy, analyzing practice, and using the two to inform each other ([(Bolton, 2001; Brock & McGill, 1988; Dewey, 1910; Kim, 1999; Nolan, 2008], as cited by HEQCO, 2016; Moon, 2007; Watson & Kinsel, 2003). Reflection can also be seen as a way of learning from mistakes and in some cases may be informed by a desired set of outcomes, such as improved learning, greater understanding, or even team building (Moon, 2007; Watson & Kinsel, 2003). The term 'critical reflection' refers to an enhanced form of reflection that also incorporates links between academic theory and practical experience, challenges assumptions, and encourages examination of different perspectives ([Ash & Clayton, 2009; Whitney & Clayton, 2011; Zlotkowski & Clayton, 2005], as cited by HEQCO, 2016). 'Reflective practice' is another frequently used term but can have varying definitions depending on the context (Moon, 2007). Typically, reflective practice can refer to a "sequence of activities" or a more habitual process of reflection (Moon, 2007). Reflection and reflective practice have also been noted to provide certain benefits, which can include increased self-awareness; increased critical thinking, decision making, goal-setting, and problem-solving skills; and increased understanding of the connection between academic learning and practice ([Boud et al., 1985; Conrad & Hedin, 1987; Eyler & Giles, 1999], as cited by HEQCO, 2016; Watson & Kinsel, 2003). However, for learners to experience these benefits, the content and methodology of reflections have to be structured in a way that is conducive to the development of the aforementioned understanding and skills.

Similar to the lack of consensus on the definition of reflection, there are also many different ways of conducting reflection. Reflections can be impromptu and take place during a situation or experience, known as "reflection-in-action", or be planned and take place outside a

situation or experience as "reflection-on-action" (Schon, 1983, as cited in HEQCO, 2016).

Variations in reflection content and methodology can also have an impact on the benefits of

reflection that are experienced by those participating in reflection, often referred to as learners.

Based on different literary studies and institutional resources, there are some key aspects of

reflection content and method that contribute to different benefits of reflection and enhance

reflection quality. These key aspects will be discussed in greater detail throughout this literature

review and incorporated into a new Framework for Reflections in Experiential Learning. This

framework will be a tool for educators to gain a deeper understanding of reflections and different

considerations for developing or enhancing reflective their activities and practice.

Research Methodology

The research for this literature review was gathered from September to November 2020,

from a variety of digitally available research studies, books, literature reviews, and institutional

resources on experiential learning and career development. The research focus was on best

practices and considerations for increasing the quality of reflections ("on-action") in experiential

learning, as well as the role of reflection in career development. An additional area of interest

was reflections within Science, Technology, Engineering, and Math (STEM) disciplines. This

focus on STEM was driven by the 2018 University of Guelph experiential learning course

inventory data and anecdotes from faculty and program coordinators about the difficulty in

integrating reflection into the sciences. After the information was gathered, commonalities in

reflection criteria and considerations across different resources were compiled.

Databases that were used to conduct research were Primo, offered through the University

of Guelph Library, and Google Scholar. Institutional websites, including those of the University

of Guelph, Niagara College, Carleton University, and Brock University, were also consulted for

information and resources. Any resources dated prior to the year 2000 were excluded from the research.

Part 1: Content of Reflections

From literature research on experiential learning, career development, and reflection, there are several recurring elements that can be included in the content of reflections to maximize their quality. These elements have been identified by looking at existing models of reflection and examining commonalities in reflection content across different resources.

1.1 Models of Reflection

Reflection has been the subject of discussion and analysis for many decades, resulting in the formation of numerous models and interpretations within a wide variety of experiential learning and professional applications. The understanding of experiential learning and cooperative education today can be traced back to John Dewey's research on experiential learning and reflection in the 1900's (Lucas, 2017; Husebø, O'Regan, & Nestel, 2015). Dewey considered critical reflection to be an important part of learning, which he saw as a continuous process involving experience and social interaction (Lucas, 2017). His work was expanded upon by many educators such as Schön, who discussed reflections within a professional development context, and Kolb (Lucas, 2017, Husebø, O'Regan, & Nestel, 2015). Kolb, similar to Dewey, linked reflections to thinking and learning. As a result, his experiential learning theory and cycle have been used to inform educators on experiential learning today (Lucas, 2017; Husebø, O'Regan, & Nestel, 2015; HEQCO, 2016). In its simplest, Kolb's theory is comprised of the following six tenets: "1. Learning is a process; 2. Learning is grounded in experience; 3. Learning involves mastery of all four learning nodes; 4. Learning is a holistic process of adaption; 5. Learning occurs when an individual interacts with [their] environment; and 6.

Knowledge is created through learning" ([Kolb, 1984; Stirling, 2013], as cited by HEQCO, 2016). The four learning nodes in question are 'conceptualization', which includes applying theory to practice; 'experimentation', such as problem-solving and risk-taking behaviours; 'experience', and 'reflection' (Kolb, 1984, as cited by HEQCO, 2016). The reflection portion of the cycle includes asking the following questions: "What? So what? Now what?" (Kolb, 1984, as cited by HEQCO, 2016; Volpe White, n.d.).

