**How do veterinary students engage when reflecting on their development towards being veterinary surgeons?**

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**Abstract**

Background: Reflection has been widely acknowledged to contribute to professional development, the ability to manage tension and enhanced resilience. However, many practitioners struggle to reflect productively due to a lack of clarity of what constitutes effective reflection.

Method: To help develop reflective competence among future professionals, 30 veterinary students’ reflective assignments were analysed by thematic text analysis. Theoretical frameworks were based on published criteria for critical and core reflection.

Results: Reflection was described through resources (the tools used), practices (the ways of using these tools) and outcomes (what was achieved). This helped to distinguish simple skills-based from higher level core reflection. Simple skills-based reflection was associated with an identity of expert learner: students perceive that their task is to identify a knowledge deficit that can be easily rectified through new learning. Core reflection was associated with students articulating an identity of adaptable professionals: rather than veterinary challenges being resolved simply through application of a body of knowledge, wider complexities of professional practice are recognised, including a need to resolve tension between their own and other stakeholders’ priorities, values and beliefs.

Conclusion: Scaffolding an iterative, cyclical reflection process may support outcomes oriented towards resilience and the management of tension.

**Introduction**

Reflection is an increasingly important part of professional education and a core competence of professionals. The RCVS Day One Competences (1) state that commitment to learning includes: “*recording and reflecting on professional experience and taking measures to improve performance and competence”.* However, for many practitioners, reflection appears ill-defined and inferior to scientific conceptions of knowledge: vague instructions, variability in assessment, and struggles to align reflection with evidence-based learning contribute to such poor perceptions (2–4).

Reflection is applied in different ways to support learning and professional development. Reflecting on clinical reasoning, surgical technique or professional skills can identify knowledge deficits, and thereby inform strategies for improvement and ongoing learning (5). Reflection can also be targeted at the analysis of tension, such as a contextual challenge to implementing previously uncontested knowledge, or an incident involving conflict with professional values (6). Arguably a deeper approach, analysis of tension involves *core reflection,* and supports personal growth, better management of such tensions and enhanced resilience (7).

Core reflection incorporates critical analysis of one’s own priorities and beliefs, rather than an exclusive focus on actions and decisions (7,8). In this way, core reflection necessarily involves engagement in the perspectives of others, improving empathy, and providing better understanding of the complexities of human interactions (5). Through core reflection, individuals are able to analyse the elements of professional work that cause them stress, allowing them to implement steps to help work through these (9). Outcomes of core reflection include developing new understandings of one’s emotional response to a situation, the validation of different perspectives on problem-solving, or an adapted understanding of professional identity: what is important to an individual in his/her professional work (10). This enhances management of career stressors and resilience , as individuals become better able to critically review the sometimes unrealistic nature of their expectations (11), having had a “*big ideal picture in our heads of the kind of physicians we … were supposed to be*” (9). Core reflection is therefore pertinent in professional education, and it is of value to students to be able to scaffold reflection at this level.

The incorporation of professional identity – how students understand their role as a veterinarian through the way they problem-solve professional challenges – represents an important goal of reflection. The way challenges and tensions are problem-solved is important for the provision of a valued service to society (12), as well as supporting the mental wellbeing of professionals. A sole focus on disease management and classroom-based clinical reasoning risks the development of values, goals and priorities that are out of sync with client needs (13). As a result, graduates, not only of veterinary degrees but across the professions more generally, find themselves engaged in conflict, struggle to act in ways that align with their expectations, and become at risk from poor career satisfaction and mental ill-health (14). Encouraging students to reflect at a core level on their experiences offers the opportunity for them to explore their understanding of the veterinary role beyond disciplinary competence, and consider how they will overcome challenges in achieving this – an element of experiential learning that is identified as neglected when students are not specifically scaffolded to use their experiences in this way (15).

Although the rationales for core reflection are well-reported, it is more challenging to provide clear instructions to educators and students in how to achieve it. Many models exist (16–18), which provide systematic frameworks for experiential learning through reflection. However, they do not explain how to engage effectively with multiple, contextual perspectives in professional practice, or how to achieve productive core reflection and the associated high-level outcomes of personal growth, managing tension and developing resilience.

