The Doctoral Transition to Teacher: Enabling Effective Instructors in Universities

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Abstract

This paper explores doctoral and postdoctoral training for university teaching and offers recommendations for sustaining preparation for this aspect of academic careers. An exploratory, action-oriented approach was adopted across two project phases: pilot, followed by roll out of the course with a larger group. Students met for theoretical instruction and participated in practice teaching. Doctoral and postdoctoral e-portfolio reflections on teaching, observed student behaviours, and undergraduate feedback provided insight on the overall learning to teach experience. While some students expressed initial hesitation to engage with practice teaching, all were enthusiastic about their opportunity to apply theoretical teaching and learning principles to a live classroom setting and reported that they felt greater engagement with the teaching process, in particular the chance to implement innovative teaching practices in a low risk setting. While research and teaching significance have begun to be recognised more equally in the university, attitudes varied, reflecting a further need to address how we value teaching in universities. Undergraduate students found varied instructor perspectives and teaching approaches stimulating. The course offers a valuable means of introducing teaching to doctoral students and postdoctoral researchers. Sustainability offers a significant challenge, requiring international, disciplinary, and university support.

1. Introduction

One anticipated outcome of doctoral level education is teaching. Those who are currently enrolled in doctoral programmes or who have completed their studies and have moved to the next stage of their academic careers may often be called upon to teach [6]. However, they often do not receive formal instruction in university teaching [13], though some disciplines have introduced teacher training in specific disciplines, such as marketing [6].

The creation of a new course at University College Dublin, Learning to Teach; Teaching to Learn, provided doctoral students and postdoctoral researchers across disciplines with an early career opportunity to explore effective means of creating curricula, presenting content, engaging students in learning and integrating e-learning tools in teaching and learning. Those enrolled in this course had opportunities to apply this knowledge in the context of an ongoing undergraduate course on the topic of social media.

The objective of this project was to facilitate those new to teaching in their transition to instructor through a positive early teaching experience. This paper documents outcomes of this project, including the implementation of the new course, Learning to Teach; Teaching to Learn, and offers recommendations for developing and sustaining this key component of doctoral education and university teaching.

2. Problem and background

Teaching is an activity that many doctoral students will do throughout their academic careers; however, doctoral students may often lack a clear understanding of the challenges associated with university teaching. While the preparation of doctoral students to teach may be declared to be valued, university reward systems may actually give preference to research in university education [7] [10] [11]. Recognising and addressing the need to support doctoral teaching is of mutual benefit to the development of doctoral education and to teaching in the university setting.

In this project, a need for formal teaching support for development of doctoral student teaching was observed in the behaviour of doctoral students in the author's university department. Doctoral students often expressed a desire to participate in teaching but lacked training and skills to teach effectively. When they acquired a teaching role, for example as tutors, they had variable teaching support from faculty and struggled with adopting appropriate learning delivery mechanisms for the contexts assigned. There was no formal training in other schools in the university for

doctoral students; instead, doctoral students depended upon what has been aptly called a "trial by fire" approach to learning to teach [14].

Elsewhere in the university, postdoctoral researchers requested preparation to teach university students. When the university surveyed its postdoctoral researchers for their needs generally, this group strongly voiced a need for training to teach, something they believed they had missed in their doctoral degrees at their previous institutions. Postdoctoral researchers found themselves being called upon to teach in different situations, from labs to lectures, and, therefore, identified this gap in their preparation for academic work. As a result of the survey outcome, the university identified this new course for doctoral level training to teach to facilitate postdoctoral researchers in learning to teach.

The need for training individuals at doctoral level to teach has been recognised for some time. For instance, the necessity for doctoral training to teach counselors and the value of practical teaching experiences and teacher mentors for the success of new educators have been reported [2]. Researchers [7] [12] have also called for preparation of doctoral students in business studies to teach, with both noting the importance of providing general teaching skills, as well as addressing subject-specific teaching needs. Former doctoral students have further noted this need for training. For instance, one doctoral student [16] offered a personal account of his attempts to supplement his doctorate with training to teach to balance his degree in life sciences.

