UNIVERSITY of Cumbria

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DIRECT ENTRY POSTGRADUATE ULTRASOUND - THE UNIVERSITY OF CUMBRIA EXPERIENCE.

LORELEI WARING AND GARETH BOLTON

Executive Summary

Background

- This report investigates findings arising from in-depth interviews with five students and six Ultrasound Department Leads throughout the North West of England over a two year period, considering their opinions and experiences in relation to the University of Cumbria direct entry postgraduate MSc in ultrasound. The student participants represent the first cohort on this newly developed programme and the clinical leads represent the placement hospitals responsible for providing the clinical aspect of the students training.

Methodology

- This report employs a qualitative-thematic approach to evaluation of the data collected from interviews with participants, which allows us to take account of the depth and variety of data for a comprehensive evaluation.
- An information letter was distributed by email to the students and the ultrasound department leads, and participants were invited to take part in two interviews, one to be undertaken at the end of each year of study. A total of $N=21$ interviews were conducted over the two year period.
- Interviews were semi-structured, conducted and recorded by telephone and transcribed verbatim. Key identifiers were removed to preserve participant anonymity.
- A Straussian Grounded Theory approach (Strauss & Corbin, 1998) was used to investigate qualitative contributions, in which responses were initially free-coded, and then grouped into sub-themes and meta-themes.
- Finally, these meta-themes were collected into common evaluative categories.

Findings

- The first emergent theme related to the previous background of the students and no concerns or disadvantages emerged from the student feedback. However, some students did conceded that previous healthcare or imaging experience did help when adapting to the clinical setting.

- The students felt that their existing anatomy knowledge was consolidated with the teaching provided at university and some felt this was more advantageous than an imaging background.

- On this theme, the clinical leads also agreed that some previous healthcare experience was advantageous when first entering into clinical placement but not necessarily radiography. One clinical team felt that more input was required with their direct entry student in regards to communication skills and appreciation of healthcare issues and it was suggested that this was due to their non-healthcare background.

- All the students reported that they were excited and looking forward to commencing the course but it emerged that they all had concerns mainly centered on their own abilities to cope with the workload and actually do the job and fit in with the clinical team. One student also voiced concerns around the issue of HCPC registration and if this would ultimately affect their employability.

- Several concerns were highlighted in the clinical lead feedback on this theme. One recurrent issue related to whether this new programme would actually work, could non-healthcare professional train into ultrasound and how much extra work would this involve for the training providers.

- Some students relocated from home to undertake their studies and this led to concerns amongst some clinical departments as to whether the students would stay at the training department post-qualification.

- The current 'traditional' ultrasound training route offers, qualified, employed radiographers and other healthcare professionals the chance to access funded ultrasound training whilst employed by the training department. If this route were no longer available, these healthcare employees would have to fund themselves through ultrasound training. This is expensive and is not feasible for all so many could miss out on the opportunity to become a sonographer and some clinical leads had concerns that introducing this new route could ultimately spell the end of the traditional route.

- Not all clinical leads expressed concerns prior to the course commencing; some were confident in the selection process and had good expectations of the programme and their students.

- Considering the feedback from the students following the first year of study the reality of how it was progressing was overall very good. They were unanimously happy with the programme and all felt they had adapted to the clinical environment well. They felt welcomed and well prepared and reported that the clinical teams were very pleased with their level of knowledge and ability

- It was widely recognised by the students that the teaching provided at the university prepared them well and the simulators (scan trainers) proved very beneficial for orientation and basic scanning skills prior to starting placements.

- On this theme, the clinical leads also had a very positive experience over the first 12 months of the course. They were all very pleased with their students and in some cases, the students had exceeded their expectations. They had all fitted in well with the clinical teams and their academic and clinical skills were often commended.

- The clinical leads recognised that the scan trainers were a contributing factor to how well prepared the students were for placement as well as the level of academic teaching provided by the university.

- Much of the opposition encountered prior to the course had faded and the students were seen as members of the team, the same as the traditional route students.

- Masters level study demands a high level of input from students and the workload associated with a full 2- year vocational Masters programme is high. These students were expected to fulfill the academic requirements of the course at the same time as learning a new and complex skill.

- On this theme it is understandable that the students feedback highlighted some challenges. High stress levels were encountered, exacerbated in some cases by additional factors such as students having to relocated and live away from home to undertake their studies as well as students continuing with part-time work to ease financial worries.

- Some students admitted that they faced challenges in managing their time efficiently and struggled to maintain a healthy work-life balance. Avoiding distractions was also highlighted as a challenge at times.

- Although all the students agreed that the workload was substantial, some did admit that it was what they had expected and that they had found it manageable. These

- students reported that they had been provided with enough information and time to successfully complete any work on time and adequate support was made available.

- It emerged for both the student and clinical lead feedback that the biggest challenges encountered during the first year of the programme related to the clinical objectives.