To help develop reflective competence amongst future professionals, as well as encourage reflection on individuals’ ambitions and priorities for their professional development, pre-clinical veterinary students were asked to complete a high-stakes assignment, reflecting on their learning from earlier experiences. Students worked according to assessment criteria that reward core, critical reflection, described further in the Methods section. The completed assignments demonstrated the different ways by which students reflected on their experience. A sample of these assignments was analysed, in order to explore the following research questions:

1. What are the methods used by students that make their reflection productive?
2. What is achieved by students as they engage in this process?

The study was intended to inform education practice and was inspired by students’ difficulties to understand how to reflect effectively and by educators’ difficulties to explain this clearly. There was misconception among students that only tear-jerking accounts would receive a high grade and subsequent disappointment that this was not the case. The authors sought to develop a clearer and empirically induced understanding of what makes effective reflection to support future veterinarians in their studies and career.

Summative reflective assessments are increasingly used in under- and postgraduate veterinary education, and it is in students’ and educators’ interests to be able to scaffold reflection that will support personal growth, the management of tension, and enhanced resilience. It was anticipated that analysis of these assignments would yield valuable information for students and educators in this respect: what constitutes effective reflection in professional education, how to make it lead to higher-level outcomes, and how to foster reflective competence that students can take into their future careers.

**Methods**

In interpretive work, it is important to recognise the researcher’s epistemological positioning and the influence it will have in data interpretation and conclusions. The researchers have considered this work from a post-structural, social constructionist perspective and thus defined experience and reflection as complex phenomena, in which experience will be interpreted individually, with different ways of making sense of multifaceted events and how to learn from them. When experience is referred to as ‘complex’, interpretation and analysis draws on critical theory (19): an understanding of experience that is achieved through engagement with the perspectives of those involved, and the tensions that exist between them, arising from their differing values, historical experiences and situational influences. The interpretation of students’ work, as well as the standards they were working towards, was informed by this epistemological position. Greater value was thus attributed to the understanding of experience according to multiple perspectives and the realisation that an individual’s analysis of a case will vary according to the context in which it occurs.

The following instruction was given to students at the start of the third year of their five-year veterinary degree: *Reflect on your skills in communication, teamwork or ethical reasoning since starting the veterinary course, and explain how this skill will support your development towards being a veterinary surgeon (veterinarian).* The assignment contributed 20% towards the students’ overall end of year grade and was assessed in accordance with the institution’s marking scheme for reflective student work. This scheme encourages core reflection and is constructed according to Hatton and Smith’s criteria (8): ‘pass’ level marks are achieved for descriptive reflection, ‘merit’ for evidence of dialogic practice, and ‘distinction’ for critical reflection (defined in the next paragraph). Assignment support was provided through reflective writing resources in the institution’s online learning environment, opportunities for students to complete short, formative exercises, and the provision of “drop in” sessions in which students could obtain individual feedback on their draft work.

From a total of 280 submissions, 15 assignments were selected at random and entered into NVivo (QSR International, Version 12) to aid data coding and management. Initial analysis was carried out by both authors independently, each reviewing the assignments using a standard approach for thematic text analysis that involves the coding and categorising of data (20). The research questions were used to direct theme identification, focusing on content that revealed how students had engaged in reflection, and what new knowledge or understanding was achieved. The theoretical framework guiding judgment of quality in reflective outcome was based on Korthagen’s concept of core reflection, and Hatton and Smith’s criteria defining criticality in reflection (incorporating context and multiple perspectives in one’s analysis), as markers of high level practice (7,8).

Text analysis then followed an iterative process of deepening understanding. The two authors discussed their initial interpretations, then returned to the texts to repeat their analysis, informed by collaborative co-construction of themes. An additional 15 assignments were then randomly selected for further analysis, including verifying saturation in theme generation. Following further discussion, both authors returned to all 30 assignments to identify data excerpts that evidenced the themes obtained. Further discussion enabled the ongoing development and refinement of themes as the analytical understanding of reflective practices and outcomes deepened. Final output therefore represents social co-construction of meaning through multiple cycles of collaborative conversation (21,22).

**Results**

Variation in students’ ability to meet the assessment criteria, i.e. to reflect at a higher level, enabled the identification of generic indicators of effective reflection, which were coded into three themes: reflective resources (the tools used), reflective practices (the ways of using these tools) and reflective outcomes (what was achieved). Analysis also revealed the different solutions by which students proposed they would respond to complex communicative or ethical challenges in daily practice, and thus achieve personal growth, competence in managing tension, and resilience. Excerpts that illustrate these themes have been taken from the assignments of four students, referred to here as A, B, C and D, and are shown in Tables 1-4, which are presented in such a way as to maintain the narrative structure of the original assignments. Student A wrote about the experience of her employment being terminated at a veterinary clinic. Student B wrote about conflicts experienced amongst friends in shared accommodation. Student C wrote about the experience of observing euthanasia of a healthy dog. Student D wrote about witnessing termination of pregnancy in a dog.

