

A qualitative analysis of student reflections on public health internships

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Abstract

Purpose – Reflective practice (RP) is a key skill for developing one's professional practice. It has, however, not been unanimously prioritised in public health (PH) competency and education frameworks. Reflection activities are often unstructured in higher education. There is also a dearth of literature on the RPs of undergraduate PH students. This study aims to explore in greater depth how RP helps undergraduate PH students explore their own learning in internships.

Design/methodology/approach – Reflection prompts were designed using the DEAL model. 124 written reflection entries from 32 students were collected and analysed thematically using a deductive-inductive approach. The conceptual framework of internship learning goals by Ash and Clayton (2009) was used to guide the deductive analysis.

Findings – Three themes were identified: initial engagement with reflective learning; gradual integration of reflective learning, and a transformative phase involving professional development, personal growth, civic learning, growth through struggle, being confronted with differences in expectations, and skill acquisition.

Originality/value – This study extends the limited evidence regarding RP in undergraduate non-medical PH education, and contributes toward informing the revision of undergraduate PH programmes, for example, by integrating structured reflection earlier in the curricula, and establishing/supporting mentorship programmes between institutions. The findings call for PH educators to be more intentional in creating opportunities to nurture RP among budding PH professionals.

Keywords Internship, Reflection, Student learning, Professional development, Public health

Paper type Research paper

Introduction

Public health (PH), although historically considered a medical sub-specialty, has since evolved into an interdisciplinary profession comprising medical professionals and practitioners primarily trained in non-medical fields, such as behavioural sciences, economics, life sciences, psychology, and statistics. To facilitate formative learning amongst PH practitioners, the continuing professional development (CPD) scheme by the UK Faculty of Public Health was revised to shift the focus from traditional credit accumulation to reflective practice (RP), and deems written reflection as “the most



discriminating form of evidence of effective CPD” (Faculty of Public Health, 2023). Reflection practices have been found to foster self-directed, lifelong learning and aid in problem-solving, personal and professional development, and competence (Chan and Lee, 2021; Mann *et al.*, 2009). Yet, despite the benefits of RP and the call for PH professionals to become more reflective practitioners (Walpolo and Lucas, 2021), the teaching of RP in PH education is generally unstructured or lacking, perhaps due in part to the inconsistent emphasis placed on RP across PH education competency frameworks (Coombe *et al.*, 2022). For example, in line with the standards for CPD in the reflective approach (Brigley, 1997; Faculty of Public Health, 2023), the training curriculum by the Faculty of Public Health strongly emphasises RP (Faculty of Public Health, 2022), while the Council of Education for Public Health (CEPH) education framework specifies the requirement of a “reflective component” in applied practice experiences at the postgraduate level but not at the undergraduate level (CEPH, 2021). Apart from this, RP may also have been regarded as secondary to other competing priorities among professionals and students (Chan and Lee, 2021; Mann *et al.*, 2009).

Nonetheless, reflection is necessary for learning to occur through an experience (Dewey, 1933). Based on Kolb’s (1984) experiential learning model, the learner goes through a process of reflection on one’s action following an experience and considers new ways to address learning gaps, informing the approach or application of new knowledge or skills when encountering similar future incidents. Simply telling students to reflect without providing guidance is neither sufficient nor helpful (Welch, 1999). Further, Mezirow (1995) proposed three types of reflection classification: content reflection, process reflection, and premise reflection, and argued that of the three, only premise reflection brings about perspective transformation – the core theme of critical reflection. Critical reflection should be thoughtfully designed and structured to effect learning (Ash and Clayton, 2009). The DEAL model for critical reflection is an example of such structure that helps students reflect on their experiences and achieve their intended learning outcomes. The model, applied in written and oral reflective activities in higher education, stimulates higher-order thinking, and involves three phases: Describe (where the experience is detailed and described objectively), Examine (where the experience is examined further with the aid of reflection prompts), and Articulate Learning (which includes goal setting or considering actions to take in similar future situations). While the model was developed for service-learning courses and studied in such settings (Molee *et al.*, 2011; Farmer, 2015), it has been used in other applied learning settings (Glassburn *et al.*, 2019; Brooks *et al.*, 2010; Denny and Hardman, 2020; Shehane, 2014; Tabassum *et al.*, 2023).