These reflection questions are also the main elements of Borton's model for reflection, which was published in 1970 (McClean, 2019). The first step, "What", is a brief description of the experience, while the second step, "So what" consists of using theory to analyze and understand the proceedings (McClean, 2019). The final step, "Now what", requires one to consider the consequences of their actions and their next steps for the future (McClean, 2019). This model is considered good for beginners and for reflecting on overall learning, rather than a specific experience (McClean, 2019). It has also been used as a basis for further models and frameworks of reflection, such as for guiding debriefs in clinical medical practice, in which case the reflection would revolve around a specific event (Bluett, 2013).

Another commonly used model is Gibbs' reflective cycle, published in 1988, which further expands on Kolb's work and has been used for reflections in various medical professions, including "midwifery, interprofessional patient-centred care and ethical dilemmas, emergency care, nursing, physiotherapy, and dental hygiene education" (Husebø, O'Regan, & Nestel, 2015). However, unlike Kolb's cycle, Gibbs' model links to the "affective and social aspects of learning" by incorporating emotions and feelings into the reflective aspect of experiential learning (Husebø, O'Regan, & Nestel, 2015). Gibbs' cycle has six stages (see Figure 1), each with question cues and prompts, and is meant to be carried out after an experience has taken

place. The six stages are: 1. Description, where the happenings of the experience are described;

2. Feelings, where the learner's feelings during the experience are considered; 3. Evaluation,

where the experience is judged; 4. Analysis, where alternate perspectives and information are

used to understand the experience; 5. Conclusion, where alternate pathways and overall learning

are determined; and 6. Action Plan, where implications for the future are discussed (Husebø,
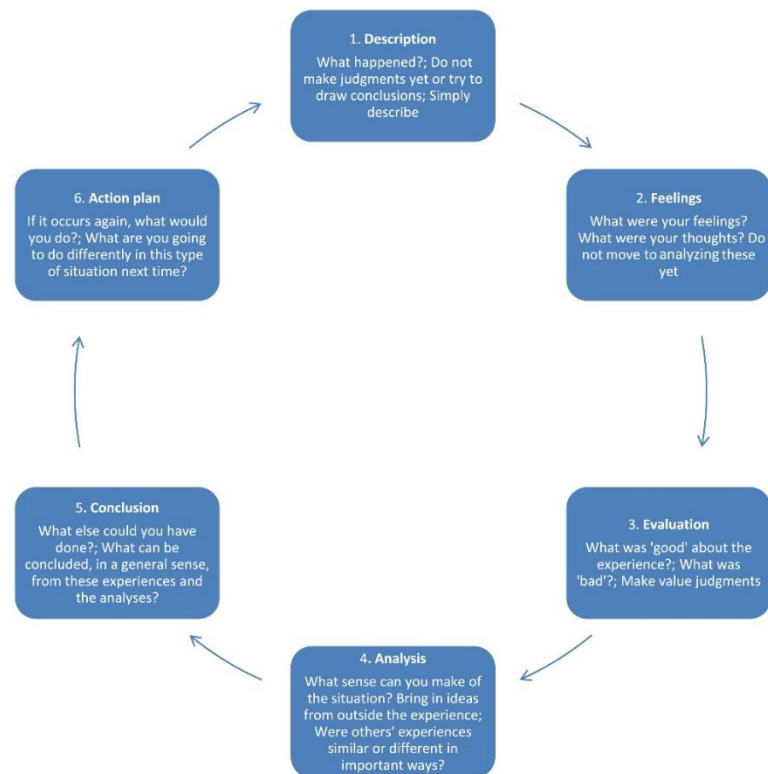
O'Regan, & Nestel, 2015; McClean, 2019).

Figure 1: Diagram of Gibbs's Reflection Cycle (Husebø, O'Regan, & Nestel, 2015)

The DEAL model of reflection, published by Ash & Clayton in 2004, is a more recent

model that links reflection with learning. It is also currently being promoted as a strong guiding

framework for reflection by institutions who have studied the subject of experiential learning and

reflection, such as Brock University (2020), Niagara College Canada (n.d.), and HEQCO (2016).

This model consists of three stages, including: 1. Description, where the details of the experience

are discussed; 2. Examination, where learning is analyzed and linked to personal goals; and 3.

Articulation of Learning, where overall learning is discussed and goals for future learning are set (Ash & Clayton, 2009, as cited by HEQCO, 2016; Niagara College Canada, n.d.).

While numerous models and frameworks for reflection exist, Kolb's experiential learning cycle, Borton's model, Gibbs' reflection cycle, and the DEAL model seem to be the most commonly referenced when discussing reflections in professional and experiential learning situations (Husebø, O'Regan, & Nestel, 2015; McClean, 2019; Lucas, 2017; Steele, 2019; Moon, 2007; Maloney, Tai, Lo, Molloy, & Ilic, 2013; Volpe White, n.d.; Dyke, 2009; Bluett, 2013; HEQCO, 2016; Niagara College Canada, n.d.). Overall, all of the models agree that for reflection to take place, one must describe the experience, conduct some degree of analysis of the experience, and relate the experience to future outcomes (Husebø, O'Regan, & Nestel, 2015; McClean, 2019; Volpe White, n.d.; Bluett, 2013; HEQCO, 2016; Niagara College Canada, n.d.). Further, when analyzing the experience, the models suggest that one should consider the emotions felt during the experience and their impact, alternate perspectives, and the positive and negative aspects of the experience (Husebø, O'Regan, & Nestel, 2015; McClean, 2019; Volpe White, n.d.; Bluett, 2013; HEQCO, 2016; Niagara College Canada, n.d.).