***Reflective resources***

When analysing the data, “reflective resources” was the code given to the tools used by students to analyse and learn from their experiences. Students used a variety of such resources to engage in reflective practice, which are here described as *external* (observations of events; reference to learning resources) and *internal* (emotional responses to events).

External resources included description of experience, literature on teamwork, communication or ethical theory, video resources (such as TedX talks) and lectures within the curriculum.

Internal resources represented emotional responses or intuitive reactions to the situations described by students. This type of resource was often used in combination with the literature, video resources or lecture materials already mentioned. Following a description of experience, students would typically relate their response to the situation: either an emotion (anxiety, frustration, confusion) or an intuitive judgment (success, failure). Students then tended to relate their experience to relevant lecture material or literature, for example a model of effective communication.

The first rows of Tables 1-4 show how these students used reflective resources to describe their experiences and position their learning. Students typically included both internal and external resources, most frequently a combination of event description, relevant literature and emotional response. Student A (Table 1) exemplified students who prioritised the use of literature at this stage (e.g. communication theory), positioning it as the most valuable resource to inform reflection and analysis. Other students (exemplified by Students B, C and D), shown in Tables 2-4 emphasised their feelings or intuitive responses when considering their experience. The processes by which external theory was used to support analysis of the students’ internal responses are explained in more detail next.

***Reflective practices***

“Reflective practices” was the code used to describe the different ways that reflective resources were used by students to consider and learn from their experiences as shown in the second rows of Tables 1 to 4. Two reflective practices were identified in the dataset: *mechanistic* and *catalytic.* In *mechanistic* reflective practice external literature or theory was applied normatively. Challenges experienced were problem-solved by identifying a skill deficit. This process was exemplified by Students A and B (Tables 1 and 2), who used communication theory to identify deficits in body language. Mechanistic reflection then followed a linear process, moving from the deficiencies identified to a presumed solution (detailed further in the section on reflective outcomes), but without deeper engagement in how the complexities of the experience may complicate application of learning. This linear process was assumed lead to an improved outcome, with Student B predicting “*a satisfying outcome and a more positive relationship overall”.*

In contrast, *catalytic* reflective practice described the staged use of reflective resources to reach a deeper understanding of experience. Whereas Students A and B used external resources to propose normative behaviours, Students C and D applied these resources as they revisited the experience, not to identify what they should have done, but to understand what was happening: the complexity of interactions between individuals, and the reasons for their own emotional responses. Both Students C and D used ethical theory to understand veterinarians’ actions that they initially understood as “*just wrong*” (Student C) or as “*inherently wrong”* (Student D) and that triggered moral stress.

Catalytic reflective practice thus proceeded in a more spiral fashion. A brief initial description of the experience (both internal and external elements) focused on the extraction of personally meaningful elements. The students then engaged with external literature or theory to enhance their understanding of the scenario, as the event was revisited in their writing. When the event was re-told with the aid of this learning, not only was there evidence of new understanding and a different perspective on the situation, the re-telling raised further questions. Student C wrote, “*it did make me question what I would have done in a similar situation and how I would have advised the owner”*, and later identified that she would need to find a way to “*justify [convenience euthanasia] in my head”.* Similarly, Student D explained, *“I became aware that I needed to find a way to resolve these quandaries… for my own mental wellbeing”*.

The spiral process of catalytic reflective practice thus occurred in multiple stages of reflection: students “entered” the experience (to describe the event and their emotional response), and then “stepped away” to access resources or consider the experience according to different perspectives. They then “revisited” the experience to consider how their understanding had evolved. As the students returned to writing about the experience, a greater level of personal meaning was evident, which sometimes manifested not as absolute solutions, but in raising questions that demonstrated awareness of the complexity of the scenario. This could be seen in the progression of writing in the accounts from Students C and D, shown in Tables 3 and 4. At the start, the event was presented descriptively, with little analysis other than identifying an immediate emotional response. As the assignments progressed, the level of depth and complexity was heightened: the students considered how reflective resources (typically literature) could be applied in a context of the conflicting values of student, veterinarian and client. The meaningful element of the experience was integrated with key theory to help the students “mull over” their situations and question implications for their future professional practice and particularly personal resources and coping strategies.