However, studies on the use of reflections in PH education remain scant, whether at the undergraduate level (Burnett and Akerson, 2019; Choi, 2022; Ezezika and Johnston, 2022; Garnett, 2017; McKay and Dunn, 2015; Suwanbamrung and Kaewsawat, 2020; Van Winkle *et al.*, 2018), postgraduate level (Pandya *et al.*, 2017; Pham *et al.*, 2023; Rispel, 2023) or collectively (Thomas *et al.*, 2020). At the Saw Swee Hock School of Public Health (SSHSPH), National University of Singapore (NUS), which offers two undergraduate programmes, a Minor and a Second Major in PH, PH students from both programmes perceived that the courses provided sufficient opportunities for reflection and more than 70% of students regarded themselves as “regular reflectors” (Lim *et al.*, 2022). PH faculty members’ RPs have been explored separately (Lim *et al.*, 2023). Given that self-reported data tend to be subjective by nature and there is a dearth of literature on the RPs of undergraduate PH students, it is imperative to explore this in greater depth by analysing students’ written reflections, a richer and more objective data source, to assess learning. For authentic reflections to occur, students should be engaged in the learning experience first-hand, hence internships were identified as the most suitable platform for RP to be carried out at the undergraduate level.

By offering supervised immersion in real-world work settings, internships provide an appropriate applied learning experience to address the gaps identified (Humphries *et al.*, 2022). Based on the revised Developmental Stage Theory, interns go through four stages in their

internship: Anticipation, Exploration, Competence, and Culmination, and they experience growth in the professional, personal, civic, and academic domains (Sweitzer and King, 2013). Similarly, Ash and Clayton (2009) suggested a conceptual framework for internships encompassing three domains: personal growth, professional development, and civic learning. Personal growth is defined as the “development of individual potential” (Molee *et al.*, 2011), while professional development may include acquisition of skills and development of related values and attitudes such as professionalism, exploration of career interests, and building professional networks. Civic learning is defined in this study by extending Diller’s (2001) definition of civic engagement (“all activity related to personal and societal enhancement which results in improved human connection and human condition”) to include the notion of active citizenry in health (Soon and Yeo, 2018). Of note, learning outcomes may overlap between domains (Ash and Clayton, 2009). This study therefore seeks to answer the research question: how does RP help undergraduate PH students explore their own learning in internships?

Material and methods

Study design and learning environment

A descriptive qualitative design was used in the undergraduate PH internship course offered as a Minor elective or a Second Major capstone by SSHSPH. This method is appropriate when the research is aimed at accurately understanding individual experiences within their unique contexts by “staying closer” to the data, compared to other approaches (Doyle *et al.*, 2020; Sandelowski, 2000), and has been widely used to examine experiences in healthcare-related experiential learning settings (Bradshaw *et al.*, 2018; Carlsson *et al.*, 2022; Major and McQuistan, 2016).

The course runs annually between mid-May to end-July during the semester break. Students embark on internships with various organisations involved in PH work for at least 320 h on a full-time basis and are supervised by PH practitioners (“workplace supervisors”). The course’s learning objectives are: (1) to introduce students to the PH infrastructure and functions in Singapore by providing hands-on exposure to real-world work at selected PH agencies; (2) to allow students to explore PH career opportunities and develop related essential skills, and (3) to provide practical exposure to selected PH careers.

Students are assessed on attendance, two rounds of evaluation by their workplace supervisors (mid- and end-of-internship), and internship training records. The training records form part of an internship log and are used to facilitate discussion and learning during student-supervisor meetings in the internship. The course operates on a satisfactory/unsatisfactory grading basis, with “Satisfactory” being awarded to students who meet the internship requirements as determined by the workplace supervisor(s) and faculty course coordinator.

