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Learning through clinical extramural studies: an observational study

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Table 4 Self-assessment of learning experiences that supported the development of competencies. Ranked by weighted mean

Learning Experiences	Strongly disagree (1)	Disagree (2)	Neither agree or disagree (3)	Agree (4)	Strongly agree (5)	Total Responses (n)	Mode	Weighted Mean
CEMS showed me how different veterinary practices work on a day-to-day basis	0%	0%	0%	46%	***54%***	69	5	4.54
CEMS gave me opportunities to apply my veterinary knowledge to a real-life context	0%	0%	1%	***58%***	41%	69	4	4.39
CEMS gave me experience of working within real-life constraints that I had not experienced at UCD (e.g., 10-min consults, limited treatment options, limited availability of equipment)	0%	1%	9%	42%	***48%***	69	5	4.36
CEMS helped me develop my animal handling and restraining skills	0%	3%	3%	***58%***	36%	69	4	4.28
CEMS gave me opportunities to develop my communication skills with veterinarians, nurses and practice owners	0%	1%	7%	***55%***	36%	69	4	4.26
CEMS gave me opportunities to work as part of a veterinary team	0%	6%	7%	***54%***	33%	69	4	4.14
CEMS gave me a greater insight into the differences and requirements between 1st opinion and referral work	0%	3%	12%	***61%***	25%	69	4	4.07
CEMS helped me develop my clinical examination skills	1%	6%	9%	***55%***	29%	69	4	4.04
CEMS gave me experiences to develop my clinical problem-solving skills	0%	3%	16%	***59%***	22%	69	4	4.00
CEMS gave me opportunities to communicate with clients	1%	12%	7%	***48%***	32%	69	4	3.97
CEMS helped me recognise my limitations and to know where to seek advice and assistance	0%	3%	16%	***65%***	16%	69	4	3.94
CEMS helped me to identify situations that should be referred	0%	6%	12%	***73%***	10%	69	4	3.87
CEMS enabled me to see how ethical and legal responsibilities apply in real-life situations	0%	6%	17%	***61%***	16%	69	4	3.87
CEMS gave me a good understanding of how veterinary practices are run as a business	0%	17%	13%	***49%***	20%	69	4	3.72
CEMS brought me into contact with species or areas of veterinary work that I had not dealt with at UCD	4%	22%	12%	***39%***	23%	69	4	3.55
CEMS helped me develop my history taking skills	7%	12%	25%	***42%***	15%	69	4	3.45
CEMS helped me to prepare accurate medical records	4%	***39%***	28%	25%	4%	69	2	2.86

Mode highlighted in bold and italics

Reflections of CEMS

Participants were asked to rate six statements that considered their overall reflections of CEMS and if alternative educational experiences should be offered. Three statements were rated highly by respondents who *agreed* or *strongly agreed* that CEMS is an essential part of the undergraduate veterinary degree program (92%, n = 65); CEMS supported their decisions regarding the type of work they wished to undertake after graduation (88%, n = 65); and CEMS made them more employable and prepared for work (87%, n = 65). The majority of respondents either *disagreed* or *strongly disagreed* with two further statements suggesting possible alternatives for CEMS weeks: replacing all CEMS weeks by increasing intramural rotations in UCD (85%, n = 65), or replacing some CEMS week by increasing time spent in the UCD

clinical skills laboratory (68%, n = 64). Responses varied regarding the suggestion of replacing some CEMS weeks by increasing the number of intramural rotations, 57% (n = 64) *strongly disagreeing* or *disagreeing* with this statement while 34% (n = 64) *agreed* or *strongly agreed*.

Overall planning experience

Respondents were asked to reflect on their overall planning experience and to select the statement that best describes their experience, there were 65 responses to this question. 65% of respondents noted they completed their CEMS with minor problems that were easily resolved. 42% of respondents noted they were able to find and complete the placements they needed. 2% indicated they completed their CEMS but it required a significant amount of research and effort. One respondent noted it was a real struggle to find and book placements.