***Reflective Outcomes***

Reflective outcomes describe what was achieved as the students attempted to problem-solve and make sense of difficult situations. Outcomes were oriented towards personal emotions (*emotion-based*), knowledge and skill acquisition (*skills based*), and personal understanding and coping with situations as they happened (*core*). Within the assignments selected for in-depth analysis, there were no examples representing uniquely emotion-based outcomes. Such assignments tended to include extensive descriptions of students’ feelings or affective responses to events, but with no additional analysis of the reasons why the students found the experience difficult or distressing, or how they might manage similar events in future.

Students A and B achieved skills-based outcomes: Recognising how to communicate more effectively was proposed to prevent future similar situations. This outcome was independent of context: there was a lack of exploration of how communication theory would be applied and how other stakeholders might respond. Application of learning was therefore described as *simple*, with an assumption that once learned, improved communication could be applied effectively to any situation, regardless of situational challenges.

For Students C and D, catalytic reflective practice appeared to support outcomes related to understanding situational complexity, and gaining a new view of the experience by considering alternative perspectives. While events were initially perceived as right or wrong, the end result was a validation of viewpoints that conflicted with these early perceptions. Skills-based outcomes were evident as these students described how engaging in communication and ethical reasoning would support them in improving the way they managed tension experienced in difficult situations. Additional core outcomes were also evident as the students reached new understandings of the situations.

In contrast to the simple classification of the skills-based outcomes generated in the accounts of Students A and B, the skills-based outcomes from Students C and D were classed as *complex*: students recognised that empathising with different viewpoints to justify dissonant actions would not be straightforward, and thus the application of communication or ethical theory would be challenged by context.

Within the articulation of reflective outcomes, Students A and B positioned themselves as *expert learners*. For these students, the solutions to the challenges encountered were perceived to represent simple correction of knowledge deficits. As an example, Student B appeared confident that her future animal welfare concerns would be addressed by simply applying the communication frameworks obtained from relevant literature. There was no recognition that situational challenges may affect the application of this theory. In contrast, the ability of Students C and D to engage with challenges at a higher level of complexity advanced their perceptions of managing challenge beyond simple application of technical knowledge. They recognised a need to engage with conflicting perspectives and find ways to cope with moral dissonance by considering their priorities, values and beliefs in a wider context. These students positioned themselves as *adaptable professionals* who will need to adapt their actions according to the situation, taking into account multiple viewpoints.

**Discussion**

The research questions asked what methods make reflection productive, and what is achieved by students as they engage in it. All students used their experiences and what we call reflective resources to identify ways of resolving related challenges in the future. Variation in reflective outcome was shown in whether the management of challenges, and the associated tensions, was seen as skill-based (a knowledge deficit to be corrected), or core (how to better understand and personally cope with a situation). Review of the literature mirrors this variation. While some scholars view reflection as worthwhile only if it leads to enhanced knowledge that improves patient care (23), others identify benefits in deeper understanding of situations that fosters personal growth, supports the management of tension and enhances resilience (24).

The coding of reflective resources and practices helped articulate the methods students used in compiling their assignments. A combination of external (actions, literature) and internal (the emotional response to the event) resources provided the foci for reflection, and different practices (the ways the resources were used) seemed to lead to different reflective outcomes (skill-based or core). Linear, mechanistic reflective practice led to simple skills-based outcomes: identification of skill deficits that provided strategies for managing a situation that neglected the challenges of context. In contrast, spiral, catalytic reflective practice, in which an experience was revisited several times during writing, led to core outcomes (engagement with multiple perspectives, deeper understanding of the situation, and identification of methods to cope with what happened).

All students described themselves as feeling upset by events. When this was explored mechanistically, the priority was to identify a skill (often improved communication) that was naïvely proposed to prevent distressing events in the future. It was only when catalytic reflection was used that upsetting scenarios were resolved by exploring why one found the event to be emotionally difficult, what other perspectives may be valid, and how one’s own beliefs may be adapted.