Reflection strategy: rationale, development, and implementation

The internship reflection strategy comprised three compulsory reflection sessions with the course coordinator and facilitators from the NUS Centre for Future-Ready Graduates (CFG) [1], through pre- and post-internship workshops and a mid-internship Zoom session with the coordinator. Optional consultation with the coordinator was provided on-demand. During the mid-internship session, the coordinator facilitated a group-level reflection of internship experiences. Career coaching was also offered separately and on-demand as courses or ad-hoc consultations with CFG career advisors.

However, it was challenging to encourage deep reflection individually during the group-level feedback sessions. Individual student feedback from course evaluations were also largely brief and descriptive. To maximise learning beyond the classroom, specific guidance can be offered in the form of prompts designed to stimulate deeper reflection (Ash and

Clayton, 2009; Fernsten and Fernsten, 2005). Based on the extant literature, structured reflections that use guiding prompts were found to be more effective in scaffolding deeper learning compared to unstructured ones (Cengiz, 2020; Dinç *et al.*, 2023; Kori *et al.*, 2014). Hence, the reflection strategy in this course was further developed by introducing a reflection section in the internship log.

Specifically, the design of reflection prompts (Table 1) was guided by the DEAL model (Ash and Clayton, 2004, 2009). Students were encouraged to reflect on their internship by submitting one 500-word reflection entry fortnightly, and to be as honest in their writing as possible. Students were informed that their reflections would not be graded and that identifiable reflections would only be seen by the coordinator. Students had the option to share their reflections with their supervisors of their own volition.

Data collection and ethics approval

The reflection entries from the 2022 cohort form the data used in this study. All entries were de-identified prior to analysis. The study was approved by the SSHSPH departmental ethics review committee (Approval ID: SSHSPH-047).

Prompt set	DEAL model	Internship phase
1	<i>Describe</i> the experience objectively and in detail	<i>Start of internship (Weeks 1–2)</i> Give a brief summary of your experience when you started on the internship. What were your first impressions (this may refer to the workplace, people, culture, etc)? Were you surprised by anything you encountered? What questions do you have as a result of your experience these first two weeks?
2	<i>Examine</i> the experience with the aid of reflection prompts based on learning goals	<i>Mid-internship (Weeks 3–6)</i> a) What was one difficulty you faced? Why was it a dilemma? What were some options you considered doing to address the problem? How did you eventually overcome it? This challenge may refer to anything within the context of your internship. b) What public health concept(s) was/were applied during your internship? How has that added to your understanding of public health practice? Which public health courses (if any) best prepared you to apply these concepts in your internship? c) Describe with examples how your academic training has prepared you in your research, writing, communication, and/or presentation skills (where applicable)
3	<i>Articulate Learning</i> (including goal setting or consideration of actions to take when faced with similar situations in future)	<i>Final two weeks of internship (Weeks 7–8)</i> a) What was one skill you acquired and/or developed in your internship? How does this relate to your own development (either personally, or in terms of your career)? b) Now that you're nearing the end of this internship, would you consider a career in this field? Why or why not?

Source(s): Authors' own work

Table 1.
The DEAL model (Ash and Clayton, 2004, 2009) and corresponding reflection prompts by internship phase

Data analysis

Reflection entries were imported into NVivo 12.0 and coded line by line. All three authors independently coded and analysed the data using the deductive-inductive approach. In the deductive phase, the conceptual framework of internship learning goals by [Ash and Clayton \(2009\)](#) was applied as a lens to code and assign relevant labels derived from the model. An inductive approach was then introduced to identify labels not explicitly covered by the model. Reflections were read multiple times to familiarise with the data, and collaborative efforts were made to establish inter-coder reliability. The codebook was continuously refined, with additional codes identified during the iterative analytical process. The final version of the codebook was systematically applied to code the remaining reflection entries. Themes and sub-themes were identified using thematic analysis ([Braun and Clarke, 2006](#)) – codes were organised and summarised into preliminary subthemes and overarching themes. Any discrepancy in coding and interpretation was deliberated and resolved by consensus. Representative quotes were extracted from the data to illustrate sub-themes.