Recommendations to improve CEMS

42 respondents provided comments highlighting their recommendations to improve CEMS for both students and placement hosts. Two themes from the thematic analysis were developed: planning supports, expectations and formalising learning on CEMS. Quotes have been included to illustrate the key ideas of the themes or nuances.

Planning supports

Planning of CEMS was viewed by respondents to be financially challenging given that it has to be completed during non-academic trimester weeks. For some this impacted their ability to work in order to support their studies. One respondent highlighted this caused them some stress. A funding scheme was suggested.

> *"Provide financial support for students in order to undertake CEMS, even if that is in the form of accommodation, as in human medical schools. Due to CEMS, we are generally unable to work a paying job, which further compounds the high cost of veterinary school." (2017, GE)*

One respondent commented that giving extra time for CEMS during the academic trimester, in particular during the lambing season would be helpful.

> *"I know its difficult to arrange with UCD but maybe give vet students time off at spring for calving season." (2017, MVB)*

Respondents suggested the development of a "*Student to student practice and experience feedback scheme*" (2017 MVB) for CEMS to support other students to source suitable CEMS placements. This information would include the type of practice, learning opportunities available and key contact. It was suggested this may involve veterinary practices nominating themselves and providing information for the scheme.

Expectations and formalising learning on CEMS

Respondents highlighted that CEMS experiences can be variable in terms of practical clinical skills development and level of interaction with the veterinary team. Suggestions were made to formalise learning by including a specific list of skills to undertake, procedures to be completed and a possible move to a distributed model of work placements similar to that implemented in the UCD Veterinary Nursing programme. Respondents viewed greater communication between placement hosts and UCD would assist student learning on CEMS. One respondent highlighted that additional clinical skills practicals conducted in UCD in advance of CEMS would be supportive.

> *"Practices vary a lot in the way they teach students and how much they let them do, and as a result, I think my overall experience with CEMS was a bit of a mixed bag. Some placements were excellent in regards to hand-on work and interaction/discussion with the vets, and at others I was no more than an observer and not even allowed to help restrain an animal. Unless you got recommendation from another student who had done CEMS at the practice, you had very little idea of what to expect at each placement." (2018, GE).*

One respondent suggested that students should find a suitable placement host where they would do the majority of their CEMS weeks. This would allow them time to build trust with the practice team.

> *"Ensure that students have a good base practice that will support them allow them to learn. Encourage students to spend time in what they think will be their base practice for CEMS prior to starting their actual CEMS so that they get to know the practice and that the vets get to know the students and to trust them." (2018, MVB)*

Discussion

The aim of this study was to explore how final year students' in UCD planned, learned and reflected on their CEMS experiences. The findings of this study suggest that students highly value CEMS as a co-curricular learning experience to their undergraduate veterinary medicine programme, and that CEMS experiences aided their future career choices and their preparation for the workplace. Students were motivated to plan CEMS placements that would support or guide future career

goals, however, the cost of financing CEMS placements played a key role in planning decisions. The data presented indicate that students did not frequently engage in learning activities such as discussing their learning goals with their placement supervisor, receiving external feedback or reflecting on their learning, which are activities more strongly related with SRL processes. Students self-assessed that the majority of day-one competencies were developed through their CEMS experiences and overall any problems planning their CEMS were easily resolved.

Effective self-regulated learners are able to set personal learning goals that will guide their decision making and subsequently their learning, this process is influenced by the individual's motivation and self-efficacy [34]. The survey highlighted that students are motivated by placements that would be beneficial to a future career goal or possible future employment. The student activity records for the GE programme indicate they completed the majority of their placements in small animal practices. As many on this programme are international students [35] and have worked as veterinary technicians in clinical practice, these prior experiences may have already focused their career aspirations and subsequent CEMS placement plans and goals. Career motivations are important in light of the results of a previous study conducted in the UK in 2018 of veterinary students and graduates by the *Association of Veterinary Students*. They noted that participants agreed that CEMS assisted their career preparation and 58% of graduates indicated they received an employment offer from one of their EMS placement hosts [36].