1.2 Common Elements of Reflection Content

Beyond the basic structure of reflections, including description, analysis, and future implications, there are several elements that can be incorporated to enhance the quality and benefits of reflections.

Feelings and Emotions

One such important element of reflection would be a discussion of the emotions and feelings evoked during the experience (Lucas, 2017; Bluett, 2013; Husebø, O'Regan, & Nestel, 2015; Moon, 2007; Constantinou & Kuys, 2013; McClean, 2019; Niagara College Canada, n.d.).

Self-awareness, with regards to feelings, emotions, thoughts, habits, and behaviours, is a key part

of good reflection and is featured in many models of reflection (Constantinou & Kuys, 2013;

Niagara College Canada, n.d.; McClean, 2019). Understanding one's emotions and feelings can

"help to establish meaning and clarity to the situation," and provide an understanding of one's

values, which is important for guiding behaviour and determining conflicts of interest (Bluett,

2013). Further, reflecting on feelings can also provide insight into future behaviours and steps

([Kember et al., 2001; Schon, 1983; Sullivan & Rosin, 2008], as cited by HEQCO, 2016).

Additionally, in a study conducted with students from the Monash Physiotherapy program, it was

found that when writing reflections some students struggled with expressing their emotions in a

manner that was appropriate and professional, creating a psychological barrier to reflection

(Maloney, Tai, Lo, Molloy, & Ilic, 2013). As debriefs are an important component of many

medical professions, it is important for students to learn how to communicate their emotions in a

professional manner (Maloney, Tai, Lo, Molloy, & Ilic, 2013). Thus, by incorporating emotions

in reflection, students can also prepare for future reflections in a professional setting and

determine areas to work on for the future, such as communicating emotions professionally.

Assumptions and Alternate Perspectives

Challenging assumptions and considering alternate perspectives is another important

element of reflection ([(Ash & Clayton, 2009; Whitney & Clayton, 2011; Zlotkowski & Clayton,

2005], as cited by HEQCO, 2016; Bluett, 2013; McClean, 2019; Fletcher, 1997; Moon, 2007;

Constantinou & Kuys, 2013; Dyke, 2009; Calkins, Grannan, & Siefken, 2020; Lohwasser, 2019;

Niagara College Canada, n.d.; Heslin & Keating, 2017). This element can increase the depth of

reflection to critical reflection (Moon, 2007; [Ash & Clayton, 2009; Whitney & Clayton, 2011;

Zlotkowski & Clayton, 2005], as cited by HEQCO, 2016). Similar to emotions, pre-existing

beliefs and assumptions provide insight into one's values, and by extension, insight into their

behaviours and decisions (Fletcher, 1997). Challenging these pre-existing assumptions, beliefs,

and points of view can promote learning and lead to increased self-awareness, which is known to

be an important aspect of reflection (Constantinou & Kuys, 2013, Heslin & Keating, 2017;

McClean, 2019; Niagara College Canada, n.d.). Further, according to Dewey, reflections and the

experiences of other people are the basis from which "knowledge and theory" are gained (Dyke,

2009). This idea is supported by Heslin & Keating (2017) who claim that being open to alternate

ways of doing things and learning from those more experienced or knowledgeable than oneself,

is an aspect of the "growth mindset", which is key for enhancing learning. In addition to learning

from others, the ability to question their advice and experiences was also mentioned as being

important for career development in the field of physics, by junior and senior permanent

researchers (Lohwasser, 2019). It is likely that this advice can be expanded to other disciplines as

well, within science, technology, engineering, math (STEM) and beyond.

Exposure to alternate perspectives has additional benefits for STEM, by way of helping

with the development of skills that are not necessarily supported in higher education (Calkins,

Grannan, & Siefken, 2020). The Mathematical Association of America's Committee on

Undergraduate programs in Mathematics stated in a 2004 report that STEM courses, especially

math courses, should move towards assessing learning in terms of the development of important

skills, such as problem solving, and critical reasoning/thinking. (Calkins, Grannan, & Siefken,

2020). A study examining the impact of Peer-Assisted Reflection in math courses, found that

exposure to multiple perspectives and ways of solving math problems, by way of peer

interaction, helped improve critical thinking and problem-solving skills (Calkins, Grannan, &

Siefken, 2020). The study also mentioned that "question[ing] authoritative sources" is a

component of critical thinking, which supports the advice provided by permanent researchers in

physics (Calkins, Grannan, & Siefken, 2020; Lohwasser, 2019).

