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Abstract (327 words)

The international debates surrounding teaching acknowledge the complexity of this activity. Perhaps one may argue that the teaching of occupation-related courses offers an additional challenge. These courses encompass pre-university, university and professional levels. There are lacuna of research in the areas of: teaching knowledge of teachers with occupational-related courses and a curriculum solution to the training of such teachers. This chapter seeks to address these two gaps in the training of teachers of occupation-related programmes. The first relates to teaching knowledge by examining critically the notion of teaching knowledge and its import in teacher education/training curriculum and alongside these, the need for research-based evidence. The second refers to a pedagogical solution using digitally recorded teaching sessions as a reflective peer review process to collaboratively and constructively support peer learning and enhance quality teaching via teaching knowledge.

This chapter also draws on theoretical frameworks relating to the studies surrounding teaching knowledge, the importance of knowledge in curricula, and the use of recontextualisation processes to gain a better understanding of the uses of teaching knowledge in the training of teacher of occupational courses. The other frameworks draw on multimodality for understanding the interactions of digital technologies and reflective learning for collaborative peer review learning.

The empirical data is drawn from two projects using qualitative and quantitative research methods. These studies were carried out in England. One studied the teaching knowledge of those delivering occupational courses and they included those teaching on: pre-university areas such as equine studies and gas fitting; university programmes such as dental hygiene and accountancy; and professional areas of clinical studies (e.g. general medicine and emergence medicine). The other study investigated the application of digitally recorded teaching sessions. After a re-examination of the data in order to focus on the aims of the investigation, the discussion and findings are delineated from the two projects together with the theoretical frameworks. The chapter finally offers contributions from this paper and implications for individual teachers, related institutions and policy-makers.

Introduction (6160 words incl. reference list)

At an international level, teaching is increasingly viewed as a complex activity and the training or education of teachers is highlighted as a significant strand towards the improvement in quality teaching [Tatto 2013]. This chapter focuses on the training of teachers especially those delivering on vocational or occupation-related programmes in England. Even though the investigation is focused on England, the study has

implications for similar teachers internationally as it studies teachers who have occupational experiences and practices and teach in their occupational areas. Because of the lacuna in this area of study, the findings from this investigation will offer relevant stakeholders such as teacher educators, managers in teaching institutions and policy makers useful insights into the training of these teachers. The occupation-related courses offer a more direct route to work which include health and social care and travel and tourism (at pre-university levels); dental hygiene and accountancy (at first-degree level); and clinical practices (e.g. general practice and emergency medicine) (at professional levels). The training of these teachers covers an added complexity as in addition to the acquisition of knowledge and experiences relating to teaching, they also require related occupational knowhow. Thus the pedagogic and occupation-related knowhow need to be included in their teacher training.

The intention of this chapter is to offer an educational solution to the current under-investigated approach to combining the pedagogic and occupational knowhow (i.e. knowledge and experiences) in the training of teachers of occupation-related programmes. This contribution critically examines teaching knowledge and its significance for research-based evidence to teacher education curriculum and the application of recontextualisation processes in order to gain a critical understanding of teaching knowhow in pedagogic activities. It also offers a pedagogical solution by using multimodality as a conceptual framework to understanding the interactions of digital technologies and reflective learning for collaborative peer review learning.

This chapter, after the above introduction as the first section, examines the conceptual frameworks relating to teaching knowledge and collaborative peer review learning in the second section. The third section focuses on the details of the two projects from which the empirical data is based and re-examined for the purposes of this investigation. The fourth section centres on the discussion of the findings in relation to integrating pedagogic and occupation-related knowledge and experiences in teacher education. The final section offers contributions and implications resulting from this investigation.

Conceptual frameworks

Where as teaching is increasingly viewed as a complex activity [Tatto 2013], the training of those teachers of occupation-related programmes who have occupational knowhow – knowledge and experiences – offer teacher educators/trainers an even more formidable task in the inclusion of such occupational knowhow. This section offers three related areas for literature reviewing: one, is the inclusion of teaching knowledge and by extension the types and sources of such forms of knowhow; two, is the application of these forms of knowledge in pedagogic settings, and three, the enhancement of teaching quality following on from such applications. The next part deals with the first two areas, and the second part, the third area.