Providing teaching support for individuals at doctoral level is not unique to a particular subject, school, or institution. Across disciplines and institutions worldwide, doctoral students may find themselves teaching, and there seems to be general agreement that while formal teaching preparation of doctoral students is needed [3], formal teaching support is often lacking. For example, renewed interest in teaching in business schools has not transferred to formal, systemic preparation of doctoral students to teach [1]. Similarly, researchers [15] have noted that science, technology, engineering and mathematics graduate programs often provide little or no formal training for doctoral students to teach, raising concerns about the transition from doctoral student to teaching faculty and the quality of course delivery. Other researchers [9] [10] have reported that while teaching is critical to training social workers, doctoral students in this subject area are not sufficiently prepared to teach. There is a conflict between the goals of research (knowledge generation) and teaching (knowledge transfer) which has highlighted the additional learning needs of doctoral students to accommodate both research and teaching expectations [5].

In the current project, the course to prepare doctoral students for university teaching was situated in the School of Information & Library Studies (now School of Information & Communication Studies). The interdisciplinary nature of the school uniquely positioned the course, so that students from a range of subject backgrounds could participate.

The course further uniquely included practical teaching, which enabled students to do more than study teaching from a theoretical perspective alone. Additionally, the practical teaching element of the course occurred within an undergraduate course on social media in the school; the topic for practice teaching provided commonality to everyone regardless of subject discipline

3. Objectives and research questions

3.1. Objective of project

The objective of this project was to identify how to prepare doctoral students and postdoctoral researchers across disciplines to become effective teachers. The project provided an exploration of means of providing formal teaching support to doctoral students and postdoctoral researchers across University College Dublin. The development of a new course, Learning to Teach; Teaching to Learn. Developing Effective Practices in 3rd Level Education, offered a learning opportunity for doctoral students and postdoctoral researchers to explore effective means of adopting a number of essential teaching skills, including the following:

- creating syllabi
- presenting content
- engaging students in learning
- integrating e-learning tools in teaching and learning
- practising skills in an undergraduate class environment
- learning from other doctoral students
- reflecting on best teaching practices for continuous teaching development

3.2. Research questions

The project explored several research questions around supporting doctoral and postdoctoral level individuals in their transition to instructors in the university environment.

1. How would doctoral students and postdoctoral researchers engage with a course focussed on teaching development?
2. How could the course be designed to include essential teaching skills and the expressed teaching needs of doctoral students and postdoctoral researchers who were new to teaching?

3. How would doctoral students and postdoctoral researchers adopt and apply teaching methods and theories to practical teaching in a classroom?
4. How would undergraduate students in the practice teaching environment respond to the inclusion of student teachers in their learning?
5. How would doctoral students and postdoctoral researchers perceive the outcomes of the course in relation to their expressed teaching development needs?

Doctoral level learning about teaching was of primary concern; however, the response of undergraduates was also important. The response of undergraduate students in a practice teaching setting was intended to help approximate an actual teaching environment for doctoral students and postdoctoral researchers. This context for teaching was appropriate for doctoral students and postdoctoral researchers, who most often linked the teaching they were assigned in the university to undergraduate courses.

The self-constructed learning approach for doctoral students and postdoctoral researchers was also important, enabling them to play a critical role in designing their own learning, in addition to preparing lecture slides and other teaching aids for undergraduate students. Importantly, the negotiated selection of course topics for discussion in the doctoral / postdoctoral seminar offered understanding of how doctoral students and postdoctoral researchers perceived their teaching needs as first time and early career teachers.

4. Method

An exploratory, action-oriented approach was adopted to explore means of supporting doctoral and postdoctoral teaching. Action research has been described as "simultaneously a set of methodologies, a philosophical orientation, and a research culture" [4]. There are many definitions of action research; however, there are four themes usually noted in action research: "empowerment of participants; collaboration through participation; acquisition of knowledge; and social change" [8].

Action research typically examines social practice, follows a process of planning, acting, observing and reflecting, and includes those involved in the practice [8]. Action research is usually characterised as three types or perspectives:

- Positivist – or scientific problem-solving – in which an expert in a given area sets out a project and practitioners participate in implementation of the project and improvement of practice;
- Interpretivist, in which expert and practitioner participants collaborate on problem-solving; and

- Critical science, in which practitioners collaborate to achieve a collective consciousness of the problem leading to action [8].

The current project followed a highly participatory and collaborative approach, in which the researcher and doctoral students and postdoctoral researchers used educational theories and practices as a foundation for framing teaching practice in a real-life context.

