How can Universities enhance the teaching and learning of pharmacy technicians working within Mental Health Services?

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Background

There is a growing need, within healthcare organisations, for clinically rather than supply focussed pharmacy services (1,2). Developing such services is dependent on delegating appropriate clinical tasks to pharmacy technicians (3,4). Thus the role of pharmacy technicians is expanding in countries across Europe and North America and is increasingly including clinical services (1,5). Education is an important enabler for pharmacy technicians to undertake clinical roles, such as taking medication histories and patient counselling, traditionally conducted by pharmacists (6,7). The American Society of Health Care Pharmacists identified the need for national educational standards for the technician workforce (5). Unfortunately, many technicians rely upon unstructured training delivered in the workplace (1). More seriously, this failure to adequately train pharmacy technicians could compromise patient safety (1,2).

In the UK Pharmacy technicians are registered with the General Pharmaceutical Council (GPhC) and are typically trained within community or acute hospital pharmacy – relatively few student technicians are employed by mental health trusts (3,8). Student Pharmacy Technicians must spend two consecutive years of work-based experience and pass GPhC-approved competency and knowledge-based qualifications usually BTech/NVQ level 3, or equivalent (8). The training provided for this registration qualification tends to be generic and it is not clear if it fully equips pharmacy technicians to work within mental health trusts (3,8).

Post-registration technicians commonly move between sectors so that a student technician originally employed by a community pharmacy may work for a mental health trust. Pharmacy organisations in both the USA and the UK have identified the need for pharmacy technicians to develop specialised roles and technicians working within mental health are increasingly delivering direct clinical services (3,5,6). The registration qualification may not adequately train pharmacy technicians to deliver these clinical services and whilst there are post-registration courses for pharmacists, currently, there are no specific post-registration clinical courses in mental health for pharmacy technicians (1,3). The current courses include generic medication management qualifications and a BTech Diploma for Clinical Technicians, which tend to focus on the acute sector and primary care (3,9).

Therefore, this project aims to understand the following. First, whether the current pre-registration and any post-registration qualifications adequately prepare pharmacy technicians for their role, particularly their clinical role, within mental health trusts. Second, building on any gaps identified in the current training provision, understand how universities can enhance the teaching and learning of pharmacy technicians.

Overall Aim

To understand how universities can enhance the learning and teaching of pharmacy technicians.

1

Objectives

To understand the training needs of pharmacy technicians working within mental health services and whether the current qualifications are sufficient.

To identify how universities can support the training needs of pharmacy technicians working within mental health services.

To develop a framework, from the interviews, how universities can enhance the learning and training of pharmacy technicians.

Methods

An exploratory qualitative approach following adopted COREQ (consolidated criteria for reporting qualitative studies) guidelines was used (10).

Sample

Five pharmacy technicians working within mental health services were interviewed to understand their training needs. This number of interviews was based upon the necessary number of participants to provide a broad range of experiences and current roles, and was informed by principles of "data saturation" (11).

A mixture of purposive, convenience and snowballing sampling was used (11). Potential participants were informed about the project via an email on the College of Mental Health Pharmacy (CMHP) e-group and via the Association of Pharmacy Technicians UK, and invited to express an interest in participation (convenience). Personal contacts were also identified (snowballing). Participants identified by both methods were asked to supply demographics e.g. age, years working within mental health, primarily supply or clinical role. The final sample interviewed was purposefully selected to maximise diversity on these proposed relevant characteristics. Informed consent was obtained prior to the interview (appendix 1).

Procedure

Each interview lasted up to 1 hour (the majority were within 45 minutes). The researcher contacted the potential interviewee at a mutually convenient time. A semi-structured interview schedule (see appendix 2) was developed with input from an experienced pharmacy technician (Ciara Hallows [CH]) working in mental health to identify the training needs of pharmacy technicians working within mental health services and how universities can support these needs.

Participants were interviewed online using an Instant Messaging (IM) service (e.g. Facebook® or Skype®; 12,13). The conversation is in real-time and automatically transcribed (13-15). Participants may be interviewed across a wide area at a convenient time and also discuss issues more freely as online interviewing allows greater anonymity (13-15).