Using two groups of literature sources on knowledge and its import in a teacher training curriculum, the ‘typologists’ and the ‘recontextualisationists’ are reviewed [Loo 2015]. From the ‘typologists’ group, this chapter reviews the relevant literature in relation to the types of teaching knowledge. From a disciplinary perspective, Becher [1992] and Smeby [1994] offered typologies of the major disciplinary areas

(e.g. biology, physics and mathematics) located in higher education. These categorization of disciplinary areas are pertinent to the types of knowledge used in education and occupation-related programmes (such as those in dental hygiene and emergency medicine). Shulman [1987], Loughran et al. [2003], Verloop et al. [2001], Clandinin [1985] and Loo [2012: 2014] offer varying typologies of teacher knowledge. The above sources are not an exhaustive list of contributors in this area of research but they do however provide a platform of polarity of knowledge on which this investigation is built.

Shulman [1987] propounded seven types of teacher knowledge from the perspective of compulsory education in the US. They related to content, curriculum, general pedagogy, learners, educational contexts and values. This typology offers a wide range of teaching knowledge to begin with from the perspective of teaching of occupation-related courses. Loughran et al. [2003] explored in greater detail the professional knowledge of teachers and tacit aspects such as peer learning by students and the sharing of intellectual control with learners. The tacit aspects of teaching is particularly relevant to teaching on occupation-related programmes in areas which are related to action-centred learning such as suturing of a cut on a patient. The sharing of intellectual control with learners is also pertinent to this study as the learners of occupation-related courses are inevitably adults mostly with high degree of academic credentials, abilities and skills in their areas of specialism/studies. Verloop et al. [2001] offered another typology of teaching knowledge relating to areas such as subject matter, students, student learning and curriculum in the context of teachers' cognitive interactions with subject matter and students' learning. This typology is relevant to this study because teachers will need to use their cognitive capabilities to interact with their learners in terms of teaching knowhow on two dimensions: pedagogically and occupationally-related. Clandinin [1985] propounded 'personal practical knowledge' as a term to refer to the teachers' lives, which involved their personal and professional experiences together with their emotional and moralistic dimensions. This wide definition of teaching knowledge has strong resonance with the teachers with occupational knowhow alongside their pedagogic experiences. Clandinin offers intellectual (and developmental) space for the inclusion of occupation-related knowhow in the area of teaching knowledge from the perspective of this study. Loo [2012: 2014] expanded the above typologies by including teachers' occupational knowledge and experiences in teaching knowledge. He also advocated three forms of teaching knowledge from sources of: pedagogy, occupation and life, and that there was a symbiotic relationship between a teacher's pedagogic and occupational practices. In summary, one may see the relevance of the above typologies (culminating with the last one where its explicit inclusion of occupational knowhow as teaching knowledge) has a direct bearing on the training of teachers with occupational experiences.

A different perspective is provided by a group of researchers who may be termed the 'recontextualisationists' - Bernstein [1990], Barnett [2006], Evans et al. [2010], Loo [2012: 2014] and Young [2013] - to reflect the importance of teaching knowledge and its application to pedagogic practices. Bernstein [1990] offers a binary distinction of vertical and horizontal knowledge. Vertical knowledge is viewed as explicit, coherent and systematically structured where as horizontal knowledge is verbal, tacit and has context. The vertical and tacit natures of Bernstein's definitions of knowledge have resonance with some of the typologies of teaching knowledge discussed earlier. For

Bernstein [1990, 185], recontextualisation involves “not only the selection, sequence, pace and relations with other subjects, but also the theory of instruction from which the transmission rules are derived.” This process offers insights into the delivery of the occupation-related curriculum but also the content aspects of the curriculum such as the definition of content and its depth and breadth of coverage. This process is further developed by some ‘post-Bernsteinians’. Barnett [2006] focused on vocational teaching and learning with his reclassificatory and pedagogic recontextualisations where the former is viewed as a “toolbox of applicable knowledge” and the latter, a bridge between “vocational pedagogy and disciplinary knowledge” [147]. Evans et al. [2010] offer further insights into how people learn with their four types of recontextualisation: Content (theoretical knowledge is selected for learners’ learning); Pedagogic (theoretical and everyday knowledge is included in the curriculum); Learner (where they use coping strategies to combine theoretical and work-related knowhow); and Workplace (where learners learn in work settings via supportive structures such as mentoring). Loo studies the acquisition and application of teachers’ pedagogic, occupational and life experiences and knowledge in their teaching settings. He offers three recontextualisation approaches: specific, metaphor and generic [Loo 2012], and identifies two forms of ‘ongoing recontextualisation’ (disciplinary knowledge between subject areas and between disciplinary knowledge and everyday experiences) [Loo 2014]. Finally, Young [2013] advocates the importance of ‘powerful knowledge’ in the curriculum with the notion of recontextualisation as a process in which teaching knowledge is required and learnt. Teaching knowledge from the literature reviews earlier is associated with the plurality of knowledge. Thus teaching knowledge includes disciplinary, pedagogic, occupation-related and life experiences to form the complex interaction of ‘knowledges’ in pedagogic practices.