4.1. Phase 1

To begin, a new course was piloted with six doctoral students from different disciplines. The researcher/instructor drafted a syllabus for study and practice in advance of the beginning of the course (a necessary system requirement of teaching in the university setting for registration, school planning, and student awareness of course offerings); at the beginning of term, doctoral students who registered for the course then collaborated with the researcher/instructor to finalise their plan of study and teaching action.

Course seminars provided a space for doctoral students to discuss teaching theory and methods, explore the teaching process, develop a repertoire of best teaching practices, and reflect on classroom teaching. This work formed the foundation for their participation as instructors in classroom, lab, and small group session environments in a second-year undergraduate course, Social Computing & Media.

This undergraduate course provided an ideal context for teaching and learning development, since it included exploration, evaluation, and use of a wide range of social media tools in conjunction with elearning. The roughly 100 undergraduate students taking this course annually also came from across the university, reflecting again the interdisciplinary nature of practice teachers' and undergraduate students' work together.

Data were collected throughout the project, including the following:
- Observed undergraduate and doctoral student behaviours
- Undergraduate feedback
- Digital video recording of small group sessions taught in the undergraduate class
- Doctoral / postdoctoral e-portfolio reflections on their teaching development

4.2. Phase 2

Given the success of the pilot, the course was offered again. An information session was held in the autumn with interested postdoctoral researchers, who then confirmed their interest with their general coordinator in the university. Postdoctoral researchers

also required the permission of their principal research investigators to participate. A total of twenty-two postdoctoral researchers signed up for the second offering of the course; however, as a result of mainly research pressures, sixteen of these postdoctoral researchers completed the course.

In addition, two doctoral students in the university registered for this second offering of the course. Although this round had been organised as a specific offering for postdoctoral researchers, doctoral registrants were welcome. The addition of the doctoral students brought the total of registrants who completed the second offering of the course to eighteen.

The course was delivered with similar content and assessment structure as in the pilot. Because the course was framed around expressed student needs, there were a few differences between courses to reflect student input, but these were only minor and the courses essentially remained the same.

Postdoctoral researchers who finished the course received a Certificate of Completion from the school; doctoral students were officially registered for programmes that required courses and received ten credits toward their degrees.

The timing of the course was altered from the pilot offering to accommodate postdoctoral researchers' and doctoral students' research and other university commitments, enabling everyone to participate. Thus, while the pilot had run on a weekly seminar basis, the second course offering was organised as compressed sessions outside the regular teaching term in the university: one and one half days before the teaching term began in midJanuary, during the half-time semester break in March, and after the teaching term at the end of April/beginning of May. These contact hours for the course were equivalent to a course taken in the traditional weekly format in the university and hours provided by the EU Bologna model.

In addition, while registrants could still avail of the unique opportunity to take up practice teaching in an ongoing undergraduate course, they could opt instead to participate in teaching in their own schools.

4.3. Observed undergraduate and doctoral student behaviours

The researcher observed students on both the undergraduate and doctoral courses throughout the course offerings. This was essential, not only to witness interactions and student action / responses in the context of this project, but also to monitor and ensure integrity of education in both courses.

4.4. Undergraduate feedback

Undergraduate students were asked at the end of their weekly classes for their feedback on the teaching sessions with doctoral students and postdoctoral researchers, including lectures, labs and small group sessions. In particular, undergraduate students were asked to identify learning that was important for them in the session and how a given doctoral student / postdoctoral researcher helped them achieve this learning, as well as how the session might be improved to facilitate their learning. Feedback was collected and returned to doctoral students and postdoctoral researchers. Then doctoral students and postdoctoral researchers and the researcher / instructor discussed this feedback in the next doctoral course seminar to assist not only the doctoral student or postdoctoral researcher who had taught, but also doctoral students and postdoctoral researchers entering the classroom in the following weeks.

4.5. Doctoral students' and postdoctoral researchers' e-portfolio reflections

Doctoral students and postdoctoral students' experience culminated in their creation of a teaching e-portfolio, in which doctoral students gathered examples of good practice from the literature and reflected on their teaching experiences. They drew from their learning about social media during their participation in the undergraduate course, Social Computing & Media, in addition to their exploration of tools, such as WordPress, to create an effective electronic presentation of their teaching e-portfolios. These e-portfolios facilitated ongoing documentation of doctoral students and postdoctoral researchers' teaching development and supported their transition to effective university instructors.