Finally, some of the models that incorporate the consideration/challenging of

assumptions and alternate perspectives into their reflections are the DEAL model, the Core

model for critical reflection (2010), and Mezirow's reflective model (2010) (Niagara College

Canada, n.d.; McClean, 2019). Mezirow's model has the sole purpose of guiding those

experienced in reflection through the process of changing their perspectives and points of view in

ten phases (McClean, 2019). The fact that there is an entire reflection model dedicated to this

purpose, further supports the idea that considering alternate perspectives is an important part of

reflection

Positive/Negative Experiences

Another element commonly included in models of reflection, is considering the positive

and negative aspects of an experience, which could include positive and negative emotions,

positive feedback, what went well, and what could be improved upon (Volpe White, n.d.;

Husebø, O'Regan, & Nestel, 2015; Niagara College Canada, n.d.). This is a key part of the

'Evaluate' stage of Gibbs' reflective cycle, other debriefing methods, and the DEAL model

(Husebø, O'Regan, & Nestel, 2015; Niagara College Canada, n.d.).

As previously stated, discussing emotions is an important aspect of reflection, and taking

care to address negative as well as positive emotions can help with normalizing potentially

undesirable feelings, such as anger, and addressing them in a professional manner (Niagara

College Canada, n.d.; Maloney, Tai, Lo, Molloy, & Ilic, 2013). Further, thinking about what

went well, any positive feedback that was received, and the aspects of an experience that the

learner enjoyed or felt confident about, is also beneficial for helping learners better understand

their skills and interests (Sinche, 2016). Learners can use this knowledge to inform their future

career decisions and help them with their career development (Sinche, 2016). Additionally,

looking at what did not go as well in the experience and the areas that could be changed or

improved upon, contributes to a growth mindset, which is important for overall learning (Heslin

& Keating, 2017). For learners with a growth mindset, the focus is on improving rather than

being discouraged by setbacks or failure, thus contributing to greater learning over time (Heslin

& Keating, 2017).

Developing a habit of evaluating work performance and habits and considering areas of

improvement can also be useful within the workplace, or even academic environments.

According to Giada di Stefano, associate professor of strategy and business at HEC Paris, taking

the time to think and reflect on the work one is doing and the way in which it is being done, can

allow workers to perform better and increase motivation (Niagara College Canada, n.d.). It can

also boost confidence, improve information recall, and help connect theory with practical

experience, and vice versa, which is important for experiential learning (Niagara College

Canada, n.d.).

Connections Beyond the Experience

Drawing a connection between personal experience, or disciplinary theory, and the

practical experience gained from experiential learning, is also often mentioned as an important

aspect of reflection and critical reflection ([(Ash & Clayton, 2009; Whitney & Clayton, 2011;

Zlotkowski & Clayton, 2005], as cited by HEQCO, 2016; Volpe White, n.d.; Lucas, 2017;

Niagara College Canada, n.d.; McCarthy, 2018). From a career development perspective,

reflections can be used to help individuals translate their skills from an academic environment to

an experiential learning environment and vice versa (Niagara College Canada, n.d.). However,

connections between theory and practice are also integral for learning to take place. In his work,

Kolb mentioned that "the ability to connect experience and ideas through sustained reflection" is

required for students to learn through experiential learning (McCarthy, 2018). As a result, part of

the purpose of critical reflection is to unite learnings from academic environments and workplace

environments in order to gain a deeper understanding of the experience (Lucas, 2017). Similarly,

in a transactional model developed by Lucas (2017), critical reflection is shown as a central part

of the experiential learning process, that is influenced by theory and practice, as well as

experience. In turn, the model also shows how critical reflection can influence the reflector, the

university, and the workplace environment (Lucas, 2017). This highlights the interconnected

nature of learning, which relates to the surrounding environment in addition to personal

experience and disciplinary theory.

Correspondingly, Eyler et al. (1996) and Rogers (2001), as cited in *A Practical Guide for

Work-Integrated Learning* created by HEQCO (2016) mention the importance of prompting

learners to draw from their personal experiences in reflection, while simultaneously connecting

with the wider community around them. This idea is also echoed within community engaged

learning and service-learning. Reflections can be used as a way of understanding the intersection

of different identities and contexts and the role of learners within their surrounding community

(Connor, Seifer, Ahmed, Hutter, & Plaut, 2008; University of British Columbia, n.d.). In a

framework for reflections in community engaged learning created by the University of British

Columbia (n.d.), it is suggested that learners consider ethical and culturally appropriate

behaviour and the value of learnings from the experience within the larger society and

community. Thus, connections between personal experience, theory, practical experience,

workplace environment, and the broader community are an important part of reflections in experiential learning.

Connection to Learning Goals/Outcomes

The setting of learning goals or outcomes is a practice also often integrated in reflection, or critical reflection (Zlotkowski & Clayton, 2009, as cited by HEQCO, 2016; Volpe White, n.d.; Lohwasser, 2019; Norman-Burgdolf & Vanderford, 2016; Heslin & Keating, 2017). This element is included in different models and frameworks, including the DEAL Model, Kolb's experiential learning cycle, Ash & Clayton's 3-step process for critical reflection, Eyler & Giles' 4 C's of critical reflection, and Ashford & DeRue's mindful engagement learning process (HEQCO, 2016; Volpe White, n.d., Heslin & Keating, 2017). Both learning goals and learning outcomes include setting meaningful goals, either personal, professional, or academic, however learning outcomes also include a measurable factor, so progress can be tracked (Volpe White, n.d.). Setting learning goals or outcomes is a way of "synthesizing action and thought" and enhancing learning (Volpe White, n.d.; Heslin & Keating, 2017). According to Heslin & Keating (2017), setting learning goals is an important part of committing to learning and setting the right mindset for learning to take place. Having learning goals that are more specific is indicative of a 'growth mindset' and 'self-improvement motives' which are more conducive to learning, while vague goals can indicate that the individual is trying to ensure the goals will be attained, rather than focussing on genuine learning (Heslin & Keating, 2017).