The previous part of this section dealt with the relevance of teaching knowledge and its application to the occupational teachers. In the second part, two inter-related conceptual frameworks of multimodality and reflective peer review are discussed in relation to the application of digitally recorded teaching sessions for the enhancement of teaching quality. These frameworks are inter-related for two reasons: socio-cultural dimension and singularity of purpose. Researchers using recorded teaching sessions to analyze teaching practices may be typologized into four groups [Loo 2013]: researchers who use pedagogic theories of learning [Abell et al. 2004; Mitchell et al. 2010]; researchers who apply a reflective approach [Grant & Kline 2010; Harford et al. 2010]; researchers who acknowledge the relevance of recorded technologies and the ‘technical’ aspects of the technologies [Gardner & McNally 1995; Odhabi & Nicks-McCaleb 2011]; and researchers who use the multimodality approach [Kress 2010; Yandell 2008]. The multimodality approach is used as a conceptual framework as it acknowledges the relevance of the use of digital technologies in the enhancement of teaching quality and offers a schema to analyze the various modes of pedagogic activities. These groups of researchers acknowledged the socio-cultural contexts (e.g. contexts of teachers, the learners and the pedagogic environment) in their research. The other reason for the inter-relatedness of the two suggested frameworks is that both concepts offer opportunities for analyzing pedagogic activities with a view to improving teachers’ professional practices (i.e. a pedagogical solution).

Using ‘multimodality’ as a framework, meaning is constructed through different modes, which are shaped by socio-cultural environments [Jewitt 2009; Kress 2010].

These modes include gesture, image, music, room layout and speech create meanings in these teaching environments [Kress 2010]. These various modes are used as tools for analyzing the different modes of teaching activities [Jewitt 2009]. In order for the concept to be used intelligently, the context needs to be included with the analysis of pedagogic interactions. Even though multimodality was initially used in English language and science classes for 13-14 year-old students in England [Kress 2010], one could relate the applicability of this framework to teaching practices of occupational programmes. The contexts and pedagogic activities for the purposes of this chapter relate to the knowhow of the teachers, which include their occupational experiences, on occupational programmes at different academic levels and the needs of learners in varying teaching settings.

The related framework is reflective peer review where teachers are encouraged to reflect on their individual professional practice (both in teaching and occupations). Pollard et al. [2008, 49] argued that ‘critical reflection and systematic investigation’ was central to a teacher’s professional practice. In applying their approach, the chapter will focus on: an analysis of the multi-modes of teaching including those of the teacher, learners and learning environment (from ‘an enquiry of classroom practice’); and the application of digital recording of teaching sessions, listening, questioning and discussing pedagogic practices in a peer review group setting (from ‘techniques of enquiry’) [Loo 2013].

The above conceptual frameworks on the definition of teaching knowledge, its importance in its application to improving teaching quality and in curriculum serve to investigate the two aims of this chapter, which include: the significance of teaching knowhow including teachers’ occupational experiences and the call for more research evidence; and a pedagogical solution to improve the training of teachers. This pedagogical solution involves the use of digitally recorded teaching practices in collaborative and reflective peer review learning.