Results*Student characteristics*

Student demographics are summarised in [Table 2](#). Most students were female, reading a primary major in life sciences and a Minor in PH, and were in their second or third year of undergraduate study. Of the 36 students enrolled in the course, 32 students (89%) provided written consent to the use of their reflections for this study.

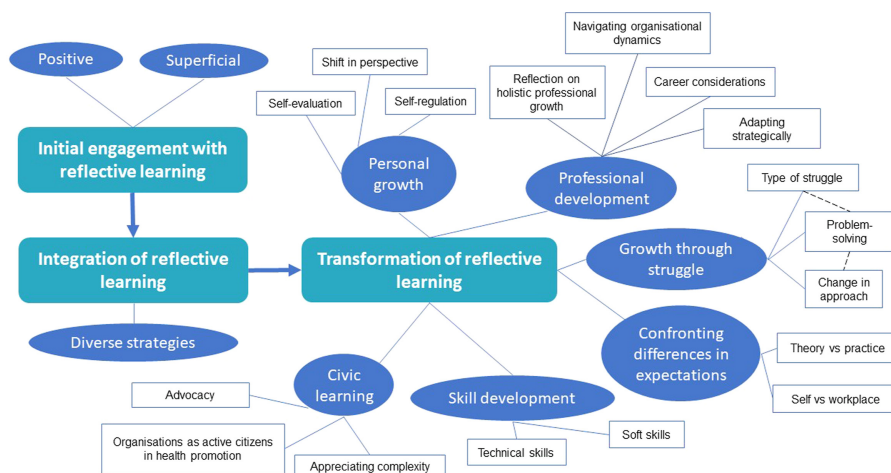
Themes and subthemes from written reflections

Three themes, nine subthemes, and seventeen sub-subthemes were identified from the data. The themes are: initial engagement with reflective learning, integration of reflective learning, and transformation of reflective learning in PH internships. The thematic map is shown in [Figure 1](#). Themes and corresponding illustrative quotes are presented in [Table 3](#). The term

	Frequency	Percentage
<i>Total</i>	36	100.0
<i>Sex</i>		
Male	8	22.2
Female	28	77.8
<i>PH programme enrolled</i>		
Minor in PH	29	80.6
Second Major in PH	7	19.4
<i>Primary major</i>		
Life Sciences	30	83.3
Business	3	8.3
Economics	2	5.6
Political Science	1	2.8
<i>Year of study</i>		
1	0	0
2	17	47.2
3	18	50.0
4	1	2.8

Table 2.
Student demographics

Source(s): Authors' own



Source(s): Authors' own

Figure 1.
Thematic map

“students” may be used interchangeably with “interns” subsequently, especially when the learner is mentioned in the context of the internship, rather than in the academic setting.

Theme 1: Initial Engagement with Reflective Learning in PH Internships

Most students embarked on PH internships without prior working experience, and with a certain naivety regarding the commitments beyond traditional academic responsibilities. Moreover, the majority had not received formal training in reflective learning at the onset of their enrolment. Consequently, initial reflections predominantly focused on descriptive accounts of early experiences, lacking in-depth reflections or analyses of underlying dynamics or reasons.

During this initial phase, reflections were largely centred around positive surface-level experiences, as exemplified by statements such as:

I could tell that the people at Organisation X [2] were all very friendly and they had a vibrant culture. (R2.1)

Even when challenges were identified early on, the engagements remained superficial and lacked further analysis. For instance:

The working culture is overall positive, with some occasional logistic problems . . . (R10.1)

Theme 2: Integration of Reflective Learning in PH Internships

As the internship progressed, students encountered various opportunities for reflective learning facilitated by interactions with supervisors (mentors), colleagues, or peers at the internship site, and a growing self-awareness of the need for self-reflection. Notably, this integration process unfolded gradually, with students adopting multiple strategies to facilitate reflective learning in internships:

Luckily, she was very responsive towards my suggestion and even apologized for her neglect. While this may seem to be a small issue, but to me it was a big step forward as usually I am more reserved