Data Analysis

The transcripts were thematically analysed using the method of constant comparison informed by grounded theory (11,16). Three coding stages were followed (11). First, open coding was used to develop categories and sub-categories informed by commonly recurring themes. Second, axial coding was used to compare categories, and develop concepts and theories. Third, selective coding was used to re-organise the data and develop a framework how universities can enhance the learning and teaching of pharmacy technicians.

A number of techniques were used to ensure validity and reliability, and control for researcher effects and selectivity in data use. Data was independently reviewed by an experienced pharmacy technician (CH) and considered in the light of existing literature. Results which contradicted the key conclusions were actively pursued (deviant case analysis). Finally, member-checking was utilised.

<u>Reflexivity</u>

Qualitative researchers engage directly with the study participants and must acknowledge the impact of personal bias and reflexivity, the relationship between the researcher and the participants, on the outputs from the research (10). This research, including the interviews, was conducted by a male academic pharmacist with over 20 years' experience working within mental healthcare, who had also been a previous chair of the UK Psychiatric Pharmacy Group (a predecessor organisation of the CMHP).

Results

Five qualified pharmacy technicians were interview. Relevant demographic details are described in table 1:

Table 1: Details of Pharmacy Technicians Interviewed

	Gender	Age	Qualific.	Employer	Years qualified	Years working Mental Health pharmacy tech	Band	Role
T1	M	30	BTech/ NVQ3	MHT	11	11	8a	Clinical
T2	F	40	BTech	MHT	12	12	5	Supply
T3	F	53	SVQ	Health Board	27	7	5	Clinical/ advisory
T4	F	46	BTech/ NVQ3	MHT	< 1 year	< 1 year	5	Clinical
T5	F	45	SVQ	Health Board	12 years	1 year	5	Clinical
T6	F	31	NVQ3	Health Board	11 years	2 years	5	Clinical
T7	M	29	NVQ3	MHT	6 years	2 years	6	Clinical
T8	F	27	BTech / NVQ3	MHT	NA	2 years	Student tech	Supply
T9	M	33	BTech / NVQ3	MHT	9 years	9 years	6	Clinical
T10	F	35	BTech		17 years	5 years		Clinical

Thematic analysis identified three key themes, which are described below in detail:

Current Role

Broadly speaking the activities of the technicians interviewed could be considered as clinical or managerial. Clinical roles were diverse and included:

> *Attending multi-disciplinary / multi agency ward rounds (T3 – line 5); working within MDTs to develop treatment guidelines (T1 – line 23 to 24); checking drug charts for errors (T4 – line 4).*

Technicians often had significant management responsibilities and one band 8a managed a team of 25 technicians (T1). It is however simplistic to consider the roles as separate and the clinical and management aspects frequently overlapped:

> *I took over the clozapine service, (which) manages the treatment including monitoring of patients with Chronic Schizophrenia (T1 – line 15 to 17)*

These next quotes also illustrate the changing role of pharmacy technicians, in particular the increasing clinical role of technicians, which was a common theme:

> *There was no such thing as a Clinical Tech when I first started working………….so definitely more clinical (T5 – lines 14 to 16).*

> *The role has developed more with the past few years, carrying out more medicines reconciliations (T2 – line 25 to 26).*

These clinical roles included evaluating prescriptions, dealing directly with patients including counselling service users on medication and training clinicians, in addition to medication reconciliation. However, these clinical roles had to be balanced against supply activity, as T5 (line 17) added:

> *But supply issues (remain) a constant force.*

Current Training for Role

Training needs to cover these clinical aspects such screening prescriptions, counselling patients and working with prescribers to adequately train the future technician workforce *(T1- line 36 to 37)*. However, some of the student courses may not cover these clinical aspects adequately (T1 – *line 30 to 31).* Indeed, some of the courses had very little on the medicines and diseases encountered in mental health:

> *I think out of 22 modules for Pharmacology - there was one on mental health. It covered (from memory) anxiolytics, drugs used in epilepsy and antidepressants. I don't think it covered antipsychotics at all and we certainly didn't cover drugs used for dementia patients or people with learning disabilities (T5 – lines 26 to 29).*

And appeared to covered topics less relevant to the current role of pharmacy technicians:

> *I was chatting to our student Tech and she said that she'd been making suppositories and creams etc - which is what we did in 2002 - and I have only once made a cream and never suppositories. I think they need to review the NVQ and see how relative it is to the practices and procedures now undertaken by techs (T5 – lines 107 to 111).*