Other scholars have similarly distinguished the outcomes achieved from iterative reflection compared to a single step process (7,25,26). Single-step (or linear) reflection is described as leading to an assertion that an identified problem can be remedied with a simple skill improvement or behaviour change (26), an outcome that aligns with the skills-based focus of the *expert learners* identified in the cohort. A more iterative (or spiral) process is described as leading to a new perspective on the experience, generating a deeper understanding of not simply what to do, but why the scenario may have happened, and why it was perceived problematically (26). This iterative process was described by Mezirow as a three-stage progression from technical reflection to critical thinking (27): (1) reflecting on *technical actions* based on empirical knowledge to identify actions dualistically, being either correct or incorrect; (2) reflecting on *interactive actions* involving communicative or dialogic action, to seek out alternative perspectives or interpretations of experience; and (3) reflecting on *emancipatory or self-focused* *actions,* to explore the societal and institutional influences that have informed the way individuals see themselves and their interpretations about the “rightness” of actions and beliefs. Such self-focused reflection involves critical analysis of self: an inquiry into the ways one’s interpretations of an experience are formed, leading to a consciousness of how one’s history has led to a personally unique way of interpreting the problem (28).

In the assignments, this iterative approach manifested when students considered different perspectives on their experience, and subsequently analysed the reasons for their own beliefs. This often involved identifying that the values they placed on animal health and welfare were personal, rather than representing a normative attitude. As students’ problem-solving evolved from a dualistic *expert learner* approach to seeing themselves as *adaptable professionals*, priorities changed from resolving tension by applying a “right” answer, to being able to adapt, acting to align with the values of diverse clients, even if such actions were dissonant to their own professional beliefs. They recognised they will need to find ways to cope with, and develop resilience to, such tension. The progression away from seeing the world as predictable and linear, where implementing knowledge will inevitably lead to an improved outcome, has also been observed in doctors (29). This development, away from the linear and predictable norms of decontextualized clinical problem-solving to one that recognizes the wider professional role, has also been advocated as a way to enhance veterinarians’ resilience to the stressors of practice (30).

The aims of the analysis, to provide better support for students and educators in how to ‘do’ reflection, makes it important to highlight the characteristics of different reflective outcomes. Across the dataset, progression from emotion-based, via skills-based, to core outcomes could be observed. Table 5 was constructed from these observations, to generate exemplifying texts that represent emotion-based, simple and complex skills-based, and core level outcomes. The main aim of Table 5 is to illustrate these outcomes, and hence provide context and guidance to students who are trying to reach a higher level of reflection. The examples may also be used by educators, for example to create criteria for assessment. Students’ initial use of an internal resource (emotional response to an event, often relating to concerns over animal welfare) appeared to provide motivation for personal development and the improved management of troubling or distressing experiences. At the most basic level shown in Table 5, students used emotion-based reflection to suggest that their ongoing (undefined) learning would help them to educate clients and eliminate the perceived problem. Such students’ work was not selected for more detailed inclusion in this manuscript, as it was felt it would be more valuable to focus on how reflection was done well. Students engaging in emotion-based reflection typify those mentioned earlier in the manuscript, who wrote emotion-heavy reflections but with little further analysis, and were dissatisfied with their grade as they felt they had written highly personal accounts.

Table 5 then demonstrates what is achieved by students as they reach skills-based reflective outcomes, firstly at a simple and then at a complex level. Simple skills-based outcomes were generated when students built on their initial emotional response, identified a skills deficit (often a communication issue) and, somewhat naïvely, proposed that becoming a better communicator would resolve similar situations in the future. At the next level, complex skills-based outcomes were achieved by students who built on both emotional responses and skill deficits, but also incorporated in their reflective practice a consideration of wider contextual influences within the situation. This was positioned as a high-level reflective outcome: to develop competence in managing challenging situations, students recognised they would need not only to gain a body of knowledge, but also address contextual influences that might challenge knowledge application. Core reflective outcomes were positioned as an even higher-level achievement, because of the associations with resilience, management of tension and personal growth described in the introduction to this paper.

The core-oriented outcomes exemplified in Table 5 were generated by progressing through the previous three levels., Students C and D achieved this by additionally including a discussion of how they could develop their skills to manage tension and challenge. Their core outcomes included a recognition that their views (such as animal welfare concerns) were part of their personal values, and reached this understanding by considering and validating the values and priorities of others. This process also enabled the students to question their own position and general scope for disagreement, while also highlighting a need to address tension between conflicting values.