Affordability of a CEMS placement was regarded by 83% of the survey respondents to be a key motivational driver for CEMS choices, and financial barriers were cited as the second highest obstacle to planning. The majority of students reported in the survey that they choose to complete their placements in a location that did not incur significant costs (accommodation, transportation). 93% of students indicated they approached a placement they knew; further research would be required to ascertain why, but it may be that the practice was local to them and therefore costs to attend could be reduced. Financial concerns surrounding CEMS have been further reported by the RCVS in their consultation with stakeholders [37] and in their 2014 student survey from which our questionnaire was adapted [33]. Our survey findings indicated that students would be supportive of a funding scheme to support CEMS. While some sources currently exist in the UK [38, 39], accessing funding may be a challenge for students. Following a recent stakeholder consultation by the RCVS a new EMS policy was published in 2022 that aims to improve how students can plan their CEMS and provides greater flexibility for students to set individualised learning goals [40]. The number of CEMS weeks will be reduced to help offset the financial burden of EMS as the demand for CEMS placements continues to grow in parallel to the increasing number of veterinary students as new veterinary schools open. At the time of writing there is a shortage of accommodation in the rental market and a cost of living crisis in Ireland that has been widely reported in the national media [41]. Furthermore, there are ongoing concerns regarding the cost of Higher Education in Ireland that the Irish government is seeking to address through a '*Funding the Future*' policy that aims to provide a model of Higher Education that is accessible to all [42]. Students are facing significant challenges to finance their studies, while not explored in this survey, these socio-economic factors may play an increasing role affecting student goals and motivations in planning their CEMS.

The survey highlighted that students did not consistently discuss their learning goals with their CEMS placement hosts, an activity that would support SRL processes. Sitzman and Ely [13] highlight in their systematic review of SRL in a work-related training that goal level, persistence, effort and self-efficacy were constructs that had the strongest influence on learning outcomes. The guidelines to support student learning on CEMS by the RCVS encourage students to develop learning objectives and discuss these with their placement hosts [43], an approach encouraged by UCD and by the *Association of Veterinary Students* [44]. If these discussions were to occur more frequently it may help to manage learning expectations and facilitate learning opportunities that are realistic for the student and the activities of the practice. Our study did not explore why students did not discuss their goals with their placement hosts more frequently and what challenges they may have faced in their efforts. Further research is recommended to explore how and why students choose their learning goals for CEMS, what difficulties they may have experienced discussing these with their placement host, and how learning goals were utilised to regulate their learning in the clinical environment.

Developing effective learning strategies in the context of the clinical environment is important for students where efficient patient care is the priority. Strategies for learning will differ from those implemented in formalised academic contexts. Instead students must be able to recognise potential learning opportunities and be able to act [10]. Berkhout [45] identified factors that influence students' self-regulation in the clinical context: (i) the opportunities received or created, which are affected by multiple attributes including facilities available, interaction with clients, cases available, engagement with staff, workplace dynamics; (ii) level of autonomy experienced, and (iii) anticipated outcomes. Students can also struggle

with confidence, understanding their role and what was expected of them by clinicians when they transitioned to learning in the clinical workplace [11]. The survey results highlight that students '*almost always*' engaged in learning activities that were passive and observational. While our study did not explore the factors that inhibited greater active participation with the clinical team on CEMS, it may be that contextual factors identified in previous research on SRL in the clinical workplace and role expectations impacted students' ability to engage more actively. Survey data indicated that students did not frequently reflect on their learning activities on CEMS and qualitative data from the survey suggest that students sought a formalised approach to their learning on CEMS, through the introduction of a specific list of tasks for practices to teach. It may be that students need guidance to develop their reflective learning skills [46] to maximise their learning from observation in the clinical environment, and to develop skills to identify alternative informal learning opportunities available. Educational theories of experiential learning [47] and zone of proximal development [48] can guide educators to develop and scaffold educational interventions to support students to actively analyse observational clinical experiences encountered with veterinary professionals on CEMS and to extract meaning to further their knowledge [49-52]. Developing these reflective learning skills will be important for students on CEMS, as observation is likely to be a core activity when students commence their placements.