Method

A case study approach is used to investigate how teachers of occupational courses may be trained to deliver on those programmes. It uses empirical investigations of this current phenomenon using real life participants with both teaching and occupation-related knowhow from quantitative and qualitative research sources of evidence [Yin 1994]. In order to study this phenomenon, it draws on two projects. The first relates to a larger project which draws from 21 teachers of occupational courses where the focus is on teaching knowhow [Loo 2015] and the second is a structured approach designed to enhance teachers’ teaching through the use of digitally recorded pedagogic sessions [Loo 2013]. The research methods used in the two projects included quantitative and qualitative ones. Both projects used questionnaire surveys to ascertain details of the teachers’ age, gender, years of teaching, occupational and related life experiences. In the first project, the qualitative method included semi-structured interviews of varying duration from 45-90 minutes each and supporting documents such as programme specifications and professional guidelines and accreditation requirements. With the second project, a similar questionnaire survey was used to ascertain the participants’ salient details. This quantitative data source was followed up with qualitative data collection methods including interviews (semi-

structured in nature), three recordings of teaching sessions from each of the six participants and supporting documents such as programme specifications.

The 21 participants of this first project had occupational and pedagogic experiences. They included seven from each of three groups relating to pre-university, first degree or its equivalence and profession-related levels. The seven teachers from the first group all taught at further education colleges. This sector in England offers the largest percentage of occupation-related courses in comparison to the other education sectors with nearly 70 per cent of the provisions in this area [Frontier Economics Limited 2014]. Teachers in the first group taught on courses relating to art, fashion design, gas servicing, equine, and travel and tourism. Others in the second group delivered first-degree level courses in dental hygiene and accounting, while those in the final group delivered professional courses relating to general medicine and emergency medicine.

With the second project, the six participant teachers had occupational and teaching experiences in areas such as art (e.g. painting, printing and drawing), dance, dental hygiene, health and social care, information technology and life skills.

Perhaps it needs to be mentioned that the researcher in the two projects like with the participants had occupational and teaching experiences and had teaching qualifications. These similarities with the participants offered the researcher an insider's perspective, which might have facilitated the close interaction and description of the participants' articulations [LeCompte & Preissle 1993].

Data collected through interviews were already transcribed in the initial project analysis and subsequently re-examined with reference to the aims of the investigation. This re-evaluation of the data sources in relation to this study offered different perspectives to earlier ones [Miles & Huberman 1994]. The data from the first project was initially used to study the characteristics of this style of teaching of occupational courses and the nature of the knowledge needed from both teaching and occupational practices. This led to the framing of knowledge for teacher training as well as professional development for this specific chapter. The data from the second project was initially used to investigate the application of digital recordings of teaching sessions as a form of reflective peer review approach to learning about teaching. This led to the application of its findings for the education of teachers on occupational programmes.

This re-evaluation also included the stages of: generating codes, identifying phrases, patterns and themes, triangulating the identified scenarios from the data sources, and linking the scenarios to the theoretical frameworks [Robson 2002]. The first stage of this re-analysis led to the coding of the empirical data from the qualitative methods. The list of phrases, patterns and themes were then compared and evaluated over the transcripts to classify and cluster into smaller and more abstracted categories such as the types of teaching knowledge. A data triangulation was carried out based on the various data sources in order that threats to validity were avoided [Robson 2002]. One possible contradiction in the data analysis process was avoided, as the researcher was the only person involved in this process. Finally, the re-analyzed data was compared and evaluated with the theoretical frameworks on teaching knowledge, multimodality and reflective learning discussed in the earlier section.

Findings and discussions

The first part of the findings presented here focuses on the relevance and importance of teaching knowledge in curriculum by using examples of curriculum content from post compulsory programmes (i.e. pre-university academic level) and university programmes (i.e. first degree and professional academic levels). It argues that there need to be clearer guidelines to define, typologize and research teaching knowledge. The second part relates to the use of multimodality and reflective peer review conceptual frameworks to evidence that digitally recorded teaching sessions (e.g. 'Taking History' session) can enhance teaching quality of deliverers. The findings used in this section are from the re-evaluated data of the two projects.

Teacher training programmes are offered to lecturers/teachers teaching in pre-university and university-level courses in order for them to obtain a recognized teaching qualification. These training courses offer in general: theories of learning, teaching strategies and pedagogic knowledge relating to areas such as assessments, learners and teaching settings. In England, at the post-compulsory level, the training is guided by the latest 'Teaching and Training Qualifications for the Further Education and Skills Sector in England' document [Learning and Skills Improvement Service 2013]. At the university level, teachers are usually supported by their institutions to undertake teacher training courses, which are accredited by the Higher Education Academy. Neither of these training is mandatory.

