Discipline-Specific Compared to Generic Training of Teachers in Higher Education

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Abstract

A recurrent theme arising in the higher education sector is the suitability and effectiveness of generic versus discipline-specific training of university teachers, who are often recruited based on their disciplinary specialties to become teachers in higher education. We compared two groups of participants who had undergone training using a generic post-graduate certificate in higher education (PGCertGeneric) versus a discipline-specific course in veterinary education (PGCertVetEd). The study was conducted using a survey that allowed comparison of participants who completed PGCertGeneric (n = 21) with PGCertVetEd (n = 22). Results indicated that participants from both PGCertGeneric and PGCertVetEd considered teaching to be satisfying and important to their careers, valued the teaching observation component of the course, and identified similar training needs. However, the participants of the PGCertVetEd felt that the course made them better teachers, valued the relevance of the components taught, understood course design better, were encouraged to do further courses/reading in teaching and learning, changed their teaching as a result of the course, and were less stressed about teaching as compared to the PGCertGeneric participants ($p < .05$). It is likely that the PGCertVetEd, which was designed and developed by veterinarians with a wider understanding of the veterinary sector, helped the participants perceive the training course as suited to their needs.

Key words: teaching the teachers, discipline-specific training, pedagogical content knowledge, veterinary educators

Introduction

Over the past 20 years there has been a considerable focus, particularly in the English-speaking world, on teacher development in higher education,[1] driven by political agendas that have anticipated public demand for better quality teaching and students seeking value for money for the increasing tuition fees that they pay.[2–4] This has led to the proliferation of formally taught courses, pedagogical centers outside education faculties and departments, and institutional, national, and international networks and communities of practice, focused on pedagogical research and development (e.g., the Carnegie Foundation[5] and the Staff and Educational Development Association[6]). In the UK, the first attempt to provide national recognition of the professional higher education teacher was the founding in 2000 of the Institute of Learning and Teaching in Higher Education. The Higher Education Academy replaced the institute in 2003 and has gone a step further by developing a professional standards framework (UKPSF)[7] to support minimum standards for its fellowship qualification and creating a "trajectory of learning" for those who wish to continue to develop their professional teaching skills.

In most higher education institutions in the UK and elsewhere, teacher development is managed through post-graduate teaching programs and other short courses. Many multi-faculty universities, with centrally located teaching and learning groups, offer generic teacher training across different faculty and disciplinary boundaries. While the training is based on sound principles of the Scholarship of Teaching and Learning (SoTL), Healey argues that "the scholarship of teaching needs to be developed within the context of the culture of the disciplines in which it is applied."[8] There is increased recognition that methodologies that address subject-specific issues must be developed within particular disciplinary contexts.[9] Each discipline has its

own traditional pedagogies, methods that influence teaching within their context and student community, that take on different characteristics and approaches to learning. Pedagogical content knowledge of a discipline may have been developed over decades (or centuries) based on the experiences of teaching in that discipline.[10] Therefore, the integration of pedagogical content knowledge into teacher development programs is crucial for further advances in SoTL in each discipline. For most academics, teaching is explicitly linked to their subject domain and research, and unless it is embedded in the discipline and/or the department they cannot envisage developments in teaching.[11,12] Academic discipline and teaching conceptualization have a very strong influence on teaching scholarship, in contrast to qualifications and years of teaching experience, which have a more moderate impact.[13,14]

The integration of discipline content knowledge with pedagogy is particularly challenging in the fields of science, technology, engineering, and mathematics. Science teachers offered training in teaching and learning can find it difficult to embrace the discipline of *education*,[1] which is new to them, though is a much older discipline with a different history and evidence base.

This pedagogical discontentment reflects a state of cognitive conflict due to a mismatch between science teacher pedagogical goals and teaching practice.[15] The diverse methodologies that scientists employ to study the natural world and find explanations for it are rooted in the traditions of enquiry-based approaches. Science teachers find it difficult to accept the knowledge and research frameworks and thus the evidence-base that are offered to them in education.[1]

Medical education is a field in which there has been considerable interest in discipline-focused pedagogy[16]. Considerable research capacity in medical education has been combined with clarification of social responsibility, the need for students to understand professionalism and start to develop their professional identities,[17] a better understanding of clinical reasoning and decision making,[18] and a considerable investment in the identification, development, and assessment of technical skills[19] to drive evidence-based changes to medical curricula.[16]"

Faculty development activities are also highly valued in medical education with evidence of changes in learning and teaching behaviors.[20]