Table 3.
Themes and subthemes, with illustrative quotes

Themes	Subthemes	Sub-subthemes	Illustrative quotes
Links to Kolb's experiential learning cycle			
Initial engagement with reflective learning in public health internships	Concrete Experience	–	“I could tell that the people at [Organisation X] were all very friendly and they had a vibrant culture.” (R2.1)
	Reflective Observation	–	“The working culture is overall positive, with some occasional logistic problems.” (R10.1)
Integration of reflective learning in public health internships	Diverse strategies for reflective learning	–	“Luckily, she was very responsive towards my suggestion and even apologized for her neglect. While this may seem to be a small issue, but to me it was a big step forward as usually I am more reserved and quieter . . . especially so when working with someone of higher authority. I am using this internship to really step out of my comfort zone and . . . push myself to do things that I usually would not do.” (R21.3)
		–	“I decided to reassess what I was doing and realized that the way the framework was presented caused me to jump steps to the bigger themes before smoothing out the smaller details . . .” (R12.3)
Transformation of reflective learning in public health internships	Abstract Conceptualisation,	Navigating organisational dynamics for learning and growth	“ . . . I grew and developed my cross-cultural competencies through interaction with my colleagues. As [Organisation X] is a diverse organisation, I learned how to understand and work effectively with people of diverse backgrounds . . . The firsthand experience I gained through working in a large global organisation has shown me how such organisations function.” (R19.4)
	Active Experimentation		
“Ultimately, it has to be one's own tenacity that carries one across the finish line. I believe through adapting and even having resilience to hold on before becoming more comfortable with a new environment would be applicable anywhere, not just in the working world. Sometimes, it will take time to develop an understanding of one's surroundings.” (R13.5)			

(continued)

Themes	Subthemes	Sub-subthemes	Illustrative quotes
Links to Kolb's experiential learning cycle		Career considerations in public health	<p><i>"I would consider a career in health research and consulting. This is because the company is structured in a way that it offers a flexible working environment that explores a multitude of health issues that are troubling the world today – and working with various stakeholders to do something about it. I can learn much more about different aspects of a health issue (e.g. financing, policies, organizational needs), and work with people of various disciplines, like the diverse team of colleagues here . . ."</i> (R3.4)</p>
		Adapting strategically to dynamic work environments	<p><i>"Coming into this internship, I considered myself to like flexibility, space, and freedom in workflow. However, this internship made me realize that I need to have some sort of structure and purposeful timeline established to keep me motivated and keep everybody on the same page of expectations. There was a constant change in expectations and even the objectives of the project, with many decisions needing to be gone back and forth, revisiting after resolution. Learning these on the way was not easy. While I am glad that I managed to pick up such adaptability, it hindered workflow and the meeting of deadlines. While I don't fancy a rigid workflow environment, this was the other end of the spectrum that challenged my definition of completing work, or working towards a particular goal when working on something. Picking up all the various soft skills like patient interaction, or maybe some sort of leadership skills was definitely valuable, thus this internship . . . revealed more about myself and how I interact with others around me."</i> (R4.3)</p>
	Personal growth in public health context	Shift in perspective Self-evaluation	<p><i>"I realized that as an introvert, it can be very draining when you are trying to recruit people for study."</i> (R17.3)</p> <p><i>"After reflecting on how the event went, I realized that even though we made the good decision of eliminating one of the two icebreakers, we could have done better by being more prudent with which icebreaker we chose to keep."</i> (R15.3)</p> <p><i>"In the past, I have always been a perfectionist. However, this internship has taught me to give myself a bit of grace and make use of this opportunity to learn from highly competent people with strong expertise."</i> (R19.4)</p>
		Self-regulation	(continued)

Table 3.