The LSIS document [2013] covers 38 pages consisting of: an overview, a description of the qualifications, explanation of the implications of the changes to the qualifications, and indicative examples of an effective teaching training programme. It offers three levels of generic qualifications and specialist diplomas in areas such as English (Literacy and ESOL). The credits in this programme relate to 'the study of underpinning theories, frameworks and research into effective teaching and learning alongside the development of practical teaching skills' [LSIS 2013, 18] and involve knowledge and application of theory and pedagogical principles, and use of technologies [LSIS, 2013]. From the perspective of this study, there were references to collaboration, research and professional development and an effort to integrate knowledge into teacher training but little to offer in terms of the definitions of teaching knowledge, its possible typologies or sources and there was no mention of including teachers' occupational experiences and knowledge.

The HEA [2011], 'The UK Professional Standards Framework for teaching and supporting learning in higher education' document of eight pages in length acknowledges the need for professional development of staff who are involved in teaching and supporting learning and mentions the need for 'Core knowledge' which includes subject material, methods for teaching, learning and assessment, students' learning, application of technologies, evaluation of teaching and quality assurance for four levels of accreditations, which they term: fellowships.

Both of the above standards focus on generic aspects of teacher training and offer different levels of accreditation and notions of professional development. Knowledge relating to teaching was indicated but specificities of individual disciplinary knowledge are left out as they cover the sectors – post compulsory and higher

education – where a wide range of disciplines both academic and occupation-related is taught. However, for those involved in teacher education, it would be helpful if teaching knowledge were explicated in more detail such as definitions, types and sources. One can draw from the typologies identified in the literature review section such as those by Becher [1992], Smeby [1994], Shulman [1987], Loughran et al. [2003], Verloop et al. [2001], and Clandinin [1985]. Additionally, the significance of occupation-related experiences and knowhow [Loo 2012: 2014] should be included especially where these courses form an integral part in the post compulsory sector and increasingly so in the higher education areas relating to professional and occupational offers.

In the context of occupation-related programmes, my re-analysis draws from one example from each of the three academic levels. At the pre-university level on equine studies as used by Participants 3 and 4 in Project One, the specifications on ‘Riding and Training Horses’, a course in which students learn about working with horses in various terrains and settings, there is no indication of the breadth or depth of equine knowledge other than a mere listing of indicative content such as knowing of basic equipment, working with horses from the ground and jumping exercises and courses. The deliverers of this course will need to draw on their own occupational experiences and knowhow to ascertain the breadth and depth of coverage of the indicative content in order to satisfy the learning outcomes. Participants in the first project on equine teaching indicated that little research studies were carried out and hence there is sparse knowledge in this discipline.

At the first degree level and using specifications on dental hygiene as an example (as used by Participants 9, 10, 11 and 14), the specifications offer more detailed listing of areas for coverage as the programme is accredited by the relevant professional body. The areas included: tooth morphology, biomedical science, microbiology, periodontology, regional anatomy and pharmacology together with specified clinical practices. As is the case with the equine specification, the level of knowledge (both breadth and depth) is not indicated nor is the occupation-related aspects of disciplinary knowledge specified.

Turning to the professionally-accredited programme for the training of clinicians in a school of medical education (as used by Participants 15 and 19), undergraduates are expected to cover areas of: basic medical sciences teaching in anatomy, physiology, biochemistry, pathology, pharmacology and therapeutics together with basic human sciences in psychology, ethics, sociology, clinical epidemiology and communication skills. There is a clear indication of the areas of medical knowledge a trainee doctor is expected to know and its relevance to clinical practice. However, the level of knowhow is not specified and the relevance to clinical practice is expected but not specified.