Worryingly, student techs may not be aware of these deficiencies in the training:

> *Not (medicines and diseases) adequately (covered) and the tutors depth of knowledge was not good. The others students on the tech course were oblivious to the lack of knowledge of the tutor (T4 – lines 15 to 17).*

Thus technicians may lack the required skill set (although they may not always be aware of this):

> *I think techs lack the knowledge on how drugs work...we know the basics but need a greater understanding (T1 - line 55).*

The techs also identified that the student training did not cover the more practical day-to-day clinical role, although this may be covered in "on the job" training:

> *No there was no meds rec or ward based stuff but you usually work up to the band 5 and are ready by then (T4 – lines 11 to 12)*

In addition to a lack of training pre-registration, whilst there are "generic" management courses there is a lack of suitable post-registration clinical courses:

> *I have done various courses (for the management side of the role), but nothing really relevant to Pharmacy......but I am like many technicians desperately looking for a postgrad clinical course in Pharmacy (T1 line 43 to 46).*

Training Needs and Role of Universities

Every technician interviewed identified a role for universities and the need for a formal qualification such as a postgraduate certificate in mental health pharmacy at a university. They expressed the opinion that a qualification delivered by distance learning, based around the current Certificate primarily aimed for Mental Health Pharmacists and structured around diseases and their treatment, would be helpful for pharmacy techs:

> *I believe that the course would be welcomed (T3 – line 118).*

Some of the techs identified the need for training focussed on the clinical environment in which they work:

> *Would be sufficient to gain a baseline knowledge in conditions that we see day-to-day in practise (T2 – lines 68 to 69).*

A more basic introductory course is also required, in addition to a formal qualification:

> *A course that's specifically for Techs BEFORE THEY EMBARK ON A CAREER IN MENTAL HEALTH. My team are all very helpful and approachable but there just never seems to be time to cover the basics. I'd have liked a week of training before going into post to cover the basics...depression, personality disorder, mania, psychoses, dementia (T5 – lines 48 to 51).*

The formal qualification should also include material that is directly relevant to the day-to-day clinical practice. Topics suggested, by the pharmacy technicians included Consultation skills, Medicines Optimisation, Physical Health monitoring, Medication Reconciliation, use of compliance aids, drug misuse and the Mental Health Act.

However, the practical aspects of a highly specialised role may be difficult to deliver using a traditional educational model:

> *My role is so specialized it would be hard to teach/learn in a classroom…its mainly learning on the job (T3 – lines 48 to 49).*

Communication skills were a common theme. Training on how to speak to people with communication difficulties, including people with dementia and learning disabilities, and people for whom English is not the first language was suggested *(T3 - pharmacy technician working within learning disability services).* One other technician *(T4)* also highlighted the need to communicate to, and manage the interaction with, people with mental health problems who become intimidating.

Most importantly, if universities can enhance the training of pharmacy techs this could have significant benefits:

> *Enhancing our skills will result in better patient outcomes and ultimately improving the patient journey (T1 – line 51 to 52)*

Discussion

The Kolb Cycle suggests that people learn best by making discoveries and from direct experience (17). All four stages of the cycle – concrete experience, reflective observation, abstract conceptualisation and active experimentation - must be followed for successful learning from experience (18,19). The Kolb Cycle focusses on how experience informs learning, and defines learning as:

> "the process whereby knowledge is created through the transformation of experience (17)."

Higher Education Institutions must train pharmacy practitioners with the required clinical competencies, and these competencies should underpin the curriculum (20). This research project aimed to understand how universities can enhance the learning and teaching of the required clinical skills to pharmacy technicians working within mental health services. Immediate concrete experience is the first part of the Kolb cycle and the basis for future reflection and observation (17). Participants had immediate experience of the content of pre-registration training courses and the availability, or otherwise of appropriate post-registration training courses. One of the overall objectives of these vocational courses is to train pharmacy technicians to be able to work for mental health trusts; a key and increasing aspect of that role is to provide direct clinical services.

The Kolb cycle is based on a feedback process and the second part is reflective observation to identify any deviation from the required result; in this case an appropriately trained pharmacy technician (17). A key element of the second stage is to critically reflect on both the positives and negatives of the educational experience (21). Critically reflecting on the empirical data, it is apparent the current learning and teaching for pharmacy technicians does not adequately prepare them for working in mental health services; does not achieve the desired outcome.