Moreover, goal-setting is an important practice for career development (Lohwasser, 2019; Norman-Burgdolf & Vanderford, 2016). In terms of career development in physics, according to a questionnaire answered by PhD students, post-doctoral researchers, and junior and senior researchers, goal-setting is an important skill and a lack of long-term goals is a common

mistake made by many (Lohwasser, 2019). Further, an increasing number of PhD students are looking towards fields outside those in which they have been specifically trained (Norman-Burgdolf & Vanderford, 2016). On an international scale, only 20% of those with PhD's remain in academia or research, while the rest may enter careers relating to consulting, government, non-profits, and the private sector (Norman-Burgdolf & Vanderford, 2016). However, despite the high volume of people leaving academia, the focus of academic programs remains on preparing students for careers in academia, without delving into alternate career paths (Norman-Burgdolf & Vanderford, 2016). Thus, a course was developed at the Graduate School of the University of Kentucky called "Preparing Future Professionals" to help bridge the gap (Norman-Burgdolf & Vanderford, 2016). One of the four key components of the course is self-reflection, which includes a discussion of transferable skills, such as where the individual's strengths may lie, which areas they would like to improve, and which opportunities or steps they can take to prepare themselves for their career path of choice (Norman-Burgdolf & Vanderford, 2016). Overall, learning goals/outcomes and the act of goal-setting seem to be important for reflection, experiential learning, and career development processes.

Part 2: Methodology of Reflections

In conjunction with the content of reflections, there are also many considerations for how reflections and reflection activities should be implemented to maximize reflection quality. Based on the analysis of various sources from institutional guides and literature, the important considerations for reflection methodology can be subdivided into common considerations for reflection methodology, methods for creating an environment conducive to reflection, and the importance of training in reflective practice.

2.1 Common Considerations for Reflection Methodology

Some common considerations for reflection methodology include the timing of reflections, whether reflections are guided, how reflections are assessed, and if they incorporate different ways of learning.

Timing

Timing will vary based on the type of reflection and reflection activity taking place, however continuous reflection is considered a marker of higher-quality reflection (Eyler, Giles & Schmiede, 1996, as cited by HEQCO, 2016; Volpe White, n.d.). Alan Steele, an associate professor of the Department of Electronics at Carleton University found that students tend to have varied responses to reflection and varied abilities to reflect; however, across multiple reflections, the reflective abilities and written communication skills of students tended to improve (Steele, 2019). In addition, Steele suggested that multiple reflection opportunities might help students to better understand the benefits of reflection and be useful for capturing revelations or key moments of learning by the student (Steele, 2019). Moreover, the nature of career development and learning seems to be cyclical, consisting of new experiences, new knowledge, and/or re-evaluation, followed by reflection, which continues throughout ones career (Madhavan, Oakley, & Kun, 2008; Sinche, 2016). Thus, continuous reflection in experiential learning could be a good way of building helpful habits for career development. Additionally, Niagara College Canada's Work Integrated Learning Modules suggest that consistency is also important in reflection (Niagara College Canada, n.d.). One of the challenges of reflection activities is finding the time to do them, as often in professional settings there are multiple competing priorities of high importance at the same time (Mamede & Schmidt, 2005, as cited by HEQCO, 2016). The Niagara College modules mention that the length of reflection is not as

important as building a reflection plan and integrating the practice into one's routine, which could help address the issue of finding time in one's busy schedule (Niagara College Canada, n.d.).

In conjunction with developing a continuous, consistent practice, it is also important to carefully consider the frequency of the aforementioned practice. In a study where physiotherapy students were asked to make daily entries in guided reflection journals, of those who liked the practice, 28% deemed daily entries unnecessary while 17% highlighted the time-consuming nature of the entries (Constantinou & Kuys, 2013). Currently, it is suggested that in work-integrated learning, continuous reflection take place before, during, and after an experience ([Fade, 2002; Rogers, 2001], as cited by HEQCO, 2016; Volpe White, n.d.). Any reflections taking place after an experience should take place as close to the experience as possible, while leaving some time in between for enough distance to develop so one can look back more effectively ([Fade, 2002; Rogers, 2001], as cited by HEQCO, 2016; Volpe White, n.d.). Encouraging notetaking throughout the experience might also help ensure that learners do not forget what they are meant to be reflecting upon (Niagara College Canada, n.d.). Overall, the timing of reflection will vary with the nature of the experiences and desired outcomes of reflection. However, when determining timing, opting for something that is continuous, consistent, and takes place at key parts of the experience might improve the quality of reflection.