In all the three examples of specifications, the participants/teachers on these programmes require a great deal of occupation-related and disciplinary knowhow (both knowledge and experiences) in order that the appropriate level of the content is delivered via pedagogic approaches. In the teacher education course specifications, the explication of knowledge (teaching, occupation-related and disciplinary) appears to be missing not just in its mere definitions but also the breadth and depth which are relevant to the related academic levels. Despite the examples of occupation-related

specifications, very little emphasis was paid to the significance and relevance of occupational knowhow (though there were mentions of clinical practice in the training of doctors). In summary, there is a clear need to explicate the plurality of teaching knowledge (including teaching, occupation-related, disciplinary and life-related experiences), may it be featured in teacher training specifications or in occupation-related courses. Though knowledge appears to be featured in course specifications, the significance of it varies from a mere mention of ‘core knowledge’ as in the HEA Professional Standards to a listing of subject knowledge as in the dental hygiene specifications. This first part of the Discussion section has identified that clearer guidelines to define, typologize and carry out research on teaching knowledge (especially occupation-related) are required in curriculum.

The second part relates to how reflective peer review is used to refining teaching as a collaborative and supportive exercise [Loo 2013]. Along side this approach, multimodality is used to reflect and enhance teaching quality from the recorded teaching sessions, which can include discussing teaching knowledge with discussions and insights from peers who come from different professional training. The two themes, which were derived from the data analysis arose out of the second project, and are relevant to this investigation include: perceptions of reality and learning from peer review interaction [Loo 2013].

The first theme, which relates to ‘Perceptions of reality’, emerged from the analysis of the reflections from the peer group after having watched the recorded teaching session on ‘Taking History’.

I think viewing the [digital recording] with those involved demonstrated that an observer may not be aware of the bigger picture. Learners in a classroom etc. are not blank canvases. There may be other factors going on: in the learners’ lives; learning environment affecting them; the group dynamics; and the teacher–prospective rapport. An observer either attending in person or watching a recording would not necessarily be aware of these factors.”
(Participant B)

The above quotation was in reference to the peer review discussion of the recording teaching session by Participant A on ‘Taking History’ [Loo 2013]. It featured Participant A, a tutor/teacher and her learners, who were first-year candidates of a professionally accredited programme of dental hygiene, at a higher education institution. Participant A was also involved in the first project [Loo 2015]. In this part of the peer review discussion, the participants highlighted some multi-modes [Kress 2010] of teaching interests such as the learners’ gaze, the perceived inattention to the tutor, the positioning of the group (with their views towards the door) and the use of language. The contexts relating to this session would explain the multi-modes identified by the peers. At the beginning of this recorded session, two of the students were being examined in a viva and their colleagues (tutees) in the recorded session were conscious of the importance of the viva for their two colleagues, as the outcome would affect their eventual examination results. Understanding the social and pedagogic contexts helped to explain the apparent inattention of the learners as they were expecting their two colleagues to come through the door. The positioning of the tutor (Participant A) may also be explained by her consciousness of the imminent possibility of the viva candidates re-joining the session. Referring back to the above

quotation, the perception of reality as identified by another participant (Participant B) enriched the peer reviewers with a richer understanding of this part of the 'Taking History' digitally recorded session.

This use of multimodality in the reflective review also offered the tutor/Participant A another perception of reality over and above that of her perception as a tutor in that session. She was not aware of the described multi-modes of pedagogic activities identified by her peers. The replaying of the recording gave her additional space and time (as suggested by Jewitt 2009 and Kress 2010) to reflect on the group dynamics (and multi-modes of pedagogic activities), which were not identified by her in the real-life situation. This replay also enabled her to discuss with her peers the group dynamics (e.g. gaze, posture, facial expressions and voice of the people in the recording) and to provide additional insights into the discussion. Her peers in return, offered her a 'fresh pair of eyes' to reflect on other issues which might not be noticed by the recorded participant. This review offered a 'two-way' reflection within and between peers.

The other theme, which was identified, included 'Learning from peer review interaction beyond the digitally recorded session'. The comment below reflected Participant C's (a part-time teacher in dance) observation during the peer review of the digitally recorded "Taking History" session [Loo 2013]:

The observation of [digitally] recorded sessions promotes self and general awareness and reflection, which are valuable meta-cognition skills to learn in any professional training. (Participant C)

The two approaches of multimodality and reflective peer review created a nuanced and structured approach for discussion and reflection surmising from the above quotation. The collegial approach to an agreed set of guidelines for collaborative reflection created a sense of ownership and peer support. From the re-analysis of the data, it also facilitated discussions of: a comparison of teaching styles, a reflection and post-teaching action, the applicability of non-specialist observation, and the subtlety and tacit nature of teaching (the last two are featured below).