- The students are expected to undertake and pass a number of clinical assessments at the end of the first year in order to progress into year two. However, they had a substantial summer break in addition to reading weeks and academic teaching blocks at the university and the student and clinical teams reported that this left them little time to address the clinical objectives and arrange the relevant assessments.

- Additional challenges were reported in regards to the nature of the placement hospitals. Some of the smaller, district general hospitals struggled to facilitate the more complex assessment tasks due to their limited caseloads. Finally, there was some confusion as to the expected level of competence at the end of the first year and some departments felt that they needed clarification, i.e. how to you deem a student partially competent, or competent enough to continue.

- Not all feedback reflected these challenges some students and clinical departments found the clinical objectives achievable and encountered no issues at all.

- On the theme of support the students overall felt well supported throughout the course both academically and clinically. It was noted however, that feedback could at times be a little harsh and one student felt that they might have benefitted from more support with some of the academic assignments.

- The clinical leads raised no issues with the level of support they received from the university. It was evident that they all had good working relationships with the course team and felt that any issued raised were addressed in a timely and efficient manner.

- The clinical coordinator role was widely praised by both students and clinical leads. It was felt that this role provided a useful and beneficial link between the placement sites and the university. It was suggested that some clarification on the actual duties of the clinical coordinator would be beneficial as this was not clear to all placement sites and one site reported that they did not feel they had seen the clinical coordinator much but conceded that this could be because they had encountered no issues during the two-year course.

- The concluding theme relates to the overall validity of the University of Cumbria direct entry postgraduate educational route and all participants unanimously agreed that this was a valid option and that the course was fit for purpose.

- The students felt the programme was a complete success and reported that a

healthcare professional background was not necessary to successfully train as a sonographer. They suggest that by widening participation to include a variety of professional and educational backgrounds recruitment will improve and this in turn will help to address the sonographer shortages.

- The topic of HCPC registration remains an issue for some students. None of this first cohort were eligible for HCPC registration and this was a concern for the students in regards to employability. Although more and more ultrasound units are employing non- registered sonographers there remain many departments who do not.

- The clinical leads agreed that the course was fit for purpose in that it ultimately produced competent sonographers. Many admitted that this route was actually preferable to the traditional route, the financial savings for the training provider being the main reason for this.

- Opening the profession to previously excluded applicants with new life skills and experiences was recognised as being beneficial to the profession and any opposition to training non- healthcare professionals had disappeared. All the placement sites were happy to carry on supporting the course going forward.

- The financial burden on these students and the lack of HCPC registration was reported as a limitation to this educational route although most clinical leads did not consider lack of registration as a barrier to employing adequately trained, competent sonographers.

Conclusions

There is a constant need for additional training in the field of medical ultrasound but currently the rate of sonographer training is barely keeping up with wastage. This study highlights that direct entry postgraduate ultrasound education does work and does produce competent ultrasound practitioners able to meet the demand of this essential field of healthcare. It is not without limitations and there have been challenges but it is testament to the students, the clinical teams and the academic team that these challenges have been met, and overcome. All the students on this first cohort successfully completed the course and although none were eligible for HCPC registration all that applied for positions gained employment within NHS trusts across the North of England. None of the students remained in their placement hospitals after qualifications but interestingly all these placement hospitals have continued to support the course with subsequent cohorts. The course is going

from strength to strength and placements are slowly increasing, with ten placements available for the next intact of trainees.

Using a broadly Grounded Theoretical approach, this report highlights that direct entry postgraduate routes are a viable ultrasound educational option. Clinical departments need to accept that change is necessary and support these new initiatives and the challenges these may present as the workforce crisis in ultrasound is not abating and needs addressing in earnest.

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Introduction

In 2016 the University of Cumbria introduced the UK's first dedicated full time Direct Entry Postgraduate Ultrasound MSc and following a careful selection process accepted 5 students on to the programme with the support of 6 clinical ultrasound departments who agreed to act as placement hospitals.

This report investigates findings arising from interviews with clinical leads of these placement hospitals as well as the first cohort of students, evaluating their experiences and opinions of the programme throughout the two-year registration period.

1.1. Educational Routes

To address the well-documented crisis facing the ultrasound workforce in the UK several potential educational solutions have been under discussion within the Ultrasound community including:

- Direct Entry Undergraduate (BSc) open to applicants straight from 'A' levels.
- Direct Entry Postgraduate/MSc open to applicants with a range of degrees (preferably science based)
- 3+ 1 Postgraduate high achieving Radiographer students are offered the opportunity to carry on for an extra year to gain the postgraduate ultrasound qualification. (SCoR, 2009)

It is important to remember that for any educational model to work it is essential that the support of clinical stakeholders is established as they will be investing time and resources into the training program by offering clinical placements plus it will be these clinical ultrasound departments that will ultimately employ the qualified graduates (Parker and Wolstenhulme, 2012).