Guided Reflection

Most of the literature examined seemed to discuss reflections that are guided in some way. Guided reflections have been found to be quite beneficial for increasing the quality of reflection (Constantinou & Kuys, 2013; Bluett, 2013; Volpe White, n.d.; Fletcher, 1997; Steele, 2019). Oftentimes, learners may be unfamiliar with the concept of reflection and how to

participate, in which case providing some guidance on the process and purpose of reflection would be beneficial (Steele, 2019). Generally, especially when reflections are being newly introduced, reflections with guidelines, structure, or facilitation have been suggested as a more effective option than unguided reflections, (Constantinou & Kuys, 2013). Moreover, guided reflections are also useful for ensuring that specific emotions and feelings regarding a particular experience are addressed (Bluett, 2013). In the case of nurses, for example, these guided reflections could take place after a "critical incident", to help clarify the experience (Bluett, 2013). This also ties in with the idea of following different models of reflection or using them to determine the content of reflections. If there are certain desired criteria for the content of reflections, in order for them to be explored, some degree of guidance must be required, especially for those unfamiliar with reflection. This is likely why models of reflection tend to be accompanied by guiding questions, to assist those who may be unfamiliar with them (McClean, 2019). Additional benefits of guided reflections, specifically relating to facilitated reflection activities, include increased participation, creativity, and learning (Volpe White, n.d.). Thus, it can be concluded that some degree of guidance, through guidelines or facilitation, would be beneficial for increasing the quality of reflection.

Assessment

Reflections in experiential learning can also often be assessed by different parties, depending on the experience itself. Assessing reflections in some way can help with promoting higher quality reflections and ensuring the desired outcomes of reflection are accomplished (Ash & Clayton, 2009, as cited by HEQCO, 2016). An assessment factor may also provide motivation for individuals to participate in reflection (Constantinou & Kuys, 2013). However, the method of assessment can also have a major impact on the quality of the reflection itself. In a study

conducted to gauge the honesty of critically reflective essays written by physiotherapy students,

it was found that only 20% of the students felt they had been completely honest in their

reflection (Maloney, Tai, Lo, Molloy, & Ilic, 2013). Many students did not feel comfortable

discussing their feelings in an assessed activity (Maloney, Tai, Lo, Molloy, & Ilic, 2013).

Further, the students felt additional pressure to fulfill the expectations of the activity and receive

good marks, resulting in embellishment and the creation of fictitious scenarios (Maloney, Tai,

Lo, Molloy, & Ilic, 2013). As stated by one student, rather than "focusing on reflecting properly,

which would benefit [them] more as [clinicians]," they were more concerned with their grades

(Maloney, Tai, Lo, Molloy, & Ilic, 2013). Thus, the conclusion of the study suggested that

instead of assessing reflections with percent grades, they be assessed through a 'pass' or 'fail'

system (Maloney, Tai, Lo, Molloy, & Ilic, 2013). Furthermore, competitiveness, which could

potentially be spurred on by giving marks for reflections, tends to detract from the development

of a mindset geared towards learning, or 'learning mode' (Heslin & Keating, 2017). The level of

meaningful engagement of individuals in an experiential learning process is impacted by how

engaged they are in learning mode, making it an important consideration for reflections in

experiential learning (Heslin & Keating, 2017). Learning mode can be induced by emphasizing

growth, learning from mistakes, and using feedback as a tool for improvement (Heslin &

Keating, 2017). Environments where individuals could be "penalized or disparaged for making

mistakes in the service of learning" would have the opposite impact (Heslin & Keating, 2017).

An assessment system with percent or letter grades, could be interpreted as a way of individuals

potentially being penalized for not fulfilling expectations or the desired criteria. Therefore, to

maximize honesty and engagement in reflections, it appears some degree of assessment is

necessary; however, the assessment should be similar to a pass/fail system, rather than a system

In terms of assessment criteria, many reflection frameworks have been designed as a way of evaluating reflections (Moon, 2007; HEQCO, 2016), Thus, assessment rubrics can be developed by way of interpreting reflection models, such as the DEAL model, or by using existing tools for assessing reflections, such as the REFLECT Rubric developed by Wald et al. (2012) as cited by HEQCO (2016).

Different Ways of Learning

Another way of increasing the quality of reflections could be to vary reflection activities based on different learning styles (Volpe White, n.d.; Mann, Gordon & MacLeod, 2009, as cited by HEQCO, 2016). The Learning Styles Theory has been widely discussed as a way of categorizing the different ways individuals learn and intake information and altering teaching to match (Al-Azawei, Serenelli, & Lundqvist, 2016). However, this theory has received criticism regarding its effectiveness and the lack of a clear-cut way of designating learners with specific learning styles (Al-Azawei, Serenelli, & Lundqvist, 2016) . A more thorough model is the Universal Design for Learning, (UDL) which focusses more on enhancing the learning environment and making it accessible to all learners by "provid[ing] multiple means of Engagement", "Representation", and "Action & Expression" (Al-Azawei, Serenelli, & Lundqvist, 2016; CAST, 2018). The UDL guidelines are highly relevant to reflection, especially as those for Engagement discuss incorporating self-assessment and reflection into learning (CAST, 2018). Further, the guidelines for Action & Expression suggest providing different ways for learners to communicate ideas, which is important for developing reflection activities (CAST, 2018).