Themes	Subthemes	Sub-subthemes	Illustrative quotes
Links to Kolb's experiential learning cycle	Civic learning in public health internships	Advocacy	<i>"It is important that we not only make help available to individuals, but we must also bring about more awareness about the availability of these help and where to get them." (R7.4)</i>
		Organisations as active citizens in health promotion	<i>"I think what really surprised me the most is the twice a day department walks that the department tries to go for (if there are no meetings or urgent deadlines) ... it was really nice to see the department attempting to live out a healthier lifestyle, through these walks which break up the sedentary sitting time." (R30.1)</i>
		Appreciating complexity	<i>"While getting to know the physiotherapists, my supervisor, and various stakeholders, helped in using informal communication to understand each other better, and improve workflow, I had to be mindful of approaching a compromise with both sides, and also among both sides." (R33.3)</i>
	Growth through struggle	Type of struggle	<i>"... while I was making the announcement regarding the programme as a reminder and confirmation, for those seniors whose names were confirmed a slot for the programme, the senior came up to me and asked me if she was signed up. When I looked at the name list, her name was cancelled and was not written in the waiting list which confused me as my supervisor told me that she would deal with the explanation of moving the senior's name down to the waiting list but the senior probably did not understand her well as she got angry at me, claiming that I cancelled her name (which was actually done by my supervisor) and left the center before I could even explain myself." (R10.2)</i>
		Problem-solving	<i>"I also learnt to ask my mentors for help regarding task management and voiced out my concerns if I was not able to cope with the deadlines. Eventually, I managed to submit all the tasks and have learnt that time management is very important." (R2.3)</i>
		Change in approach	<i>"As I am someone who does most of my work in the morning and afternoon but the other intern does more work at night, we had to compromise ... To make this process easier for the both of us, I tried my best to be available to record the audio while she was doing the editing of the videos. That meant making sure I respond quickly to new updates and changes, and I took the initiative to notify her in advance when I had other commitments or to find out when she was going to do the editing." (R28.3)</i>

(continued)

Themes	Subthemes	Sub-subthemes	Illustrative quotes
Links to Kolb's experiential learning cycle	Confronting differences in expectations in public health internships	Theory vs. practice	<i>"I have also gathered feedback from colleagues that the way I phrased the poster sounded a little bit too serious and readers may not be able to form some sort of connection and resonance. This is because during the presentations in our modules, we often have to present a lot of facts and solutions which made the tone of the infographics more serious and solemn (especially when it comes to very pressing public health issues), which definitely will not work for this case." (R1.3)</i>
		Self vs. workplace	<i>"... when it was time to knock off, I wanted to wait for about 5–10 min before I started leaving (mostly out of courtesy). However, once I turned back, I realized that most of the staff have already left despite it being only 3 min past knock off time. My supervisor even texted me to not stay back too late when it has barely been 5 min. This made me realize how the idea of OT has been so ingrained in us that seeing people leave on time for work is fascinating." (R1.1)</i>
	Skill development	Soft skills	<i>"Throughout the course of my internship, I developed my skills in communication and presentation ... Through this internship particularly, I now feel more assured in myself and my skill of conveying my ideas clearly and confidently to my supervisors or to other colleagues." (R12.4)</i>
		Technical skills	<i>"The most important skill that I have developed would be the ability to visualize and communicate data. Prior to the internship, I had only ever presented data academically in the form of tables or bar graphs. However, I was taught to employ different types of visualization through my projects so that the audience can understand our messages clearly and immediately." (R14.4)</i>

Source(s): Authors' own

Table 3.

and quieter . . . especially so when working with someone of higher authority. I am using this internship to really step out of my comfort zone and . . . push myself to do things that I usually would not do. (R21.3)

I decided to reassess what I was doing and realized that the way the framework was presented caused me to jump steps to the bigger themes before smoothing out the smaller details . . . (R12.3)

Theme 3: Transformation of Reflective Learning in PH Internships

Students' written reflections increasingly portrayed transformative experiences nearing internship completion. Instead of merely describing experiences or feelings, students began identifying gaps and detailing strategies employed to overcome challenges. This marked a discernible transformation in reflective learning during their internships.

There were six distinct subthemes illustrating these transformative experiences: professional development, personal growth, civic learning, growth through struggle, confronting differences in expectations, and skill development. Most students reflected on their growth and development across multiple domains, providing a comprehensive overview of their transformative experiences.