1.2. Initial HENW Report

In 2014 following extensive in depth discussions and meetings with local clinical ultrasound departments, the University of Cumbria made the decision to develop a dedicated direct entry MSc programme. As part of this process in 2015 HENW commissioned the University to undertake a report investigate findings arising from in-depth interviews with twenty Ultrasound Department Leads throughout the North West of England. Current staffing levels were evaluated and opinions on the best course of action in relation to future workforce development and the proposed future sonographic education models were considered (Waring, Miller and Sloane, 2015).

This report highlighted that although there was a general acceptance that the way we approach sonography education needed to change there was understandable trepidation within the regions clinical ultrasound community. There were concerns that the service would be 'watered down' or devalued if the current educational standards were not maintained. It was agreed that the ultimate aim should be to ensure this essential service maintains its reputation and sonographers preserve their current standing in the healthcare community.

The key finding of this report are summarised here:

1. The current workforce crisis is creating an increasingly heavy operational and financial burden on the service and is becoming unmanageable;
2. Although the current model of sonography training produces highly skilled sonographers that are fit for purpose, with the deficit this programme causes in other departments and the financial commitment it is unsustainable;
3. A Postgraduate programme of study is more desirable currently as it is more of a short to medium term solution and the current role and banding of sonographers is geared to postgraduate standards of education;
4. Undergraduate direct entry could be considered as a longer-term solution as a complete overall of the way we train and employ sonographer would be needed. It was almost unanimously agreed that at this present time Graduate sonographers were not what this region wanted;
5. The need to address the workforce crisis outweighed any issues with lack of HCPC registration with only two respondents categorically stating that they

would not employ non HCPC registered sonographers;

6. Robust selection processes and curriculum design is essential to ensure the right candidates are chosen who can successfully complete the course and demonstrate first post sonographer competencies when qualified.
(Waring, Miller and Sloane, 2015)

There was unanimous agreement that Ultrasound services were in crisis in regards to the well-reported national shortage of sonographers (Waring et al, 2018). It was widely agreed that the current approach to sonographer training is falling short in meeting the needs of many of the departments surveyed (SCoR, 2009). Change is needed and in many cases welcomed and strong, well-reasoned opinions emerged on the proposed new education models.

As a result of this report and fully supported by local stakeholders the University moved forward with its plan to develop a Postgraduate Direct Entry Ultrasound MSc programme and the first cohort of students commenced training in January 2016, qualifying in February 2018.

1.3. Why Postgraduate educational level

This route was expected to be popular with a range of graduates (SCoR, 2009) with several perceived benefits and disadvantages. Common benefits include the exclusion of direct costs to the NHS both from the cost of training and the issue of back-fill and the fact it could help to address the current shortage of sonographers whereas a lack of imaging and healthcare background are deemed disadvantages (SCoR, 2009). Additional benefits have been identified as increased maturity of the students both academically and personally and the fact that sonography is currently taught at postgraduate level, meaning that graduates from this route would fit into the current job description and pay band of a first post sonographer (SCoR 2009).

Two-year Masters level degrees have been available in the UK in nursing, occupational therapy and physiotherapy since the 1990s and they were all introduced to facilitate widening participation in a climate of shortages in the relevant workforces (Milligan 2013). Much of the literature suggest that these programmes attract older, motivated candidates with a wider academic base who work hard and perform well, ultimately producing high quality clinical

practitioners (Bowie and Carr, 2013). The benefits of attracting this previously untapped pool of entrants are widely acknowledged with many suggesting that the experiences, interests and backgrounds of such a diverse cohort with a variety of first degrees adds a richness and diversity to a profession (Milligan, 2013; Bowie and Carr, 2013).

Historically it has long been accepted that higher educational levels lead to superior professionalism, credibility and autonomy (Pierce et al, 1987) so perhaps it is understandable that many within the ultrasound community feel that anything less than postgraduate level study would 'water down' or devalue the profession (Parker and Harrison, 2015). It is also worth noting that CASE has previously recommended that Sonographic education should remain at postgraduate level study and all individuals practicing ultrasound should be trained to this standard (Aitken and Thompson, 2006).

Although the literature provides strong arguments supporting direct entry postgraduate educational models, it is important to consider the disadvantages. Parker and Harrison (2015) raised concerns regarding possible attrition rates related to the cost implications of the course as well as the possibility of the students not fitting into the healthcare environment. The SCoR (2009) suggests that an initial healthcare qualification or related first degree allows the individual to build on previous experience in preparation for advanced level ultrasound practice. Several papers also highlight the potential for high anxiety levels due to the accelerated pace of study and an excessive workload with some finding the study too intensive (Milligan, 2013). Bowie and Carr (2013) suggest that accelerated programmes do not adequately support students in their professional socialisation due to the shortened period of training, with Robertson et al (2003) agreeing that students qualifying from an accelerated programme of study demonstrate a wider academic base but have had a shorter period to adapt to the professional side of the training.