Future work and study limitations

Students overall acknowledged that CEMS contributed to the development of professional skills, clinical skills and veterinary knowledge, as well as providing experiences of day-to-day veterinary life. The student learning experience on CEMS however can be improved. We recommend that there is a need to design and develop educational interventions that support students to self-regulate their learning in the clinical context and develop learning strategies to avail of informal learning opportunities and to reflect on learning from CEMS. Academic advising and mentoring programmes [53] have shown positive outcomes in supporting students' career goals, motivation, lifelong learning skills and reflective learning. Further enhancements to the design of the veterinary medicine curriculum could aid students' preparation and transition to WPL, for example increased clinical skills development prior to taking CEMS, and professional development activities to guide students in navigating the complexities of learning in the workplace and their interaction with daily practice. Further collaboration with CEMS placement hosts may also prove beneficial by providing training and resources to support their role with students. This is a complex issue that will require input and collaboration from all stakeholders. Future research should explore the effectiveness of such interventions to improve student's SRL practices in the clinical workplace and to investigate SRL sub-processes for example, setting appropriate learning goals, choosing and implementing effective learning strategies, and reflective learning in the context of informal learning on CEMS.

The single-institution design of this study is a limitation as findings cannot be generalised to other workplace settings or other educational health professional contexts, however small-scale social research projects using an exploratory sample using non-probability methods can provide insights [54]. The response rate to the questionnaire was low (23% in 2017 and 42% in 2018), which is below the 50% target for each sample the study had aimed for. This may be attributed to the timing of the questionnaire invitation and its voluntary nature. Communication was sent to students in March of their final-year, where students are completing intramural placements and will have been under time pressure for upcoming final examinations. It is therefore possible that those who responded to the questionnaire may have been particularly motivated to share positive or negative feedback about CEMS which may have resulted in the data being skewed by the respondent population. A further limitation of the study is the use of self-reporting questionnaires for investigating SRL experiences. Rowers et al. [55] highlight that this approach may provide insights globally into students' own level SRL versus more specific SRL processes where behaviour measures may be more accurate. Our survey sought to provide an overarching view of the planning, learning and reflective activities for CEMS by students in an Irish higher education institution. These activities were analysed through the theoretical lens of SRL, a previously unexplored area.

Conclusions

This study contributes to the veterinary educational literature by providing evidence of student engagement with SRL activities in an Irish veterinary medicine programme. The study found that students focused their CEMS placements in small animal, production animal or mixed practices. Students highly valued CEMS as part of their veterinary education and engaged in a range of activities to regulate their learning and attain their goals. Data provided insights into the planning and learning challenges students faced which agrees with other reported studies in the medical educational literature. This data can support a greater understanding of the veterinary student WPL experience in the context of CEMS and highlights an opportunity to develop educational supports to enhance their learning.

Abbreviations

UCD	University College Dublin
CEMS	Clinical extramural studies
MVB	Five-year undergraduate veterinary medicine programme
GE	Four-year graduate entry veterinary medicine programme
SRL	Self-regulated learning
WPL	Workplace learning
RCVS	The Royal College of Veterinary Surgeons

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Authors' contributions
DC and SR both designed the study, contributed to the writing of this manuscript and approved the final manuscript for submission. DC analysed the data.

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Availability of data and materials
The datasets generated and analysed during the current study are not publicly available as the participants of this study did not give written consent for their data to be shared publicly, but are available from the corresponding author on reasonable request.

Declarations

Ethics approval and consent to participate
This study qualified for exemption from full ethical approval by the Human Research Ethics Committee at University College Dublin (LS-E-17–17-Cashman-Doherty).

Consent for publication
Not applicable.

Competing interests
The authors declare that they have no competing interests. This study is part of a doctoral thesis that is due for submission in 2023 by DC.

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