Veterinary education and faculty development has traditionally adapted discipline-specific, pedagogical advances in medical education to enhance the teaching and learning practices of its own professionals. However, although there are similarities in discipline-specific teaching and learning issues between medical and veterinary education, several differences exist, including the nature of clinical teaching and the skills to be mastered by graduation. Teaching is conducted around animals, in clinics, and in barns, stables, and fields, with clients acting as animal *restrainers.* This means that the safety of the patient, client, and student become critical considerations for the teacher. This has led to the suggestion that "in tandem with evidence drawn from the medical education literature, context-specific faculty development initiatives could potentially be of real benefit to both veterinary educators and their students."[21]

At the Royal Veterinary College (RVC), University of London, UK, over an 8-year period ending in 2010, probationary lecturers were trained in teaching and learning using two generic post-graduate certificate in higher education (PGCertGeneric) courses offered by other University of London colleges. Formal and informal feedback consistently revealed that these generic programs were not well received by many lecturers coming from a scientific background, and despite attempts to remedy this it became clear that an externally sourced course was failing to benefit several RVC lecturers. With its increasing size, and the resources of the Lifelong and Independent Veterinary Education Centre (a Higher Education Funding Council for England–supported Centre of Excellence[22]), it became feasible for the RVC to create its own Master of Science in Veterinary Education including a Post-Graduate Certificate in Veterinary Education (PGCertVetEd) to develop veterinary educators. This program commenced in September 2010.

Although several reviews have explored the impact of discipline-based programs on teacher development,[20,23] comparative research evidence that contrasts the effectiveness or relative impacts of generic versus disciplinary approaches is very limited.[2] This could be partly due to the difficulty of training teachers using either a generic or discipline-specific approach. Most higher education institutions with centrally located learning and teaching centers offer generic skills training with an integrated disciplinary emphasis.[24] At the RVC, we had the opportunity to compare two groups of participants who attended either a generic or a discipline-specific post-graduate certificate course in higher education.

This article presents participant perceptions from the groups of veterinary educators who took part in either one of the generic post-graduate certificate courses in higher education (PGCertGeneric) or the new discipline-focused PGCertVetEd. Participant perceptions regarding the courses and the impact on their teaching were explored.

Methods

Participants from two PGCertGeneric courses were compared with participants from PGCertVetEd. All the programs were mapped to the level 2 descriptor of the UKPSF.[7] They were designed to be UK level 7 (post-graduate study), with clearly defined learning outcomes, and the assessments were scrutinized by internal and external examiners.

The PGCertGeneric

The two generic courses used in this study consisted of face-to-face (F2F) study only. The 60-credit (UK Credit Accumulation and Transfer Scheme credits) programs were delivered

as monthly 1-day workshops, and compulsory attendance was required over a 2-year period. Participants commenced the program with a 30-credit core module in their first year of study. In the second year they had the option to select two 15-credit modules out of 5. The programs encouraged participants to reflect on and interrogate their own practices with peer and tutorial support over monthly periods. Teaching observation was a compulsory assessment component. The teaching teams who delivered these programs were educational developers who had backgrounds in education and were not veterinarians.

The PGCertVetEd

In contrast to the PGCertGeneric that it replaced, the PGCertVetEd was designed to be discipline focused, to integrate core principles in teaching and learning in higher education, and to be delivered in F2F or distance learning (DL) modes. The PGCertVetEd course consisted of two compulsory 30-credit modules, and teaching observation formed a compulsory component of the assessment. Developing reflective practitioners was a central philosophy of the program, and to support this a *patchwork text* approach with formative and summative assessment[25,26] was adopted, which was proven to be successful.[27] The educational developers of this program were veterinarians who had post-graduate qualifications in medical education. They had considerable personal experience in developing reflective practice and understanding qualitative educational literature. Almost all the tutors who delivered PGCertVetEd were either veterinarians or educationalists with considerable experience in the veterinary sector.

In 2010 the PGCertVetEd was offered as an F2F course, and in 2011 DL was offered as an additional mode to participants from outside the RVC. The program content and assessment components were exactly the same for both F2F and DL delivery. Participants from both F2F

and the DL program interacted frequently and participated in joint discussions on the online forums, journal clubs, "educational thinker" activities, and the development of joint teaching presentations.[28]

Participant Surveys

In 2008, the human resources staff at the RVC conducted a comprehensive questionnaire-based survey of all those still employed at the RVC who had participated in the PGCertGeneric courses. The survey was repeated using the same questionnaire in 2013 with all the participants (both RVC-based and external) of the PGCertVetEd offered by the RVC. Both groups were made up of clinical and non-clinical teachers, all with scientific backgrounds.

After collecting basic demographic information, the survey used 30 separate statements to explore participants' perceptions of their roles, their needs, and the impact of the course on their practices.