5. Results

The overall approach to bringing doctoral students and postdoctoral researchers and undergraduate students together in a teaching and learning environment was highly experimental. Doctoral students and postdoctoral researchers were able to apply new learning and to engage in innovative teaching approaches in a live classroom setting. Undergraduate students had multiple learning opportunities that extended beyond the traditional lecture format.

5.1. Doctoral students' and postdoctoral researchers' expressed needs for learning

Doctoral students and postdoctoral researchers had quite specific ideas around their learning needs to teach. To begin, in the first session of the course, they proposed and reviewed their individual teaching needs and agreed a programme of learning with the instructor.

Learning outcomes for the course were discussed first and included the following:

1. To understand the attributes of successful learning;
2. To design syllabi for successful learning;
3. To develop assessment to facilitate learning outcomes;
4. To implement feedback mechanisms to gauge successful teaching;
5. To implement best teaching and learning practices in a live undergraduate course;
6. To reflect on the teaching and learning experience, incorporating peer observation.

Because of university system constraints, this part of the course content had to be set ahead of time; however, doctoral students and postdoctoral researchers had the opportunity to consider whether they wished to agree any changes to this course content. Students were happy with this aspect of the course. The actual seminar topics supporting these learning outcomes were of major interest, since it was at this point that doctoral students and postdoctoral researchers could relate specific teaching contexts and modes to teaching opportunities in their own schools. In addition, this review of the course design and content usefully created an additional form of teaching laboratory, affording students a chance to think about this material from the perspective of course design activity they would undertake in future teaching.

Among expressed learning needs, doctoral students and postdoctoral researchers were frequently concerned with classroom management. In particular, they expressed a need to learn to manage differently sized groups of students, for example, large lecture groups, as well as smaller tutorial groups. Their expressed needs were intergrated into the course syllabus. The agreed course topics ranged from learning about teaching excellence and linking teaching to employability to specific aspects of teaching, including, for example:

- identifying characteristics of the successful lecture;
- transforming lecture plans into teaching presentations;
- developing collaborative learning in small groups;
- evaluating and using different approaches to teaching, e.g., problem-based learning;
- identifying and appropriately addressing different classroom behaviours;
- understanding diversity and adapting teaching and learning for special needs;
- developing assessment to address anticipated learning outcomes;
- using peer supports to improve our teaching.

Topics explored during the course allowed scope for doctoral students and postdoctoral researchers to develop their teaching according to their individual needs. In particular, the use of peer supports, such as teaching lectures and small group tutorials in pairs, were popular among students. The peer involvement gave students confidence in practice teaching and provided a valued opportunity for peer feedback to facilitate teaching improvement.

5.2. A valued learning experience by all participants

Because doctoral students and postdoctoral researchers could take up teaching in their own schools or via the author / researcher's undergraduate course in social media, there were multiple opportunities to acquire teaching experience. Doctoral students and postdoctoral researchers were asked to participate in multiple teaching opportunities, including lectures, tutorials, computerassisted labs, etc., to give them as broad an experience as possible. Students worked innovatively to gain this experience, including teaching in their schools, as well as on the social media course, and implementing various modes of teaching.

Within other schools, the expectation of the postdoctoral researcher in teaching seemed varied, with some expected to give lectures and others to teach tutorials / labs only, and then others not expected to teach at all. The opportunity to teach was valued by everyone on the course and students considered the positive outcomes from the practice teaching beneficial in helping future postdoctoral researchers develop a rounded set of skills for future academic posts.

The outcome of the course suggests a standardised teaching course for first time and early career instructors should be offered in the university community. Alongside this form of training to teach, there should be a learning expectation for every postdoctoral post to include teaching in each academic year. There should be an appropriate valuing of teaching as an activity and training in support of teaching activities, such as the current course or other training opportunities through the centralised Teaching and Learning department in the university.