There are limitations in regards to direct entry postgraduate education routes, however, the literature suggests that overall, they have good outcomes and they are proving successful in addressing the workforce shortages in the relevant professions (Bowie and Carr, 2013). The workforce crisis in ultrasound is not abating and these new models of Sonographic education need to be considered in earnest (Parker and Harrison, 2015). However, it is important that employment potential be contemplated when proposing any new developments (Parker and Harrison, 2015). It is in this context that the issues surrounding professional registration

become pertinent as potentially these could have serious implications when considering the employment of sonographers entering the profession through the direct entry route.

1.4.   HCPC

Thomson and Paterson (2013) make the point that there are now a sizable number of sonographers practicing in the UK who have no statutory registration because they are not eligible to register with the HCPC, NMC or GMC. This situation has arisen because these individuals have not undertaken a primary degree in healthcare and included many vascular scientists, sonographers involved in abdominal aortic screening and overseas sonographers with no primary degree in radiography (SCoR, 2013). These are often competent practitioners who are well qualified; many have undergone rigorous training to gain the necessary skills to practice competently and safely but are unable to gain recognition of these qualifications and skills (Thomson and Paterson, 2014 and Gibbs, 2013). This has left the profession of sonography in a complex and worrying situation. Some individuals performing ultrasound examinations may be registered as a professional but have no recognised training and have not demonstrated the necessary competencies in ultrasound as this is not the remit of their regulatory body; whilst others have extensive, thorough and sometimes CASE accredited training but cannot gain registration to the HCPC (Gibbs, 2013). This will include non-healthcare professional embarking on direct entry ultrasound training.

As the most widely utilised diagnostic imaging modality throughout the world (Gibbs, 2013), there is a constant need for additional training in the field of ultrasound but currently the rate of sonographer training is barely keeping up with wastage (Waring et al, 2018). The long established model of existing healthcare practitioners undertaking postgraduate education leading to a CASE accredited award is not able to supply the required number of sonographers to meet the current demand (SCoR, 2009). However, there is little scope for increasing training activity on the current model due to the added burdens this places on departments both financially and time wise (Miller et al, 2018).

1.5. Report structure

The remainder of this report is organised around the following structure:

- In the **Methodology** (p.17), the sample, data collection and analytic procedures are outlined.
- In **Participant Feedback** (p.21), the central qualitative trends emerging from analysis of interview transcripts is presented and discussed.
- In the **Conclusion** (p.76), a synthesis of all central themes is advanced, alongside a reflection on how this might direct further development.
- In **Appendix 1** (p.84), the information letter forwarded to the participants of the study is included.
- In **Appendix 2** (p.85), the interview schedule utilised in the evaluation is included.

2. Methodology

This report employs a mixed method approach to data acquisition with a qualitative-thematic approach to evaluation of the data collected from interviews with participants. This approach allows us to take account of the depth and variety of data for a comprehensive evaluation of the data.

2.1. Participants & procedure.

An information letter explaining the aim and rationale of the project was distributed by email to the placement lead sonographers and all the students from cohort one. The participants were invited to take part in two interviews to address the issues highlighted in the information letter, one at the end of the first year and the second interview was conducted at the end of the second year of study. A total of **N=20** interviews were conducted over the two-year period.

All invited parties participated in the interviews.

2.2. Design

Data were collected by means of two rounds of semi-structured interviews, conducted and recorded via telephone or face to face over a period of two years from 2016 – 2017.

Interviews were conducted according to an interview schedule, which was developed with a view to elucidating all priority issues (See Appendix 1). Semi-structured interviews were utilised, organised around a series of central broad and open questions, with subsidiary topical "prompts," rather than a rigid set of pre-defined inquiries. As such:

'...the interviewer asks major questions the same way each time, but is free to alter their sequence and probe for more information. The interviewer can thus adapt the research instrument...[to] handle the fact that in responding to a question, people often also provide answers to questions [they] were going to ask later.' (Fielding & Thomas, 2008, pp. 246-247).

The core strengths of this technique in research are fivefold:

1. Lateral comparability of findings is still fully feasible across participants,
2. Complementarity is evident where you are able to measure overlapping but different elements of a phenomenon
3. The ability to broaden and widen the range of the study allowing assessment of the outcomes as well as exploring the perspectives of the participants.
4. The respondent is also given the opportunity to voice ideas and thoughts that might not have been strictly specified within the question; i.e. there is space for new and potentially valuable themes to arise.
5. The respondent can link topics and themes in their own way, providing a sense of how they themselves understand the 'bigger picture', rather than being tied to a structure that demands they (a) repeat things they have already said, and/or (b) answer questions in a sequence that does not seem logical to them – both of which can often 'frustrate and annoy' participants (Suchman & Jordan, 1990).