There was value in a non-specialist observation as the observer could go in with an objective mind because he/she was not a specialist, then he/she would look at pedagogy (and not subject knowledge). There was value in itself. This would be 360 degree evaluation. (Participant C)

There is so much about the subtlety of teaching which you can't write about in great detail but much easier to look at it, like a [digitally recorded] session, and to discuss it. (Participant E)

The above quotation by Participant C, a dance teacher, reflected on the relevance of a non-specialist observer in a teaching practice where the emphasis might be on pedagogic activities rather than disciplinary matters. This approach could offer a richer understanding of teaching but this did not mean that observation by a specialist observer was of no benefit. Far from it, a specialist in the discipline (say of dance) could focus on the disciplinary aspects of the teaching session and by combining the two approaches, the recording could offer a 360 degree evaluation. This discussion

also centres on the types of teaching knowledge as identified by Shulman [1987] such as his general pedagogical knowledge, Verloop et al.'s [2001] curriculum and instructional techniques, Clandinin's [1985] professional experiences of Participant C, Becher's [1994] and Smeby's [1996] disciplinary knowledge, and Bernstein's [1990] vertical/disciplinary knowledge.

The last quotation by Participant E, a part-time teacher of art in community settings, referred to the non-explicit aspects of teaching as identified by Loughran et al. [2003, 856] where they investigated the 'hidden aspects of teaching practices' such as learning from peers. The tacit aspects echo Polanyi's [1966] individual tacit dimension of teaching knowledge and also Nonaka and Takeuchi's [1995] collective learning of tacit elements of teaching. Further insights may also be gained via the process of recontextualisation where the transmission of tacit (horizontal) and explicit (theoretical) knowledge occurs in teaching practices. This process is particularly relevant where it involves occupation-related teaching such as dental hygiene as suggested by Barnett [2006] and further explicated by Evans et al. [2010] in their content recontextualisation (where the theoretical knowledge is selected for learners' learning), pedagogic recontextualisation (where disciplinary/theoretical and everyday/tacit knowledge is used in teaching) and learner recontextualisation (where learners use strategies to integrate theoretical and occupation-related knowledge for application in their occupational work). Lastly, the quotation illustrated the 'ongoing recontextualisation' as identified by Loo [2014] between the theoretical knowledge and the everyday/tacit experiences.

Conclusion

The study reported in this chapter has found that the training of teachers from the post compulsory and higher education sectors in England require a much greater delineation in terms of teaching and occupation-related knowledge and experiences. These types of knowledge require not only greater emphasis in curriculum but also more research in explicating the definitions, typologies and sources in what constitutes 'teaching knowledge' in order to assist stakeholders in the teaching of occupation-related programmes. This chapter has also provided a pedagogical solution in supporting teachers to enhance teaching quality via the use of digitally recorded teaching practices, which use multimodality and reflective peer review conceptual frameworks.

The findings from the two projects have relevance for stakeholders, such as teacher educators, teachers, managers and policy makers, who are involved in the delivery of occupation-related courses worldwide as the needs to explicate clearly 'teaching knowledge' and to incorporate this into training and professionalizing these teachers have resonances in places throughout the education world.

The core arguments offered here include: acceptance of the need to further research teaching knowledge for those in occupational teaching and practices, exploratory definitions of teaching knowledge and a way of understanding how this knowledge is used in teaching and the incorporation of a teaching approach to enhancing teachers' pedagogic roles from the perspectives of teaching knowledge and its application.

This study also has implications for related stakeholders. For teachers of occupational courses, a greater understanding of teaching knowledge and the need for professional development (as teachers and occupational practitioners) are needed. For institutions responsible for delivering the teacher training courses, there is the need to: acknowledge the complexity of teaching knowledge; to include such knowledge in the curriculum; to support them in improving their teaching; to support teacher educators and other stakeholders to acknowledge the complexities of training these teachers and with this, implications for their training. Finally, for policy-makers, there is the need to acknowledge and include this knowledge into new and existing curriculum with supporting research evidence and to offer opportunities for further research in this field for the relevant stakeholders. In short, there needs to be a supportive environment to carry out these pedagogic activities for the eventual improvement of occupation-related teaching.

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