Data and Statistical Analysis

The questionnaire data were analyzed using Fisher's exact test on all questions for the binary classification *agree* or *disagree* using 2 × 2 tables:

1. RVC (F2F) versus non-RVC (DL)

2. PGCertGeneric versus PGCertVetEd

There were two questions that used a 3-point Likert scale, and these two questions were not analyzed using the binary scale.

Ethics Approval

The data on which this study is based were collected as part of staff feedback on their professional teacher development programs. While primarily collected to support course improvements, RVC staff and students are aware that these types of data may also be used to answer more general research questions, and the results disseminated for the benefit of the broader educational community. Approval for such "low risk evaluation studies"[29] has been given by the RVC Ethics Committee.

Results

A total of 21 participants who attended the PGCertGeneric completed the 2008 survey, and 22 participants who attended the PGCertVetEd completed the 2013 survey.

Demographic Data for PGCertGeneric and PGCertVetEd Participants

Both PGCertGeneric and PGCertVetEd groups had on average less than 10 years of teaching experience, and the contact teaching hours per annum were 415 ± 383.2 and 285 ± 267 for the two groups, respectively. Participants from both groups were predominantly involved in teaching undergraduates and also taught post-graduate students. With respect to all the participants' professional backgrounds, veterinarians formed the largest group, and veterinary nurses and technicians the second largest group. The *other* group mainly consisted of scientists who held teaching positions at veterinary- and animal science–related institutions. Lectures and practical classes formed the highest proportion of teaching undertaken. The other types of teaching undertaken were seminars, tutorials, clinical teaching, and project supervision. In the

PGCertVetEd group, there were about half as many DL participants as F2F participants. The demographic data were not different between the F2F and DL groups.

Comparison Between Face-to-Face and Distance Mode

The PGCertVetEd participant data were analyzed to determine whether there were any differences between the F2F and DL groups with regard to with regard to perceptions of teaching and learning, design, content, and relevance of the PGCertVetEd course or their perceptions regarding the impact of the course on their practices. There were no significant differences between the two groups for any of the 30 comparisons. Therefore, for the main comparison between PGCertGeneric and PGCertVetEd, the data from F2F and DL participants were combined for the PGCertVetEd group.

Comparison Between PGCertGeneric and PGCertVetEd Participants' Perceptions

Participants' Roles, Their Needs, and the Course

Survey responses related to participants' perceptions of their roles, their needs, and the course are summarized in Figure 1. The 21 individuals who completed the 2008 survey from the PGCertGeneric group and the 22 who completed the 2013 survey from the PGCertVetEd group placed virtually identical weighting on values-related statements such as "I consider teaching important to my career" and "Teaching is stimulating and personally satisfying." Participants from both groups expressed the need for extra training in teaching and learning. The pedagogical

content and the facilitator knowledge in teaching and learning in higher education were considered highly appropriate by both groups. To attend the PGCertGeneric, the RVC participants had to travel to other teaching institutions; this was considered unacceptable by the RVC participants ($p < .05$) and could have contributed to the negative feelings regarding the PGCertGeneric. There was a significant difference in participant perceptions regarding the value of PGCertVetEd compared to the PGCertGeneric for satisfying their needs and as a motivating course. The PGCertVetEd was considered superior on both counts ($p < .05$). Motivation to undertake further study and reading can also be seen in the increased flow through to diploma and MSc levels. For the PGCertGeneric courses, this progression was uncommon. Since the start of PGCertVetEd, 27% of the participants in the program have progressed to the MSc in veterinary education.

[INSERT FIGURE 1]

Teaching, Learning, and Assessment

Survey responses related to teaching, learning, and assessment are summarized in Figure 2. The improvements in theoretical and practical knowledge in relation to teaching and learning were significant for the PGCertVetEd participants compared to PGCertGeneric participants. The PGCertVetEd helped participants better understand course design and improved their understanding of how students learn. They regarded themselves as better teachers, and more than twice as many participants reported that they had changed their classes and that these had become more student focused. The RVC participants also felt that the PGCertVetEd helped them to understand the rationale behind RVC courses (their role in the RVC curriculum) and that this was probably due to the PGCertVetEd using the RVC veterinary curriculum as an example in

explaining integrated curriculum and curriculum models. The knowledge regarding the issues in assessment and developing assessments was equally supported by both courses, and all participants were satisfied regarding the pedagogy of assessment as a result of the PGCert courses they completed.

[INSERT FIGURE 2]

Course Assessments and Overall Experience

Survey responses related to course assessments and overall experience are summarized in Figure 3. Both groups agreed that the teaching observation was a very useful component of the course and the coursework; the discussions and the one to one support were considered equally valuable. The courses, however, did not stimulate educational research leading to publications. There was a significant difference in the perceptions regarding the usefulness of the taught part of the course in satisfying participant needs, with the PGCertVetEd offering a superior outcome compared to the PGCertGeneric ($p < .05$). The PGCertVetEd participants also felt less stressed by their roles after having completed the course.