Briefly, professional development entailed learning how to navigate organisational dynamics, reflecting on how immersive learning helped holistic professional growth, deliberating PH as a career option, and appreciating the importance of workplace adaptability. Students demonstrated growth through learning to tackle various types of internship challenges, which often led to a change in how they approached the task. They confronted differences between theoretical concepts and practice, and dissonances between personal beliefs and workplace reality. These often brought about increased self-awareness and perspective change. Across the board, interns developed both soft and technical skills. Civic learning was effected through attitudinal development in PH advocacy, recognising the organisational role in PH active citizenry, and appreciating the complexity of PH work:

While getting to know the physiotherapists, my supervisor, and various stakeholders, helped in using informal communication to understand each other better, and improve workflow, I had to be mindful of approaching a compromise with both sides, and also among both sides. (R33.3)

Personal growth was evident in students' self-evaluation of experiences, which often brought about a shift in perspective and developed self-regulation:

In the past, I have always been a perfectionist. However, this internship has taught me to give myself a bit of grace and make use of this opportunity to learn from highly competent people with strong expertise. (R19.4)

Discussion

Three prominent themes were identified from students' reflections, delineating an evolving trajectory of students' experiences: an initial engagement of reflective learning with often positive but surface-level experiences, followed by a gradual integration of reflective learning facilitated by diverse strategies and mentorship, and a transformative phase revealing developments in skills and the professional, personal, and civic domains, often catalysed by confronting differences in expectations and growing through struggle.

The reflection pieces suggested that students' assumptions were unravelled and challenged when confronted with contradictions in expectations. These in turn triggered perspective or behaviour change, indicating that deep learning had occurred through the assimilation of new knowledge (Moon, 1999). Growth through struggle was evident as

students shared about what they thought, felt, and did when faced with a problem, which often arose due to a knowledge or skill gap. Learning in internships was also driven by “productive failure” (Kapur, 2016) – when encountering a challenge, interns often attempted to problem-solve by activating prior knowledge or acquiring new knowledge independently. When such attempts failed, students often considered diverse strategies. Drawing parallels with the zone of proximal development (Vygotsky and Cole, 1978), gaps were often bridged through scaffolds provided by supervisors, colleagues, or peers. Students then used the information gained to tackle the problem and in doing so, constructed new knowledge.

There was also a greater emphasis on soft skills compared to technical skills when students reflected on learning gains, a finding consistent with other studies (Cord *et al.*, 2010; Edward Beck and Halim, 2008; Noll and Wilkins, 2002), including one with an earlier cohorts of PH interns (Teng *et al.*, 2022), suggesting that students recognise the importance of soft skills for workplace success, and underscoring the value of internships in providing an authentic transitional learning environment for soft skill development.

While feedback is important in improving learning quality and RP (Bain *et al.*, 2002; Hattie and Timperley, 2007), it was not provided for individual reflections to prevent possible influence of faculty feedback on the quality of written reflections (Geyskens *et al.*, 2012). Given that the intent of reflection prompts was to foster a more student-centric approach that emphasises self-directed learning, overall faculty feedback was provided verbally only during the mid-internship session. This approach may be more efficient and sustainable compared to providing feedback for every submission, especially if the teacher to student ratio is large, with multiple submissions per student (Ambrose *et al.*, 2010). Moreover, journal writing was found to be highly beneficial despite having no intensive dialogue between learners and a “reflective supervisor” to facilitate reflection (Bain *et al.*, 1999). Although we did not encounter students who struggled significantly with self-reflection in our study, individual feedback focussing on the process of reflective writing, when given selectively, may be beneficial in scaffolding RP among students showing consistently low levels of self-reflection in their reflection entries.