Core-oriented outcomes were generated through catalytic reflective practice, which educators may scaffold in the following ways. Students achieving predominantly emotion-based outcomes (feeling that an event went adversely) can be prompted to access external reflective resources to identify knowledge or skill deficits. Those reaching simple skills-based outcomes can be encouraged to explore further the situational challenges that might complicate their knowledge application. They may also be encouraged to consider whether other stakeholders might perceive the situation differently, and whether this knowledge implementation will necessarily lead to a preferable outcome for all parties. Educators may question students as to why they felt a certain way about the situation, and how this viewpoint might have been developed (for example through personal beliefs and social influences). Students can thus be prompted to engage in catalytic reflective practice, revisiting the situation, considering other stakeholders’ perspectives, and exploring the implications on their personal growth, ability to manage tension and resilience. Moreover, students may be reassured that, in contrast to non-reflective assessments, they are not necessarily expected to know “the answer” but that their reflection may raise new questions about the complexities of professional practice and how these could be dealt with in a responsive and adaptable manner.

**Strengths and limitations**

Consistent with qualitative work more generally, the relatively small sample size of this study enabled an in-depth understanding of how students engage in reflection, which can be used to provide guidance and support for reflective practice. Potential limitations arose from the use of assessed reflective work for research, which together with the assessment of student reflection, is contentious (31). In this study, the assignments were treated explicitly as texts produced by students for the purpose of summative assessment, which may not provide ‘authentic’ insights into students’ experiences or beliefs (32). To answer the research questions, the analysis sought to elucidate how these students ‘do’ reflection rather than analyse the power relations and tensions between examiner and student that might influence the content and output of reflective writing, which has been well established (31). Therefore, although the practice of reflection may be influenced by performative attempts to meet assessment criteria, the conclusions made surrounding reflective practices and outcomes remain valid.

Readers of qualitative research often raise questions surrounding the transferability of a small data sample to other contexts and a wider population. This data set was notably diverse, and theme generation was as a result of multiple iterations of collaborative conversation between the researchers as described above. It is therefore possible that, should further examples be analysed, different approaches to reflection may be identified. The aim of the research was to provide a practical, evidence-based approach to reflection for practitioners and educators, who would benefit from greater support in writing reflectively, scaffolding or assessing reflective work. As such, the question is not whether the observations are generalisable to a wider population or different context; others may find different ways to reflect at a high level and it was not the intent of the analysis to provide an all-encompassing recommendation for how all reflection is or should be achieved. Instead, the importance of the observations lie in their transferability to other contexts: whether the resulting guidance is beneficial in supporting other students to reflect at a high level. The practical elements that were extracted provide such support, regardless of whether different approaches to reflection may also be appropriate.

The emphasis on core reflection may also not be relevant to all contexts. Where the problem is less complex (more dualistic, less context-dependent and not associated with conflict or tension), then attempting to reflect at a core level may be inappropriate (and if this is expected, for example core reflection is used in assessment criteria, this may be frustrating for learners). However, given the benefits of core reflection on personal growth, the management of tension and resilience , and the concerns surrounding mental health amongst veterinarians and across the professions more generally, encouraging practitioners to reflect on the personal importance and affective component of their learning, rather than simply on technical expertise, will confer benefits.

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Table 1: Student A writing about her experiences of employment termination at a veterinary clinic. Emphasis on external resources, applied mechanistically, to achieve simple, skills-based outcomes.

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| **Reflective resources**   1. Brief description of emotions (internal), followed by a lengthy description of working at the clinic (external; not shown):   *“I’m afraid we have to let you go,” are the words no one wants to hear as an eager pre-vet student at their first hospital of employment. They are words that are full of disappointment especially for a job in which you have chosen your future career path in.*   1. The student then goes on to use a 2nd resource (communication theory) to support analysis of experience:   *The article, Four Core Communication Skills of Highly Effective Practitioners stated, “management practices that demonstrated the largest potential to increase income were related to employee longevity, employee satisfaction, and client satisfaction” (Shaw 385 [sic]) (32). In my future practice I would like to be observant of my employees’ health and wellbeing, and the environment I am creating as a boss to achieve their true potential* |
| **Mechanistic reflective practice**  Theory is applied to identify skill deficits:  *In the doctor's explanation of my wrongdoings, she mentioned my hostility toward receiving feedback. Though I know I never tried to defend myself I do know my face and body can say a thousand words. My body language can truly affect and communicate what my employer thought was lack of interest or aversion to feedback. As a future clinician non-verbal communication is key in both the relationship I have with my clients as well as my ability to read their concerns… In the instance of an eye roll or a change in tone of voice, I picked up the cue but I did not proceed by reflecting back to my employer.* |
| **Reflective outcome: skill-based, (simple)**  A proposed solution is then generated (a suggested skill improvement):  *An example response would have been, “I noticed you seem unhappy with my performance” allowing for a reply and a faster resolution than a larger argument. Open-ended questions could also have followed this transaction in the likes of “Where do you see room for improvement?”* |