[INSERT FIGURE 3]

Perception Regarding Educational Theory and Level of Challenge

Survey responses related to educational theory and how challenging the courses were are summarized in Figure 4. The course-related statements generally favored the PGCertVetEd. Although a proportion of the PGCertGeneric course participants did not consider the level of their course sufficiently challenging, this was not the case for the PGCertVetEd participants,

over 90% of whom considered it about right. The amount of educational theory was considered excessive by 30% of the participants of both groups. However, 20% of the PGCertGeneric cohort also considered their courses to be deficient in educational theory.

[INSERT FIGURE 4]

Discussion

On a range of key indicators related to participant perceptions and reports of their own practices, the comparison supports the view that the PGCertVetEd is perceived to be more effective than its generic predecessors in developing the pedagogical knowledge and understanding of new teachers, who predominantly have science backgrounds, which is in line with current thinking on the importance of discipline-focused pedagogical training in general.[8–10] The results, however, do not give any indication regarding the effectiveness of the training in terms of impact on practice or on students. The PGCertVetEd participants suggested that they had learnt more about student-centered learning and assessment.

The recognition of the relevance of this professional development to them means that teachers are being inspired to engage outside the classroom and continue further in their formal educational status than is required by the terms of their contracts. Participants are recognizing the scholarship of education as an additional academic avenue alongside scholarship in the clinical and basic sciences. With time, this should strengthen student and learning-focused culture in the veterinary sectors and enhance the reputation of veterinary teaching institutions in this area through presentations and publications on pedagogical themes.

The PGCertVetEd group had a significantly higher proportion of students worried about their teaching compared to the PGCertGeneric group . This may be partially explained by the perception of heightened student expectations in the face of increasing fees[3,30] and the difficulty of combining successful teaching with their other responsibilities,[31] which are judged on business measures (clinicians) and research measures (research scientists). However, it was clear that both groups considered teaching an important part of their careers and already perceived teaching as a fulfilling part of their academic roles.

We recognize that there are several limitations to this study, including that it is structured as a historical comparison, involving arguably different groups of teachers who, although only separated by 5 years, faced different higher educational landscapes as a result of rapid changes resulting from external economic and political pressures.[32] Moreover, some widely accepted learning theories began to be challenged in the intervening period,[33] and this may have affected the instructors. More PGCert VetEd participants perceived the course as meeting their needs and having the right balance in terms of challenge. We want to emphasize in our analysis of the three programs that they have much in common and were all benchmarked to the English Framework for Higher Education Qualifications Level 7 (Masters). They were also all facilitated by teachers who knew their subject well (as acknowledged by the participants). An important aspect of learning is participant perception of its relevance and the ability to use new knowledge and skills in personal practice.[34,35] There is a lesson here for all curriculum designers: a paper analysis might reveal apparently similar content and objectives, but the perceptions of the participants and the level of the outcomes may be very different based on the relevance of the pedagogical framework to the participants' backgrounds and their current roles.[36]

The DL participants had similar perceptions regarding the PGCertVetEd course compared to their F2F counterparts. The synchronous nature of some of the discussions and activities between DL and F2F led to close interactions and made DL participants feel less isolated and a part of one large group.[37] The motivation to participate was strong in DL and F2F groups, which could be related to their understanding of the importance of teaching and learning in their professional roles. However, the motivation to participate could also be high in the DL group as they were external to the RVC and were not required to do the PGCertVedEd, compared to internal RVC participants who had to do the course as a mandatory probationary requirement. This may have affected the perceptions of all RVC internal participants, as the motivation to do the course could have been extrinsic rather than intrinsic leading to dissatisfaction.[38] The opportunity to discuss disciplinary-related pedagogical issues may have played a key role in theses joint interactions. As the first discipline-specific PGCert course, the course may fill an unmet demand of the veterinary sector.

Stress is an increasingly important consideration for the academic community, in both teachers and students.[39,40] The veterinary profession is well aware of the adverse consequences for its members that, at the extreme end, have resulted in it topping league tables for suicide,[41,42] with an incidence that is four times the national average in the UK and twice that seen in medicine. It must concern all who manage academic institutions when they receive reports of increased worry on the part of staff over their roles. The developments within the PGCertVetEd suggest that this discipline-focused pedagogical learning, in addition to enhancing the quality of teaching, has helped a larger number of staff cope with the stresses of their roles, which must be a collective academic benefit as well as a benefit to those individuals.