Link between results and theoretical framework

Dewey’s (1933) emphasis on reflection as an essential component for learning through experience is notably reflected in our investigation of student reflections in PH internships. As Dewey posited, the process of thoughtful contemplation plays a pivotal role in deepening understanding and deriving meaning from experiential learning encounters. Moreover, our findings also align with Kolb’s (1984) experiential learning model. The transformative experiences documented by students in our study provide empirical support for the notion that reflective engagement with practical experiences contributes significantly to personal and professional development. In our study context, the integration of Ash and Clayton’s (2009) conceptual model served as a practical and structured framework. This structured approach prompted students to move beyond surface-level descriptions, encouraging them to delve into the intricacies of their experiences by relating theory to personal experiences and challenging assumptions to bring about perspective change, so as to foster a more profound understanding of the underlying dynamics and challenges encountered during PH internships.

Practical implications for educational practice

This study offers valuable insights on the use of RP to enhance educational practices in PH programmes, that is, (1) RP is effective in fostering higher-order thinking skills; (2) mentorship was greatly valued by interns, and (3) a structured reflection section in the internship log is a useful scaffold for RP.

For students with limited prior work experience, our findings provide an impetus for integrating structured reflective learning components early in the curricula to lay the foundation for cultivating higher-order thinking skills and achieving meaningful learning outcomes. Institutions are therefore encouraged to adopt and adapt appropriate RP frameworks to guide students in engaging in critical reflection to facilitate a smoother transition for students toward meeting the demands of PH internships.

The emphasis on mentorship in internships is another pivotal takeaway from our findings. Mentoring has an important influence on the quality of written reflections (Beausaert *et al.*, 2011; Wade and Yarbrough, 1996), and the diverse strategies employed by students for reflective learning highlight the varied forms mentorship can take (Burgess *et al.*, 2018). This underscores the need for educational institutions to establish and support mentorship programmes within their curricula. By doing so, institutions can contribute to holistic student development whilst enhancing the quality of the internship experience.

Finally, a noteworthy practical strategy emerging from our findings is the introduction of a structured reflection section in the internship log, guided by carefully designed prompts. The incorporation of such a tool in internship programmes provides a practical method for students to systematically reflect on their experiences, fostering a more comprehensive understanding of the complexities inherent in PH practice.

Strengths, limitations, and implications for future research

In this study, a high response rate of 89% was attained, resulting in a substantial and diverse dataset for thorough analysis. The robustness of the study is further enhanced by the fact that three independent researchers conducted the analysis. The direct evidence of learning provided by students' written reflections offers a distinct advantage over indirect measures like student feedback surveys. The depth and nuance inherent in qualitative data, as opposed to quantitative data, allowed for a more comprehensive understanding of students' learning experiences in PH internships.

This study acknowledges the following limitations. There is uncertainty about the extent to which students may have been inclined to "write for the teacher", although efforts were made to mitigate this by clearly communicating that their reflections would not be graded and by fostering an environment conducive to candid expression. Additionally, the reliance on voluntary participation meant that non-participants' reflections were excluded, although these may offer relevant insights different from those of participating students.

While we did not examine workplace supervisors' perspectives in this study, investigating how mentorship styles influence the depth and breadth of students' RPs would provide additional valuable insights into the mentoring strategies and mentorship attributes that contribute to enhanced learning outcomes, enabling institutions to refine mentorship programmes for optimal effectiveness.

As this study examined the RPs of PH students from only one educational institution during a semestral internship, the long-term effects of reflective learning on students' subsequent academic and professional trajectories, and comparative studies across diverse PH programmes and institutions, are worth further investigation. Longitudinal studies monitoring PH students' engagement in reflective learning can reveal the lasting impact of experiential learning on their career paths, decision-making processes, and overall success in the PH field. Exploring variations in curricular design, mentorship structures, and RP frameworks across different settings can provide a comprehensive understanding of what works best in fostering RP and inform evidence-based recommendations for curriculum development and institutional practices to enhance the reflective learning experience for PH students.

Abbreviations

CEPH	Council on Education for Public Health
CFG	Centre for Future-Ready Graduates
CPD	Continuing professional development
NUS	National University of Singapore
PH	Public Health
RP	Reflective Practice
SSHSPH	Saw Swee Hock School of Public Health

Notes

1. A university-level career guidance and preparatory unit
2. A pseudo organisation name has been used to uphold anonymity.

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