Table 2: Student B writing about conflicts experienced amongst friends in shared accommodation. Internal and external resources, applied mechanistically, to achieve simple, skills-based outcomes.

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| **Reflective resources**  Combination of event description (external) and emotional impact (internal):  *I found out that a few of the people had been berating me behind my back about things I was completely unaware of. I tried to ignore it, however it affected me to a point where I wouldn’t want to go back to the flat. When I discovered one of the individuals that I believed I was quite close with, had been making unpleasant remarks about me after I had left a room, I wanted to address this and put a stop to all the unnecessary animosity, but I was unsure how to. I calmly approached the person and asked if everything was ok between us. I asked if I had done anything to upset them and offered them the opportunity to tell me what was bothering them. The individual stared blankly at the floor and had no response, which made me feel remorseful as they obviously didn’t deal well with confrontation, but neither did I.* |
| **Mechanistic reflective practice**  Taught content is applied to identify skill deficits:  *During the communication strand taught at university, I now understand that it is not only the way you communicate verbally but also non-verbally e.g- body language, eye contact, facial expressions, and including tone of voice. Upon reflection of this experience, I can see my body language wasn’t very inviting; I remember being stood against the counter with my arms folded… my body language may have indicated to the person that I was already closed off to his answers – which contradicted my verbal communication and suggested I didn’t want an answer.* |
| **Reflective outcome: skill-based (simple)**  A proposed solution is then generated: (a suggested skill improvement):  *Reflection on this scenario has allowed me to improve my communication skills… I now know I must try and get my message across while keeping a neutral tone and body language conveying openness and understanding... Providing a non-empathetic and overall negative behaviour towards a client could be detrimental. It could result in them leaving negative feedback about you or the practice and not returning; impacting their animals’ welfare and the practice’s reputation… In future, I aim to take into consideration everyone’s perspectives on a situation and their incentives for doing something…. I should try and understand what that person may have been thinking and feeling at that time and be able to empathise with their reasoning… As a result, both parties should achieve a satisfying outcome and a more positive relationship overall.* |

Table 3: Student C writing about the experience of observing euthanasia of a healthy dog. Internal and external resources applied catalytically to achieve core outcomes.

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| **Reflective resources**   1. Description of event (external) and emotional response (internal):   *While on work experience, an owner came in and was having both of their pet dogs euthanised. One was ill, and they wanted the other healthy dog to be put down at the same time. This made me slightly uncomfortable, as I wasn’t sure how I felt about the euthanasia of a healthy animal.*   1. The student then goes on to use ethical theory (external resource) to support analysis of experience:   *A similar ethical argument is made with the Deontological framework, which considers some actions ‘unconditionally prohibited’ (Tannsjo 2005)* (33)*, meaning some actions (including euthanasia) are just wrong, and shouldn’t be performed despite the consequences. However, utilitarianism ethics appears to allow euthanasia, as ‘an action is wrong if, and only if, an alternative is available with better consequences’. This is saying that there is no other solution to the suffering, then euthanasia is an appropriate option.* |
| **Catalytic reflective practice**  The student revisits the event and applies ethical theory to achieve a new understanding of what was happening and to raise further questions:  *This seemed to be the view of the acting vet when the dog was euthanised, as euthanasia was deemed to be a better option than the potential distress that could be caused by being the only dog in the house. At the time I found it difficult to understand why the vet didn’t have an issue with euthanising a healthy animal, but I was not present for the prior consultation where the vet said they discussed in detail all the options with the owners… However, [reflecting on] this case it did make me question what I would have done in a similar situation and how I would have advised the owner.* |
| **Reflective outcome: skills-based (complex) and core**  The student reaches a new understanding of the experience that demonstrates empathy with the client and a need to problem-solve in a way that engages with the client’s needs:  *Looking back now, I feel that there would be a very big stress on communication during this case, as if I was the consulting vet then it would be important to take the time to sit down with the owner and talk through the options… At the end of the day, even if the animal is healthy, euthanasia might be the only suitable option for both the animal and the client, at which point I feel like I will be able to justify it in my head. Therefore, I think that this has highlighted the importance of good communication, and how it can not only make a decision easier for a client, but it could also help me, as a vet, come to terms with the client’s decision if it wouldn’t have been my first choice.* |

Table 4: Student D writing about witnessing termination of pregnancy in a dog. Internal and external resources applied catalytically to achieve core outcomes.