Research has shown that pharmacy graduates are not able to effectively manage common medication management issues seen within mental health services (22). This project clearly identified that current pre and post registration training in clinical pharmacy for pharmacy technicians is not fit purpose. The overall training has not kept up to date with current practice, and does not provide appropriate training on the main mental health diseases and treatments, and skills required to deliver day-to-day clinical services. This finding confirms the results of a large research project on pre-registration training for pharmacy technicians in UK (23). Like the curriculum for pharmacy students, the curriculum for student pharmacy technicians does not adequately cover key areas including communication skills and some clinical areas (22,23).

Therefore there is clearly a role for universities to enhance the post-registration teaching and learning of pharmacy technicians working within mental health services. The next question is – how can universities enhance this teaching and learning - which is considered in the third stage of the Kolb cycle.

The third stage is to form abstract concepts that incorporate the outputs from the observations (17). Universities can enhance learning post-registration by using a blended approach including both

knowledge-based and more direct practical clinical aspects of the role. The knowledge-based teaching should focus on the main different diseases and their treatments, including evidence-based guidelines and physical health monitoring; in effect the knowledge applied to the clinical environment. However, in addition to knowledge-based teaching and learning, any training for pharmacy technicians should cover more practical aspects such as Medicines Optimisation, Physical Health monitoring, Medication Reconciliation and the Mental Health Act; there may also be a need to include an introduction to management as technicians are increasingly taking on management roles. The need for training in communication skills, particularly important in this patient population, was one strong theme.

Universities could enhance the learning and teaching of pharmacy technicians by delivering this teaching in a formal academic qualification, such as a postgraduate certificate with appropriate learning outcomes. A learning outcome is "what a student should be able to do in order successfully to complete a course of study" (24). Critically reflecting on the interview data, the key learning outcomes for a certificate, that enhanced the post-registration training of pharmacy technicians working in mental health, would be:

 - to understand the key pharmacological treatments used within mental health services (specifically their area of work); and

- to develop the practical skills required to deliver effective medication management within their area of practice.

An effectively designed curriculum provides students the opportunity to attain the learning outcomes and demonstrate this attainment (25). Assessment, which drives learning, should be constructively aligned with the aims of the module, and the learning and teaching activities contained within the module (26). It should enable students to demonstrate that they have achieved the learning outcomes (26). By constructively aligning assessment with learning outcomes key to day-to-day practice and the learning required to achieve these outcomes, universities can enhance the teaching and learning of pharmacy technicians working in mental health. This alignment is a key element of course design and underpins the modular structure (27,28).

Overload of information can be a barrier to learning and therefore students should be able to choose a number of relevant modules (29). By enabling students to study areas relevant to their particular area of practice and achieve the required learning outcomes relevant to their practice universities can enhance the learning and teaching of pharmacy technicians. Thus, students should be able to choose the most suitable modules from a menu of both knowledge-based and more practical clinical modules. An outline curriculum could contain six integrated 10-credit modules structured as follows:

Introductory Module
Individual modules should link together to form a coherent programme to enhance learning and teaching. A first compulsory module would provide an overview of the main pharmacological treatments, and a broad introduction to mental health services and the role of pharmacy and specifically the role of pharmacy technicians (25). This would enhance learning and teaching by integrating the modules within the certificate, with the later modules building on the learning attained in this initial module (25). Assessment would be constructively aligned with both learning outcomes, but at a basic level. For example the students would be expected to know the practical skills that need to be developed in later more practice-based modules.

Knowledge-based modules

The certificate would contain five knowledge based modules structured around the major diseases technicians working within mental health are likely to encounter: Psychosis, Affective Disorders (depression and bipolar disorder), anxiety and sleep disorders, Dementia and related disorders, epilepsy and learning disorders. The Pharmacy Technicians would then choose three out of these five modules relevant to the clinical environment in which they practice, for example a pharmacy technician working on an older person's ward could choose a knowledge-based module on dementia. Assessment of these modules should be constructively aligned with learning outcome one to enhance learning and teaching, and enable students to demonstrate an understanding of the key pharmacological treatments.