Conclusions

With the advent of post-graduate certificate courses for teacher development in higher education, new questions about the effectiveness of these programs for teaching in different disciplines have arisen. How can the disciplinary specialist, without any training in teaching and learning, be converted to a specialist in teaching and learning? How can pedagogical content knowledge that has been accumulated through decades (if not centuries) be combined with generic themes in a post-graduate certificate course so that it becomes a more effective program? Can educational developers without pedagogical content knowledge of the disciplines train disciplinary specialists in teaching and learning? Without answers to these questions we cannot know how best to train the teachers in higher education to achieve the goals that are set by their students, institutions, and society. Results from the current study suggest that discipline-focused training designed and delivered by those with a greater understanding of the veterinary sector is perceived as more effective than a generic post-graduate certificate course in education.

However, there is a danger that such a discipline-specific training approach could isolate the veterinary educator from the wider group of teachers in higher education. There is much evidence that being engaged across disciplinary boundaries can lead to broader understanding, learning from other disciplinary cultures, and intellectual advancement. More research is needed to understand the long-term benefits of discipline-specific versus generic training in shaping disciplinary specialists into motivated teachers who will continue to grow, both in their own discipline and in the profession of teaching.

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Conflict of Interest

The authors report no conflict of interest. The authors alone are responsible for the content and writing of this article.

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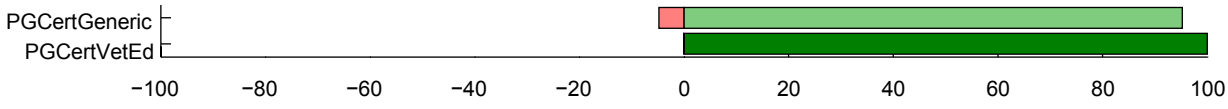
Figure Captions

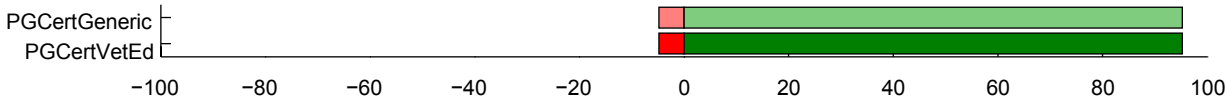
Figure 1: Comparison between PGCertGeneric (*n* = 21) and PGCertVetEd (*n* = 22) participants' perceptions of their roles, their needs, and the course (* $p < .05$)
Figure 2: Comparison between PGCertGeneric (*n* = 21) and PGCertVetEd (*n* = 22) participants' perceptions regarding teaching, learning, and assessment (* $p < .05$)
Figure 3: Comparison between PGCertGeneric (*n* = 21) and PGCertVetEd (*n* = 22) participants' perception regarding course assessments and overall experience (* $p < .05$)
Figure 4: Comparison between PGCertGeneric (*n* = 21) and PGCertVetEd (*n* = 22) participants' perception regarding educational theory and level of challenge

Comparison between the PGCertGeneric (n=21) and the PGCertVetEd (n=22) participants – perceptions of their role, own needs and of the course

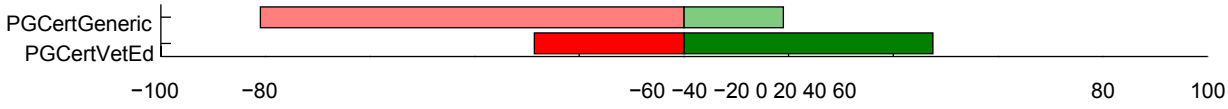
Q1: I consider teaching is important to my career.



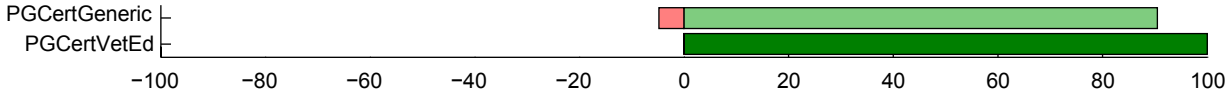
Q2 Teaching is stimulating and personally satisfying.



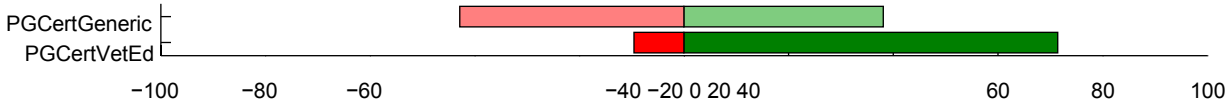
Q3 I was worried about teaching when I [took up my current role] / (came to the RVC). *



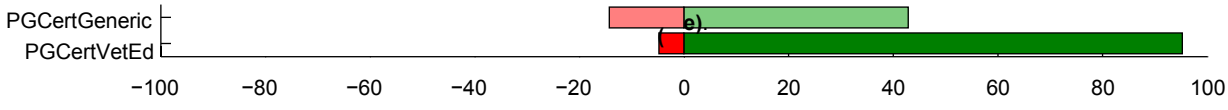
Q4: As part of my role, I felt extra training in teaching and learning would be helpful.