At the beginning of each interview, and in line with formal academic research ethics, each respondent was provided with the following information, and consent to proceed sought:

1. The interview would be audio recorded.
2. Data from the interview would be disseminated as part of the report.
3. These data will be rendered anonymous in all outputs.
4. The participant has the right, with no negative consequence, to:

   a. Refuse to be interviewed.
   b. Withdraw their whole contribution, or any part of thereof, after the interview itself.
   c. See all outputs of the research once completed.

In all reported data, the anonymity of participants is preserved insofar as practically achievable. This intention was made clear to participants at the beginning of each interview as a constructive research strategy designed to stimulate the most open and honest feedback possible. With respect to the participants themselves, the label 'interviewee' was attached to

their contributions in place of names.

Each interview was anticipated to take between 20 and 30 minutes in total, though some were longer and some shorter (contingent on the level of detail the respondent provided). Sound files from all interviews were transcribed verbatim, but are presented in this report with necessary deletions for clarity of reading wherever practically possible. These deletions are

1. 'Minimal continuers' (Hutchby & Wooffitt, 1998), such as 'uhm', 'erm' and 'err'.

2. Word repetitions and stutters.

3. Aborted or reformulated sentence starts.

4. Linguistic idiosyncrasies, such as 'you know', 'kind of like' and 'sort of'.

All data were transcribed and prepared for analysis by April 2018.

2.3 Data analysis

A Straussian Grounded Theory approach (Strauss & Corbin, 1998) was used to investigate the qualitative contributions, in which responses were initially free-coded, and then grouped into sub-themes and meta-themes. Finally, these meta-themes were collected into common evaluative categories.

It is essential to keep in mind that this mode of thematic analysis is designed to display the *range* of themes emergent of the qualitative data, and not accord significance according to frequency of occurrence. From a Straussian point of view, every issue has potential

ramifications and it would be myopic to dismiss an innovative idea or suggestion because it is less statistically significant. Indeed, innovation itself is often defined by the fact that it is not widely posited.

3. Participant Feedback

3.1. Data Analysis

Qualitative data collected from participants feedback reveal there is a significant amount of variation between responses addressing the same issues, six broad areas of focus emerged. Findings are, thus presented below in terms of these global themes:

1. Background of students

2. Initial expectations/concerns

3. Reality

4. Workload

5. Support

6. Viability of direct entry Pg route

It should be noted that the graphical representations included herein are schematisations of thematic occurrence, dimensions and linkage, but are not quantifications thereof. As such, the charts below reflect the range and depth of themes, rather than the frequencies with which they were raised.

3.1.1 Background of students

The first major theme to emerge from participants feedback relates to the issues surrounding the previous background of the students. Considering the findings elicited from the students interviews, which are schematically outlined in Figures 1 and 2 (below), it is evident that overall, the students did not consider their professional backgrounds as a disadvantage but that was not unanimous with some respondents suggesting their previous experience was advantageous. These findings are not surprising, as you would expect the students to defend their previous professional backgrounds. Within this meta-theme, these issues were divided into two high order themes (a) background matters and (b) background does not matter. These are addressed in turn, with reference to participants' comments.

| Raw Date Themes | Intermediate Themes | High End Theme |

Radiography/imaging helps — Radiography

Healthcare background is beneficial — Healthcare

Background matters

Figure 1: Background of Students (students) – Background Matters

This first cohort of students professional backgrounds varied; some did have previous healthcare or imaging experience whilst some did not and this obviously affected the way the student answered this question. There was agreement amongst some the students that a background in healthcare was advantageous but not necessarily in Radiography.

My background was actually radiography; I found that actually helped me

I think that my previous background helped me to be honest more than the other students because I have worked in X-Ray before

I think working within ultrasound for 4 years, even though it was as a HCA; I feel it has really benefitted me

I worked in a hospital beforehand so I do not feel I was disadvantaged

I think that it has helped me the fact that I have worked in a hospital since I left school, so it has helped me to speak to patients

In terms of the students opinions on previous background not mattering core themes are represented in Figure 2 (below)

| Raw Date Themes | Intermediate Themes | High End Theme |

Well prepared by University

Can be learnt

Background does not matter

HC background not important, can be learnt

Previous knowledge

Anatomy knowledge gained through previous learning more important

Figure 2: Background of Students (students) – Does not matter

Other participants felt that other factors pertaining to their previous study/profession helped more than any healthcare experience and that the teaching provided on the course made up for any perceived disadvantages.