However, there are a number of potential problems when students are taught about practice at a university (30). Theory tends to general and abstract, whereas practice is unique and specific; in the clinical environment every patient has unique needs (30). Theory may assume that practice is static, but practice changes and thus the theory may lack relevance, as seen with the pre-registration course (30). It can thus be difficult to engage students with practice-based qualifications delivered at a university (30). Students should keep a journal of their clinical interventions based on theory learned within this course, to make the course more relevant to day-to-day practice, and therefore enhance learning and teaching (30). It is also vital that the course contains more practice-facing skills-based modules.

Skills-based Modules
The certificate would contain three skills based modules as follows:
i. Medicines Optimisation – this would include Physical Health monitoring and Medication Reconciliation.
ii. Communication skills – both with people with mental health problems and other clinicians. A strong focus within this module would be communication to promote appropriate adherence to medication.
iii. An Introduction to Management – this would cover the general principles of management.

The Pharmacy Technicians would then choose two out of these three modules. Assessment of these modules should be constructively aligned with learning outcome two and enable students to demonstrate the development of the practical skills.

Integration of two different processes must occur for learning to take place; first the external interaction between the learner and their material, culture or social environment and second an internal process of knowledge acquisition (29). The course would need to be delivered in a distance learning environment as it would be open to technicians working across the UK.

There are some potential limitations in delivering a distance-learning course. Whilst distance learning improves access and distance learners tend to have more diverse backgrounds, it reduces face-to-face human contact to a minimum (31,32). It can depersonalise the teaching particularly when the very sophisticated teaching material, or methods, are used (so-called "death by powerpoint"; 33). Distance learners need more supportive information and any distance learning courses need to build in regular phone, or discussion-group contact (31). Therefore the teacher is equally important as the material even in a distance learning course and needs to be accessible to the students (33).

Practical hands-on teaching and learning is challenging to deliver via distance-learning. Exposure to people with mental health problems is recommended within undergraduate pharmacy education and reduces stigma (22,34). However, pharmacy technicians working in the environment will already have direct patient contact perhaps negating the need for the inclusion in the university delivered material.

The last stage, of the cycle, involves active experimentation, testing the concepts, in this case the course, formed by critically reflecting on a concrete experience (17). Therefore once the course is established, it should be rigorously assessed to understand whether it is fit for purpose and provides the appropriate learning and teaching to develop clinical technicians working in mental health pharmacy. The academics should critically reflect on whether the constructive alignment does indeed enhance learning and teaching and produce pharmacy technicians with the required skills. This critical reflection should partly be informed by feedback actively obtained, from both the students and clinical staff within the organisations that employ the students, on the suitability of the course.

Whilst not the main focus of this research, pre-registration of student pharmacy technicians appears to require modernisation. This project clearly identified that the courses do not reflect current practice. The courses should cover the main therapeutic areas that pharmacy technicians will cover when practising and also some of the applied clinical roles that pharmacy technicians are now under-taking. Conversely, the courses should not cover skills and knowledge that qualified technicians will, most likely, never utilise. In particular, it is somewhat surprising that the courses still teach student technicians to make creams and suppositories, which are redundant skills. The General Pharmaceutical Council is responsible for defining the training and education of pharmacy technicians, and should work to ensure that training reflects current practice.

Strengths and Weaknesses

As far as I am aware this is the first study worldwide to consider the training needs of pharmacy technicians working in mental health services and more specifically how universities can enhance their learning and teaching. In European and North American countries pharmacy technicians are increasingly undertaking clinical tasks and this research provides valuable insight on their training needs (1,5).

Whilst some degree of data saturation was obtained, with the same themes re-occurring, the results are based on the interviews with five participants. This sample may not reflect the opinions of the wider body of pharmacy technicians. In particular the techs, who agreed to be interviewed, may have been a self-selected sample with an interest in training. Put another way, the technician who agrees to be interviewed at 8.30pm in the evening via Skype®, may not be typical. Furthermore, participants may have given socially desirable responses; in the context of this interview, by an experienced mental health working within academia, participants may have over-emphasised the potential role of universities. The finding about pre-registration training in particular needs to be treated with some caution, as it was not the main objective of the research; although it does replicate the findings from the recent GPhC-funded project (23).