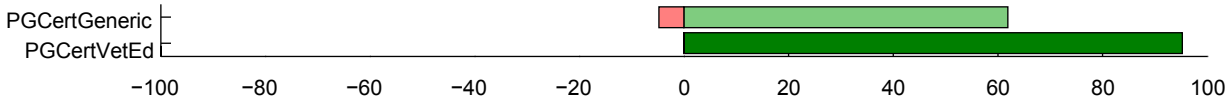
Q6 The [PGCertVetEd] / [PGCertGeneric] course answered my needs for development in this area. *



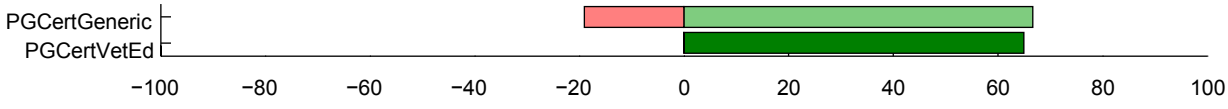
Q7: The teachers/facilitators worked well with [us]



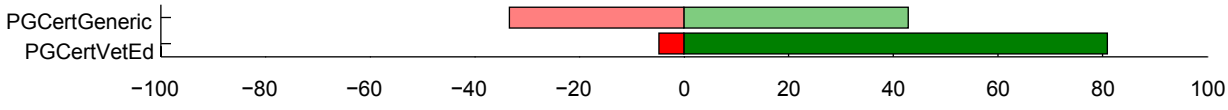
Q8: The teachers/facilitators knew their [subject] / (subjects) well.



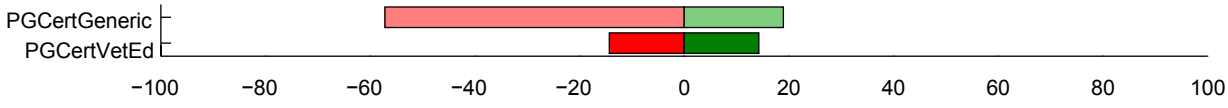
Q9: The mix of individuals from different disciplines, including those not involved with RVC, was an important part of this experience.



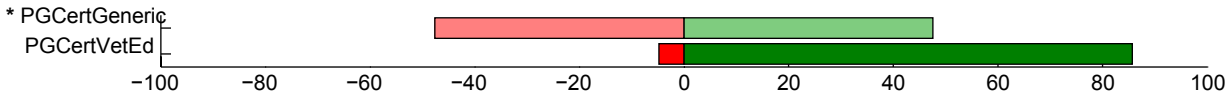
Q10: A course located at the RVC [suited me well] / (would have suited me better). *



Q11: The time required for travelling to attend was unacceptable. *



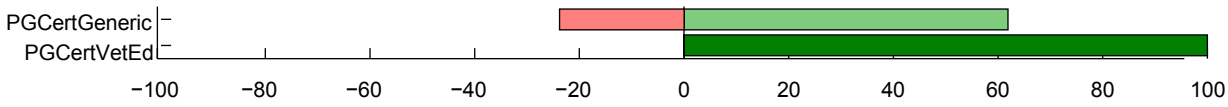
Q12: As a result of this experience, I feel encouraged to do further courses/reading on teaching and learning.



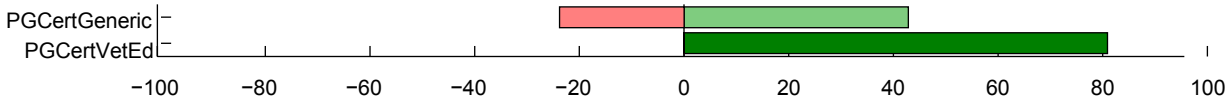
red − disagree as a % of respondents
green − agree as a % of respondents

Comparison between the PGCertGeneric (n=21) and the PGCertVetEd (n=22) participants - perceptions regarding teaching, learning and assessment

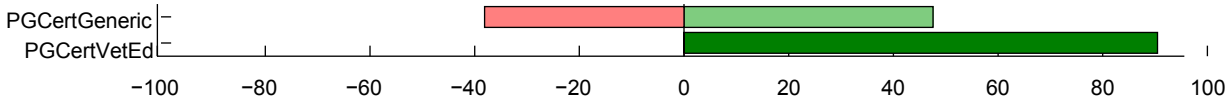
Q13 The course improved my understanding of the way students learn. *