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| **Reflective resources**   1. Description of event (external):   *A client presented her dog, which had accidentally become pregnant, and was requesting a termination of the pregnancy. The ultrasound scan performed by the vet showed the foetuses to be normal and healthy. But the client explained that the mating was unplanned, and that she could not look after a litter of puppies. After exploring the client’s motives, the vet was satisfied with the reasons for terminating the pregnancy, and administered drug by injection, which would result in absorption of the foetuses.*   1. Emotional reaction (internal); the student also described ethical theory (external; not shown):   *I recall feeling uneasy about the consultation… I felt that killing healthy young animals was inherently wrong, and that the vet was violating this principle by carrying out the owner’s request. At the time, my reasoning skills did not extend past being able to define my moral intuition about the case. I could not explain why I felt this way, nor see my view in a wider context.* |
| **Catalytic reflective practice**  The student generates questions, that lead him/her to “step away” to consider theory, and then “revisit” this experience to apply theory that supports understanding:  *How had the vet managed to negotiate the case with such apparent ease? I became aware that I needed to find a way to resolve these quandaries, not only to handle the ethical challenges that come with practising as a vet, but also for my own mental wellbeing, or as Rollin (2013)* (34) *puts it, to avoid the ‘moral stress’ associated with the conflict between my reasons for entering the profession and the practices I was to be involved in. By studying this [ethical] theory, I was now able to understand how the decision to terminate the pregnancy could be reached. The inconvenience to the owner of having to look after a litter of puppies and the uncertainty of the puppies’ future welfare, together the potential risks associated with the pregnancy for the bitch, outweighed the unborn puppies’ presumed interests in staying alive.* |
| **Reflective outcome: skills-based (complex) and core**  The student reaches a new understanding of the event, and of the need to problem-solve according to different viewpoints. However, the complexity in achieving this, and the ongoing tensions that exist, are also acknowledged:  *My own personal ethic had fundamentally been ‘killing is wrong’. Yet in the consult room I had not stopped to question this belief. Having studied ethical theory, I now feel I have a good basis for analysing a case: I can identify moral concerns, consider the interests of affected parties, and come to possible conclusions using different ethical theories, I can also put my personal view on a case into a wider context, understanding the need for objective thought. However, there remains a persisting problem for me: how will I resolve all these conflicting interests and actually reach a decision? As a vet, I will ultimately need to make a judgment. I will establish the interests of the relevant parties…[but] I must also respect my own principles. This will be essential, as I have previously described, for my own reassurance that I am doing the right thing, and staying true to my central goal as a vet, to safeguard the wellbeing of animals.* |

Table 5: Examples of reflective outcomes generated from across the data set, demonstrating reflection at progressive levels

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|  | Examples have been created based on summaries of central themes derived from the analysis of 30 student assignments. They represent hypothetical students’ responses to a commonly observed scenario, in which students perceived that their animal welfare concerns were in conflict with the values of an animal owner. These examples show progression from emotion-based and skills-based to core reflection, to help educators articulate and scaffold effective reflection for their students. |
| Emotion-based outcome | *I was stressed by the conflict in this situation and will work hard to convince clients to look after the animals better.* |
| Simple skills-based outcome | *I was upset by the conflict in this situation, which resulted in poor communication. To prevent this type of conflict, I will use eye contact and open-ended questions to achieve better client relationships.* |
| Complex skills-based outcome | *I was stressed by the conflict in this situation, which resulted in poor communication. Communication in conflict is difficult, therefore I will need to focus on using body language and active listening in these types of situations, but know that they will remain challenging.* |
| Core outcome | *I now realise that my priorities to protect animal life may be in conflict with the needs of my clients, which I can now see are as important as my own beliefs. I will need to find ways to cope when a compromise is required, and my subsequent actions, to help a client, are dissonant to my personal values. It has helped that I now better understand the validity of the client’s needs in this scenario.* |