Variation in reflection activities can help sustain the interest of those partaking in reflection and reduce the chances of 'reflection fatigue', which could cause individuals to be less

engaged (HEQCO, 2016). In addition, different methods of reflection could increase authenticity and comfort for the learners with whom they resonate, which would improve the level and quality of participation (Niagara College Canada, n.d.). Niagara College suggests some different ways of reflecting, including creative mediums, such as poetry, images, doodles, and songs, as well as active mediums, such as incorporating exercise into reflection (Niagara College Canada, n.d.). It is suggested that these different types of activities could help foster the development of new and unexpected ideas and connections (Niagara College Canada, n.d.). Written reflections, which could be common in educational environments, may be limited in their interactivity and could even hinder communication at times (Fletcher, 1997). There are many forms of communication and just focussing on written communication could be a limitation for many individuals (Fletcher, 1997).

2.2 Creating an Environment Conducive to Reflection

A key part of implementing reflections or reflection activities and enhancing their quality is to ensure the surrounding environment is one that is conducive to reflection. This can include incorporating feedback and collaboration, promoting a growth mindset, and creating an environment of trust.

Feedback and Collaboration

Incorporating feedback, from facilitators and peers, and collaboration into the reflection process can enhance learning and help promote an environment that supports reflection (Seibert & Daudelin, 1999, as cited by HEQCO, 2016; Calkins, Grannan, & Siefken, 2020; Mason & Singh, 2016; Lucas, 2017; Niagara College Canada, n.d.; Dyke, 2009). Learning has a large social component, as often individuals learn through interaction and from the primary and secondary experiences of others (Dyke, 2009; Lucas, 2017). Additionally, social and cultural

factors give context and meaning to learning, and by extension reflection as well (Dyke, 2009). According to Dewey, educators are responsible for using the social aspects of the surrounding environment, to enhance experiences, which supports the idea of including feedback and collaboration into reflections (Lucas, 2017). For one, feedback and collaboration help individuals to consider alternate perspectives and how other people may have interpreted the experience being reflected upon, which has previously been established as an important aspect of reflection (HEQCO, 2016; Calkins, Grannan, & Siefken, 2020; Niagara College Canada, n.d.). Niagara College (n.d.) even suggests setting up meetings with a "critical friend" as a good strategy for reflection.

Within a peer learning environment, feedback and collaborative activities can help with engaging students, tracking their learning, and enhancing communication skills (Mason & Singh; Calkins, Grannan, & Siefken, 2020). Communication skills have also been linked to the development of critical thinking and analytical skills, making group activities and feedback seem more desirable to educators in STEM courses (Calkins, Grannan, & Siefken, 2020). Through peer learning activities, students feel a greater sense of responsibility for not only their own learning, but that of others, and learn critical skills such as how to explain complex ideas and ask questions (Calkins, Grannan, & Siefken, 2020; Mason & Singh, 2016). Incorporating an aspect of collaboration and feedback is also part of developing autonomous thinkers and self-directed learners, which is ideal for learning (Seibert & Daudelin, 1999, as cited by HEQCO, 2016; Lucas, 2017). Further, this type of learning helps promote life-long learning by providing individuals with a way to compare themselves to others and developing their ability to learn through interaction and observation (Calkins, Grannan, & Siefken, 2020; Dyke, 2009). Thus, the

inclusion of feedback and collaboration into reflections will expose individuals to different perspectives and enhance learning through the reflection process.

Environment of Trust

An incredibly important aspect of creating an environment conducive to reflection is creating an environment of trust, where individuals can feel safe and comfortable reflecting (Steele, 2019; Fletcher, 1997; Volpe White, n.d.; Heslin & Keating, 2017). Reflection can often bring up feelings and ideas that are uncomfortable, thus providing a safe space will allow individuals to attend to these feelings and ideas and enhance the quality of reflection (Volpe White, n.d.). Further, it has been found that students are less honest in reflection when they believe there is a 'hidden curriculum' or specific expectations, and some kind of penalty for not meeting them (Maloney, Tai, Lo, Molloy, & Ilic, 2013). Environments that allow for mistakes and subpar performance, with an emphasis on growth, will also lead to greater learning, which is beneficial for the reflection process (Heslin & Keating, 2017). Another way to maintain a safe space is to inform those reflecting of the people who will have access to their reflections, as they may feel more comfortable opening up if, for example, only their professors or TA's will be seeing their work (Steele, 2019). Overall, ensuring individuals feel comfortable and safe is a key component of higher quality reflective practice.

2.3 Importance of Training

Providing adequate training to facilitators and learners is also important for improving the quality of reflection.