I came from an anatomy-based degree so I feel that actually benefitted me more than maybe radiography would have

I felt that my first degree really helped me because I did a lot of anatomy and physiology, so I felt like I went in with a good background knowledge

I thought I would [feel disadvantaged] but I think the lectures at the beginning covered the basics that we needed so I did not feel disadvantaged in the end

I do not feel that you really need X-Ray or MRI as a background to come into Ultrasound, you can always learn that

When I came here [clinical placement] I realised actually I've not [been disadvantaged], I'd say no because for me it was easy to pick up

It could be argued that the opinions of the clinical leads would be more valuable in this theme as they have been involved in training healthcare professionals and radiographers into ultrasound so have the ability to compare. Considering the findings elicited from the clinical leads interviews, which are schematically outlined in Figures 3 and 4 (below), there was agreement that a healthcare background was advantageous but not essential and overall radiography was not felt to be a pre-requisite to studying ultrasound. Within this meta-theme, these issues were divided into two high order themes (a) background matters and (b) background does not matter. These are addressed in turn, with reference to participants' comments.
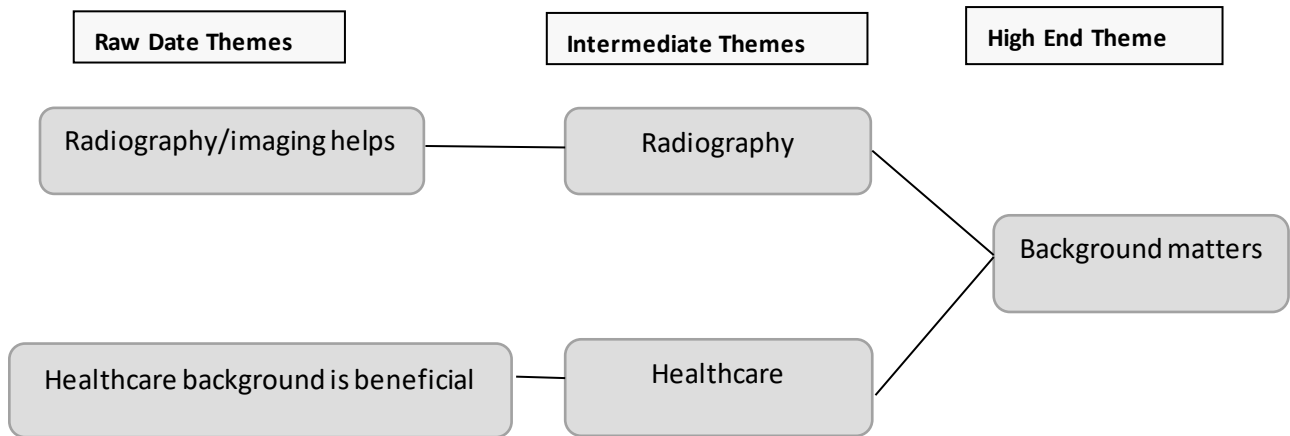
Raw Date Themes	Intermediate Themes	High End Theme

Healthcare background helped

Lack of patient contact proved a challenge

Patient care

More input required in regards to hospital systems

Understanding HC issues

Knowledge of imaging helped

Understanding of imaging

Background matters
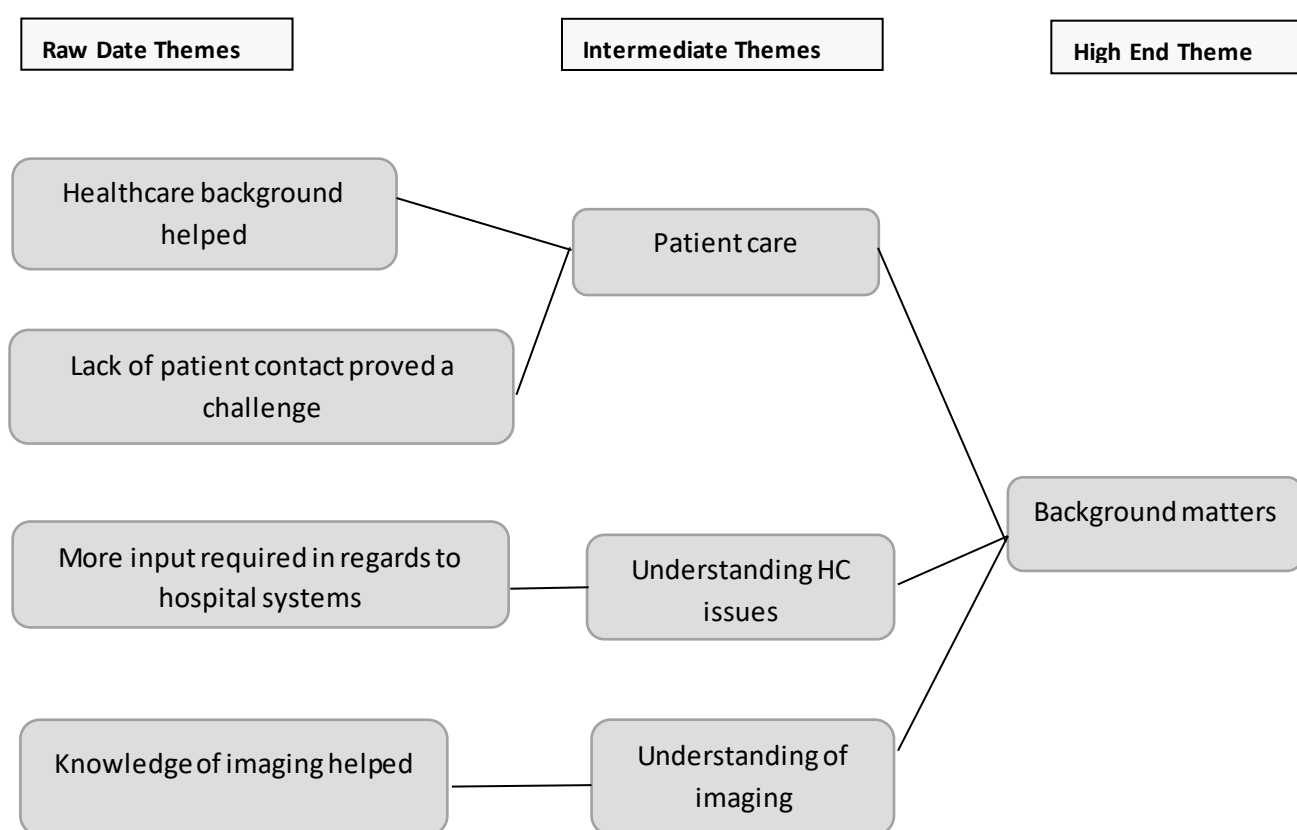
Figure 3: Background of Students (clinical leads) – Matters