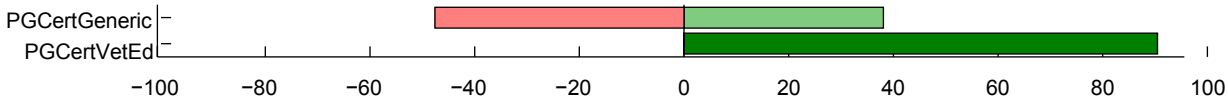
Q14 The course helped me to be a better teacher. *



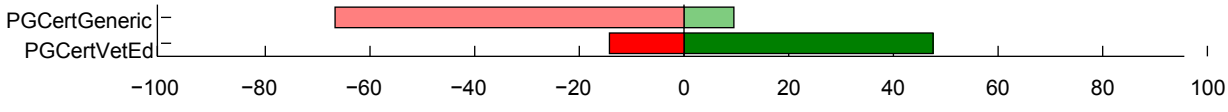
Q15 The content of my classes has changed as a result of the course. *



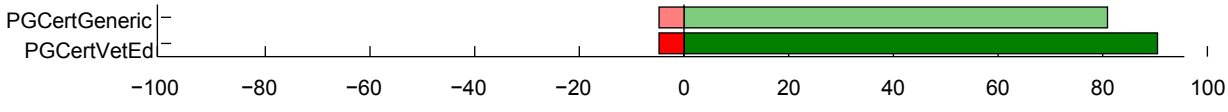
Q16 The way I deliver my teaching is more student−focused than it would have been otherwise. *



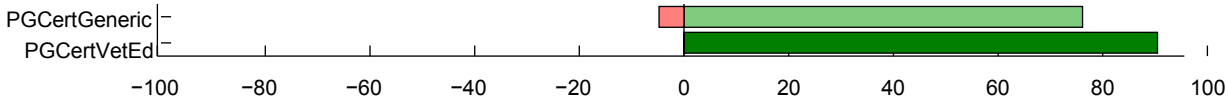
Q17 I am less stressed about teaching as a result of the course. *



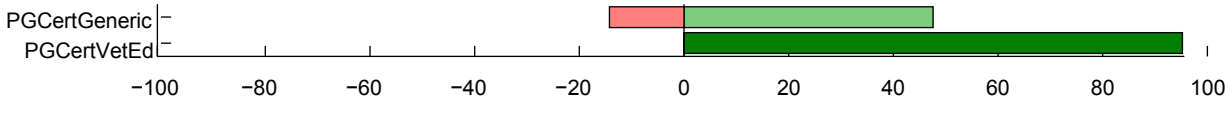
Q18 The course improved my understanding of issues relating to assessment.



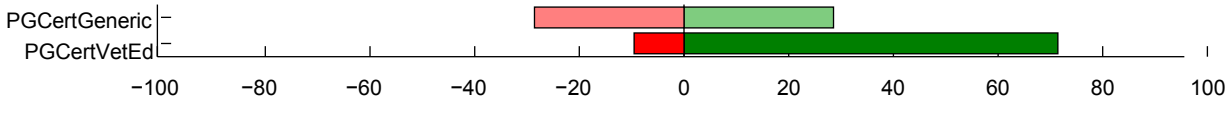
Q19 I am keen to contribute to the development of more valid assessment methods for my students.



Q20 I have a better understanding of course design. *



Q21 I understand the rationale behind the [courses on which I teach] / (the RVC courses) better now. *



red − disagree as a % of respondents
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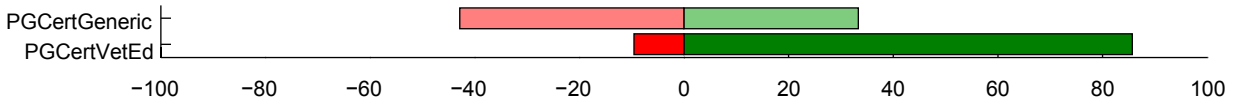
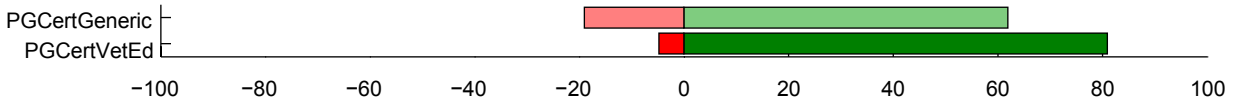
Comparison between the PGCertGeneric (n=21) and the PGCertVetEd (n=22) participants - perception regarding course assessments and overall experience