Interestingly, as postdoctoral researchers identified their need for training to teach, they also brought with them their expectations of what sorts of activities teaching would include. A very few postdoctoral researchers had an unusual expectation that teaching preparation should be done for them; however, working with these individuals on a one-toone basis helped them engage in the process of preparing material for teaching and to develop content on topics around every day social media issues, such as the ethics of posting controversial video content on

Facebook. Their teaching went well, and these individuals seemed reassured after enjoying a positive first-time classroom experience. Others who embraced all teaching opportunities on offer (even multiple sessions) performed extremely well, integrating classroom learning with experience and then highlighting their work in their teaching eportfolios.

Doctoral students and postdoctoral researchers, as well as undergraduate students were very positive about their experiences. Doctoral students and postdoctoral researchers reflected upon lessons learned as they brought theory and practice together in a classroom setting. Summing up their journey, one doctoral student observed, "I feel like I've learned loads, and lots more to come." Another doctoral student valued the experimental approach to teaching on an undergraduate course:

> *Social Media has been an incredible facility for me during the semester. It has really encouraged me to step outside the box and explore the best available tools to enhance student learning.*

Undergraduate students were also enthusiastic about their course and commented positively on their interaction with doctoral students and postdoctoral researchers. In course feedback, undergraduate students repeatedly reported that "the guest lecturers were very good" and "guest lectures aided my learning."

5.3. Learning acquired by doctoral students and postdoctoral researchers

Doctoral students and postdoctoral researchers identified their opportunity to apply theoretical teaching and learning principles to a live classroom setting as a major benefit from participation in the course. They reported they felt greater engagement with the teaching process, in particular the chance to implement innovative teaching practices in a low risk setting, as well as the opportunity (as supported in the literature by [3]) to manage a classroom and implement teaching strategies. As a result, creative approaches to teaching and learning were enhanced in the classroom; while doctoral students and postdoctoral researchers still developed traditional lectures, they also learned to take different approaches to delivering lecture content to stimulate undergraduate student engagement. Because the undergraduate course was already focussed on the subject of social media, the use of video and social media tools to deliver content transferred naturally to teaching.

Continuous reflection formed a critical element of doctoral and postdoctoral learning. At doctoral / postdoctoral seminars, doctoral students and postdoctoral researchers discussed their learning acquired through reading, teaching experiences, undergraduate students' responses through feedback and in-class behaviours, and best practices they observed among themselves and in other classroom situations elsewhere in the university. By reflecting on past and present teaching experiences and working with the researcher / instructor to respond to undergraduate students' individual needs, doctoral students and postdoctoral researchers were able to communicate effectively with undergraduate students.

E-portfolios offered a formal means of reflecting on and capturing acquired learning. Students learned how to use WordPress and considered ways of building a teaching e-portfolio at the beginning of the course. A doctoral student who participated in the pilot for the project taught a session on using WordPress with students in the second offering of the course, helping students engage with the software, as well as with teaching e-portfolio task. Doctoral students and postdoctoral researchers maintained their e-portfolios during the semester, in which they discussed all aspects of their learning about teaching, including a curriculum vitae account of their teaching appointments, their evolving teaching philosophies, and personal reflections on their teaching on Social Computing & Media. Students deemed the e-portfolio an additional benefit, not only as a chronicle of doctoral and postdoctoral teaching development through a course, but also as an organic document they could maintain for future use in career development.

The teaching e-portfolio exercise culminated in an Open House session at the end of the course, in which students showcased their e-portfolio work to visitors from Teaching and Learning, Blackboard IT, and guest speakers who had been involved in the delivery of the course. Guests at the Open House were enthusiastic about the project and students' teaching e-portfolio outcomes.

This exercise really challenged a few participants to think about the teaching aspect of their future careers, sometimes using research as a crutch for filling space; however, as they continued to practise teaching and reflected upon their experience, they discovered that they could express their teaching as a continuously evolving part of their work in the university environment. At the end of the course, one postdoctoral researcher reported that the teaching e-portfolio even helped her succeed at a job interview. Other students commented in the last class that the course had proven a valuable experience for them overall.

5.4. Student Engagement

Because of the emphasis on self-constructed learning, doctoral students and postdoctoral

researchers were highly involved in their learning. Learning to Teach was different from other courses offered in the university; importantly, this course enabled a high degree of participation in course seminars and teaching opportunities. In addition, the practical teaching component enabled doctoral students and postdoctoral researchers to apply their learning in a live classroom setting.