Issues were highlighted in regards to some of the students ability to adapt to the healthcare environment specifically in regards to interaction with patients and patient contact, it was noted however that the student worked hard on this area of patient care to reach the expected level. Understanding healthcare systems and imaging systems was also mentioned as a limitation in regards to the students' previous backgrounds. There was overall agreement that a healthcare background certainly helped the students in their early training but overall radiography was not deemed a necessity, more a bonus.

The only disadvantage I would say – it's only minor and [the student] has worked on it brilliantly was [the students] interaction with the patients, because [the student] worked in a scientific background where they don't interact with patients.

The only unexpected challenge for our student was the fact that she hadn't been in a patient facing role before.

There is a little more input required with the direct entry students with regards to the hospital systems so I think the team has had to adapt a little bit in that respect.

Her background certainly helped because she used to work as a radiographic assistant.

Even though she was not a radiographer, she worked in a radiology department, so some of the knowledge that she would have gained from that has helped.

Our student was well prepared for the clinical environment because [she had] come from a clinical assistant background. I think that if that had not been the case we may have found the integration into the clinical environment much more difficult.

I think knowledge of imaging helps, you just know the pathways but I don't think it has had any detrimental effect.

In terms of the students opinions on previous background not mattering core themes are represented in Figure 4 (below)