Facilitators

In the case of guided reflection activities, facilitators, be they employers, instructors, or TA's, will likely need to be able to help learners with the reflection process and ensure they

understand the benefits of reflection (Steele, 2019). However, it cannot be assumed that facilitators are inherently more knowledgeable about reflection than the students or individuals they are meant to guide (Moon, 2007). Thus, some degree of training will likely be required. The importance of training facilitators on the purpose and goals of reflection activities was also discussed in a previously mentioned study conducted on peer-assisted reflection (PAR) in math classes, by Calkins, Grannan & Siefken (2020). In addition to sufficient training, the study also recommended that facilitators, or TA's in their case, be provided with feedback and additional support to help with the potentially difficult process of carrying out reflection activities (Calkins, Grannan, & Siefken, 2020). Furthermore, for programs like Engineering is Elementary (EiE), which help develop curriculums based on specific engineering design principles, if teachers do not have enough support with implementation, the program will not be able to achieve the desired outcomes and benefits (Cunningham, et al., 2019). Thus, EiE helps run workshops for educators to learn about the principles of the program and the type of thinking required for their curriculums (Cunningham, et al., 2019). In addition, educators who are more comfortable with reflecting and reflections, will be more likely to conduct reflection activities in general (Moon, 2007). Therefore, in addition to maximizing the potential of reflection activities, training facilitators also increases the likelihood of the reflection activities taking place.

Learners

For learners, the ability to reflect and the depth of reflection can vary greatly, as some may have more experience with reflection than others (Steele, 2019). Thus, they will likely need to be provided with some degree of guidance in order to participate fully (Steele, 2019). Many existing models and frameworks, such as those posed by Kolb, Gibbs, and John, give a general structure of reflection, but do not explain how to enhance the quality of reflections themselves

(Moon, 2007). This could lead to surface-level reflections resulting in superficial learning

(Moon, 2007). Further, learners may also be unsure how to discuss some of the themes within

the reflection models and frameworks, such as emotions (Maloney, Tai, Lo, Molloy, & Ilic,

2013). Providing some level of training to help learners address their emotions, normalize

emotions that might be seen as unprofessional, and understand the reasoning and process of

reflection, could improve their competency in reflection, and by extension, their level of honesty

(Maloney, Tai, Lo, Molloy, & Ilic, 2013). For increasing the depth of reflection, Moon (2007)

developed a framework classifying four different levels of reflection depth, from descriptive

writing to reflective writing, and provided exercises for helping learners internalize the required

amount of depth. The required depth generally varies based on the desired outcomes of

reflection, thus showing learners what is expected from them will help them participate to the

best of their ability (Moon, 2007). In addition, for different types of reflection activities, some

degree of training may be required to ensure learners are able to fully participate in the activity

and reap the benefits. For PAR in math classes, an educator used a training exercise called

'Darts' to help students improve their abilities to give feedback on problem solving (Calkins,

Grannan, & Siefken, 2020). 'Darts' involves showing learners examples of problem-solving

responses and discussing the kind of feedback that would be useful (Calkins, Grannan, &

Siefken, 2020). Similarly, the exercises provided by Moon (2007) consist of showing learners

examples of reflections and discussing whether they have achieved the appropriate level of

depth.

Conclusion

Overall, reflection is a key part of experiential learning and career development processes

and can lead to improved learning and the development of new skills. To maximize the benefits

of reflection and increase reflection quality, there are certain criteria that should be considered regarding reflection content and method. Based on different studies, institutional guides, and existing models of reflection, it is evident that reflection content should include a description of the experience, some degree of analysis, and a connection to future outcomes. Additional elements to consider during the analysis of an experience could include feelings and emotions, assumptions and alternate perspectives, positive/negative experiences, and connections beyond the experience and to learning goals/outcomes. Further, reflection methodology can vary greatly depending on the nature of the experience and reflection activity, however consideration should be given to reflection timing, guidance, and assessment, as well as the different ways learners may learn best. Incorporating feedback and collaboration and placing emphasis on creating an environment of trust, can also be beneficial for creating an environment that is conducive to reflection and learning. Additionally, training facilitators and learners on reflection can play an important role in increasing the quality of reflection and ensuring activities are carried out as intended. All these criteria and considerations will also be incorporated into a Framework of Reflection, to help educators better understand reflections and provide ideas for developing or enhancing reflection activities. This short review has attempt to demonstrate that while different disciplines and programs will have different approaches to reflection, there are many commonalities across literature on reflections in experiential learning that can be used to form a Framework for Reflection. It is hoped that this simplified Framework will provide a useful tool to educators for developing or redesigning reflective practice in their courses and experience.

Further Recommendations

While this literature review covers the most common elements of reflection across a variety of literature, deeper research into some areas could provide greater insight into

reflections. Reflections are an area of study with many variables and differing perspectives, and the following recommendations can serve to create a more holistic understanding of reflection that is applicable in a variety of contexts.

- Determining if the type of guidance provided to learners for reflection has an impact on learning. This can include, for example, determining whether actively facilitating reflection activities results in higher quality reflection than providing only guidelines or reflection questions.

- Conducting focused research on reflections from a career development perspective, in consultation with career practitioners, to help strengthen the context of this research,

- Exploring reflections in community engaged teaching and learning, for an additional experiential learning perspective that looks beyond personal growth and career development to the surrounding community.

- Exploring the experience of the learners as they engage in reflective practice.

- Comparing the outcomes intended with a reflection to those actually achieved by the learners.

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