Undergraduates were also highly involved in the learning process. Student engagement continues to be a topic of teaching and learning discussions at the university; while even undergraduate student attendance can be problematic in courses, students in Social Computing & Media exhibited strong attendance, as well as weekly interaction in class. The inclusion of doctoral student and postdoctoral researchers as instructors facilitated student engagement; undergraduate students reported that they found varied instructor perspectives and different teaching approaches stimulating.

A knock-on effect of the project was to expose undergraduate students to possible educational and research opportunities for themselves; interacting with doctoral students enabled them to witness one of the outcomes of a doctoral degree and to see linkages between the undergraduate's focus on social computing and media and the doctoral student's / postdoctoral researcher's use of social media to connect specific social media tools with various subject areas.

6. Conclusion

Importantly, in this project, doctoral students and postdoctoral researchers self-identified their need for training to teach. They recognised their need, especially when asked to provide some form of teaching to university students and when they considered their future career needs. For postdoctoral researchers, learning to teach was akin to remedial learning, something they believed had been missed in their doctoral education in institutions elsewhere.

Doctoral students and postdoctoral researchers not only identified their need for teaching, but also brought their ideas of what teaching meant to the course. As a result, a constructivist perspective formed a critical aspect of the course, enabling all stakeholders to participate. Students on the course identified not only their need for instruction, but also components of instruction they needed to pursue to acquire university teaching skills. Enabling students to take a role in their development is new to doctoral and postdoctoral teaching development generally. This project had a twofold impact on student learning, providing benefits and enhanced learning opportunities for both doctoral students and postdoctoral researchers and undergraduate students. The overall success of linking doctoral level and undergraduate courses offers one pathway to

promoting a university-wide, as well as an interdisciplinary approach to facilitating doctoral students and postdoctoral researchers' transition to effective instructors, as well as increasing undergraduate student engagement.

The project has provided an important first examination of formal doctoral level teaching development in the university. The project specifically addressed University College Dublin's educational strategy, which aims to develop students as lifelong learners and critical thinkers, as well as to provide excellence in teaching and learning innovation to support student learning. While the course achieved university objectives for learners, valuing of teaching and research as equal components of university work requires greater attention within the university community. For example, while postdoctoral researchers requested training to teach, their research supervisors expected them to maintain a primary research focus. When postdoctoral researchers had difficulty in attending class or completing tasks, they usually referred to their need to complete research project tasks assigned by their supervisors or unforeseen urgent research obligations first, even though their supervisors had signed off on their postdoctoral researchers taking the course. For future course offerings, it would be more optimal to have training around teaching given equal priority to other activities in the university, particularly when postdoctoral researchers have been released by their research supervisors to undertake this training. Doctoral students should have "access to quality mentoring, direct instruction, and experiential opportunities to apply effective teaching methods during their training" [3], particularly since they will need to teach in their future careers.

Importantly, supporting doctoral and postdoctoral teaching development enables engagement with doctoral students and postdoctoral researchers at an early point in their academic careers and facilitates their acquisition of the necessary skills to provide a strong foundation for ongoing excellence in teaching in their future employment. Learning to Teach marks a beginning in developing the postgraduate education offered to doctoral students and postdoctoral researchers, enabling the university to augment doctoral programmes and postdoctoral training to provide more holistic postgraduate education. Whereas other projects to explore doctoral teaching development have often been subject-focussed, local, or temporary initiatives, this project has aimed to provide teaching support that has transferability to wider contexts. Sustainability remains a key issue in this effort to support doctoral level teaching development and excellence.

A sustainable approach to doctoral level teaching development which takes doctoral and postdoctoral and institutional perspectives into consideration, and which can be applied in a variety of disciplines, will

fulfil a critical teaching and learning gap both locally and internationally. To that end, consistent, systematic, broad scale supports that are embedded in our practice of preparing educators are required to move beyond the initial stage of developing a doctoral teaching course to the development of a community of practice around doctoral and postdoctoral teaching development. By establishing a community of practice around doctoral and postdoctoral teaching development, it is anticipated that the continuation of this community would play a significant role in developing a model of good practice for doctoral teaching that could become embedded in our approach to supporting our academic training and professional work. A participatory community of practice that may use social media to implement and maintain a social network of expertise among teaching and learning leaders, instructors, and doctoral students / postdoctoral researchers is needed to evolve a collaborative model for sustainable doctoral and postdoctoral teaching development.

8. References

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