The initial plan was to only interview technicians who had access to IM services. During the initial recruitment phase it became apparent that some firewalls to NHS trusts blocked access to sites such as Facebook® and Skype®. To overcome this problem the option of being interviewed by email was offered and used with one participant (T3). However, email was not instant; the interview took nearly 1 hour 30 minutes (approximately double the other interviews) and therefore this method was not used again.

Further Research

These findings should be considered preliminary and confirmed and expanded with a larger sample. An online survey, using a tool such as Bristol Online Surveys, should be used to generate predominantly quantitative data from a larger sample, in addition to some targeted qualitative interviews. Such a survey could include specific questions on the pre-registration training of

pharmacy technicians, which appeared to require modernisation. The data should also be triangulated and the views of other key stakeholders in particular Chief Pharmacists obtained.

Conclusions

Pharmacy technicians working within mental health services are increasingly undertaking clinical roles. However, the current training both pre-registration and post-registration doesn't appear to fully equip pharmacy technicians for these developing roles. Universities can enhance the learning and teaching of pharmacy technicians by developing appropriate post-registration academic qualifications.

These qualifications should contain a mixture of knowledge-based teaching and teaching focussed around more practical activities based on the day-to-day role of pharmacy technicians to enhance the learning and teaching of pharmacy technicians. Learning outcomes should be constructively aligned with learning outcomes relevant to day-to-day practice and the required learning to achieve these outcomes. In addition to an introductory module pharmacy technicians would study three out of five knowledge-based modules, designed to develop knowledge. Assessment of these modules would be constructively aligned with attaining this knowledge. Technicians would also study two out of three skills-based modules; assessment of these modules would be constructively aligned with developing the required practical skills.

By constructively aligning assessment with learning outcomes key to day-to-day practice and the learning needed to achieve these outcomes, universities can enhance the teaching and learning of pharmacy technicians working within mental health services. More importantly such an approach will help to ensure that some of the most vulnerable members of society, namely people with dementia and mental health problems, receive safe and effective treatment with medication.

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Appendix 1 - Participant Consent Form

How can Universities enhance the teaching and learning of pharmacy technicians working within Mental Health Services?

Interview Questionnaire

Aim of the Interview

To understand how universities can enhance the learning and teaching of pharmacy technicians.

Participants

Pharmacy techs working in mental health in the UK.

Participation Involvement

Participation will involve an interview via an Instant Messaging (IM) Service (e.g. Facebook® or Skype®) which is estimated to last 30 minutes. Participation in this interview is voluntary.

Information Collected

The information collected from the interview will remain confidential with all answers anonymised.

Use of the Answers

The answers from the interview will be used to inform developing educational programmes for pharmacy technicians. We will look to publish the results and/or present at a conference.

By signing this consent form, I confirm that:
1. I have read and understood the information on this form.
2. I understand that my participation is voluntary.
3. I understand that the answers provided in this interview will be treated as strictly confidential and handled in line with the NHS Code of Confidentiality.
4. I agree to participate in the interview and allow my answers to be used in the research project.

_____   _____   _____

Name of Pharmacy Technician   Date   Signature / email return

Could you please complete the following table:

Name:	
Email	
Preferred day and time for interview:	
Preferred IM service	Facebook ®/ Skype ®/ Other (please specify)
Age:	
Gender:	
Year completed student tech course:	
Employer when student tech:	
Which qualification	BTech / NVQ3 / Buttercups
How long worked in MH:	
Role predominantly – clinical or supply	
Interview Code (office use only):	

Appendix 2 – Semi-structured Interview Questions

1. Could you briefly describe your current role?

Supplementaries: how long in role? Change in role since qualification specifically balance supply vs. clinical.

2. Do you feel that your student tech course fully equipped you for your current role?

Supplementaries: if no why not and specifically what aspects did the course not equip you for?

3. Have considered undertaking or have undertaken any post-registration training or qualification to give you the skills required for your current role?

Supplementaries: details of training? Did the training provide you the required skills? If no do you think that you need to undertake more training? Are you aware of any current training courses that you feel would be beneficial to your role/future role development?

4. How can universities enhance pharmacy technician education/Is there a role for universities/would you be interested in studying a formal qualification such a certificate in mental health pharmacy at a university?

Supplementaries: What should the syllabus of the qualification cover?