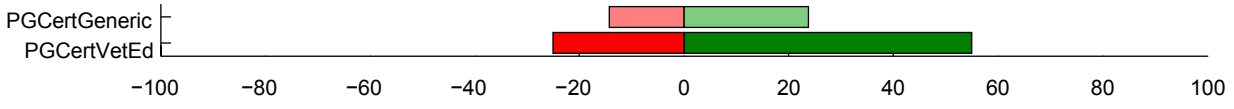
Q22: The taught part of the course was appropriate to my needs. *



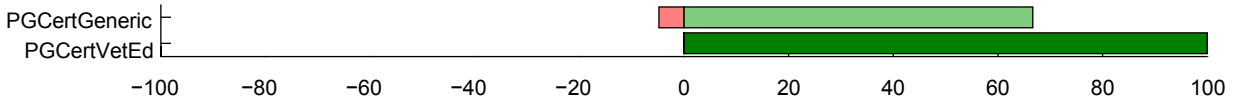
Q24 Class discussions were stimulating and constructive.



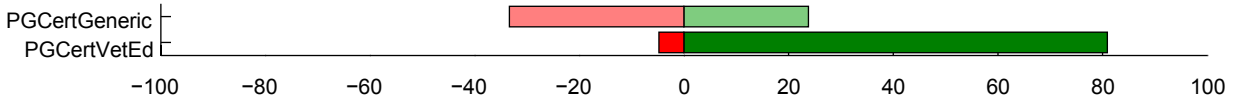
Q25 I found the essay(s) I did as part of the coursework element useful.



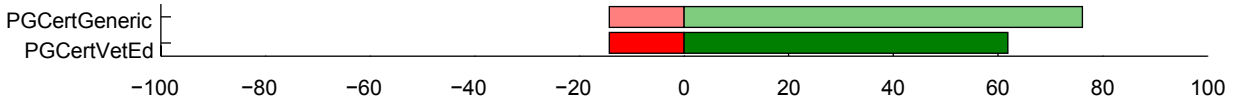
Q26 The teaching observation was a useful developmental activity.



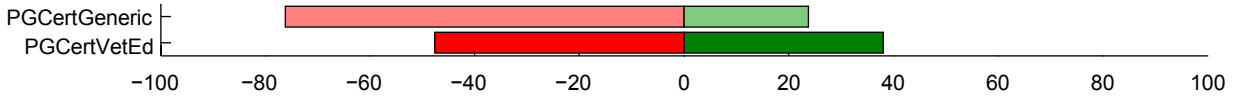
Q27: The class design exercise was a useful developmental activity / I found the portfolio I completed useful. *



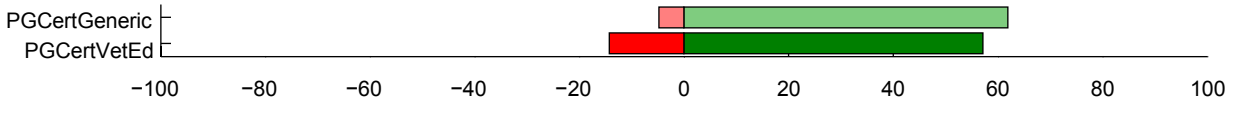
Q28 The course would have had more value if it had dealt with practical issues relevant to my day−to−day teaching.



Q29 I intend to publish an educational theme based on my PGCert VetEd experience / or have published the small project.



Q30 I found the one−to−one support which I received useful.



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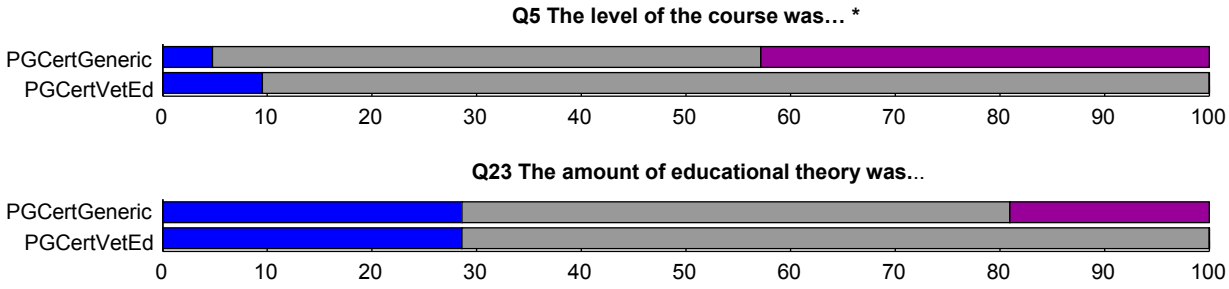
Comparison between the PGCertGeneric (n=21) and the PGCertVetEd (n=22) participants - perception regarding educational theory and level of challenge



blue − too challenging as a % of respondents
grey − about right as a % of respondents
purple − not challenging enough as a % of respondents