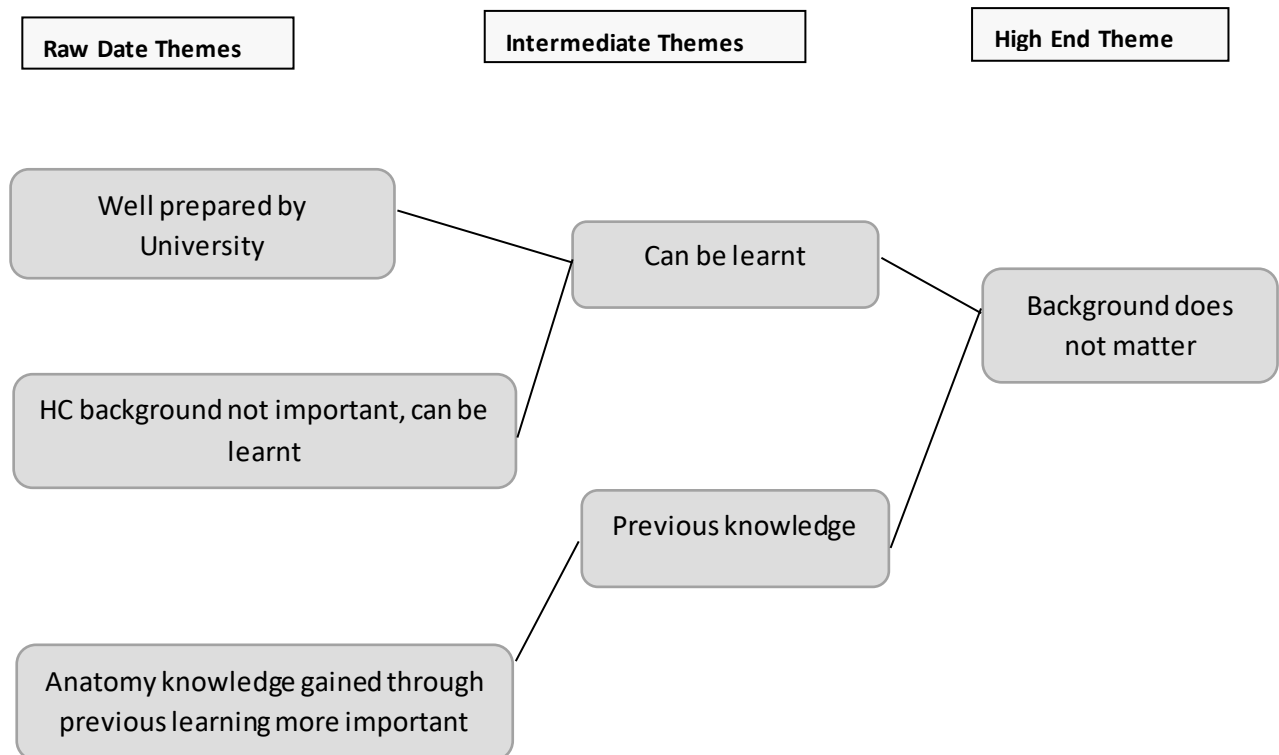Radiography background is not required

Radiography

Healthcare background is not required

Healthcare

Background does not matter
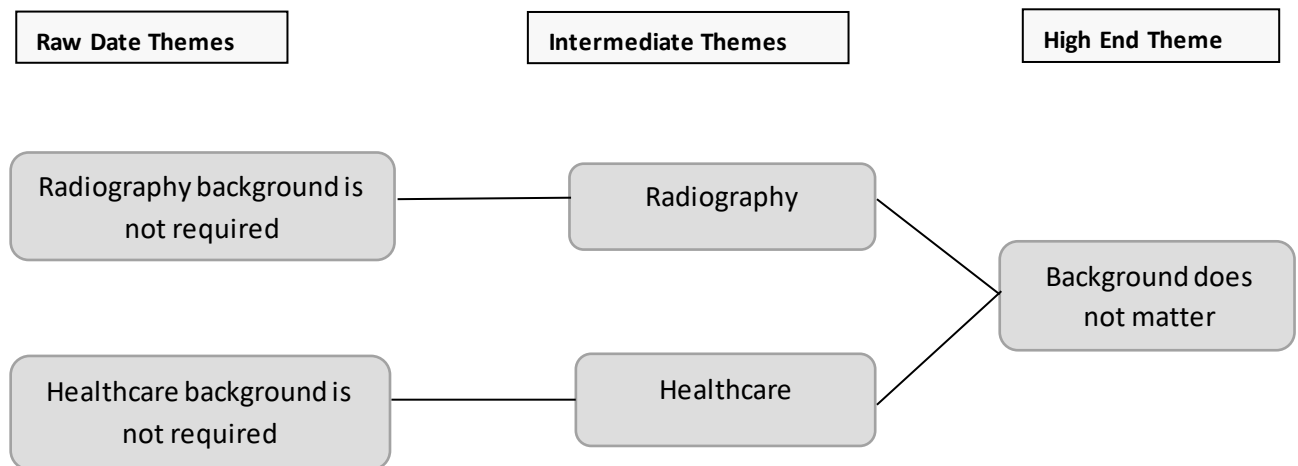
Figure 4: Background of Students (clinical leads) – Does not matters

Although most clinical leads felt that the background of the students was relevant to their training in ultrasound some did not. Indeed some respondents felt that neither a radiography background nor a healthcare background was required but no reasons to support this were offered.

Our student is a very capable student who can scan so the fact that she is not a radiographer is completely irrelevant

You don't need to be a radiographer to learn how to do ultrasound.

Not being from a healthcare background is certainly not a bar to studying ultrasound.

3.1.2 Initial expectations/concerns

The next major theme to emerge from the participants interviews relates to the initial expectations the students and clinical leads had prior to the course commencing. This is a new route into ultrasound and many sonographers have been voicing concerned in regards to how this will affect the existing, traditional route of training employed, healthcare practitioners into this role.

Considering the findings from the students' interviews, which are schematically outlined in Figure 5 (below) it is evident that there were numerous concerns prior to commencement with none of the student participants reporting no concerns at all. These concerns however, were overall more related to embarking on a master's level programme of study, which could be argued is common in all students studying at this level.

Raw Date Themes	Intermediate Themes	High End Theme

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HCPC Registration ──────── Employability ──┐
                                            │
Learning a new skill ──┐                    │
                       ├── Ability ─────────┤
Workload, keeping up ──┘                    ├── Concerns
                                            │
Meeting new people ──┐                      │
                     ├── Fitting in ────────┘
First cohort on this ┘
new course
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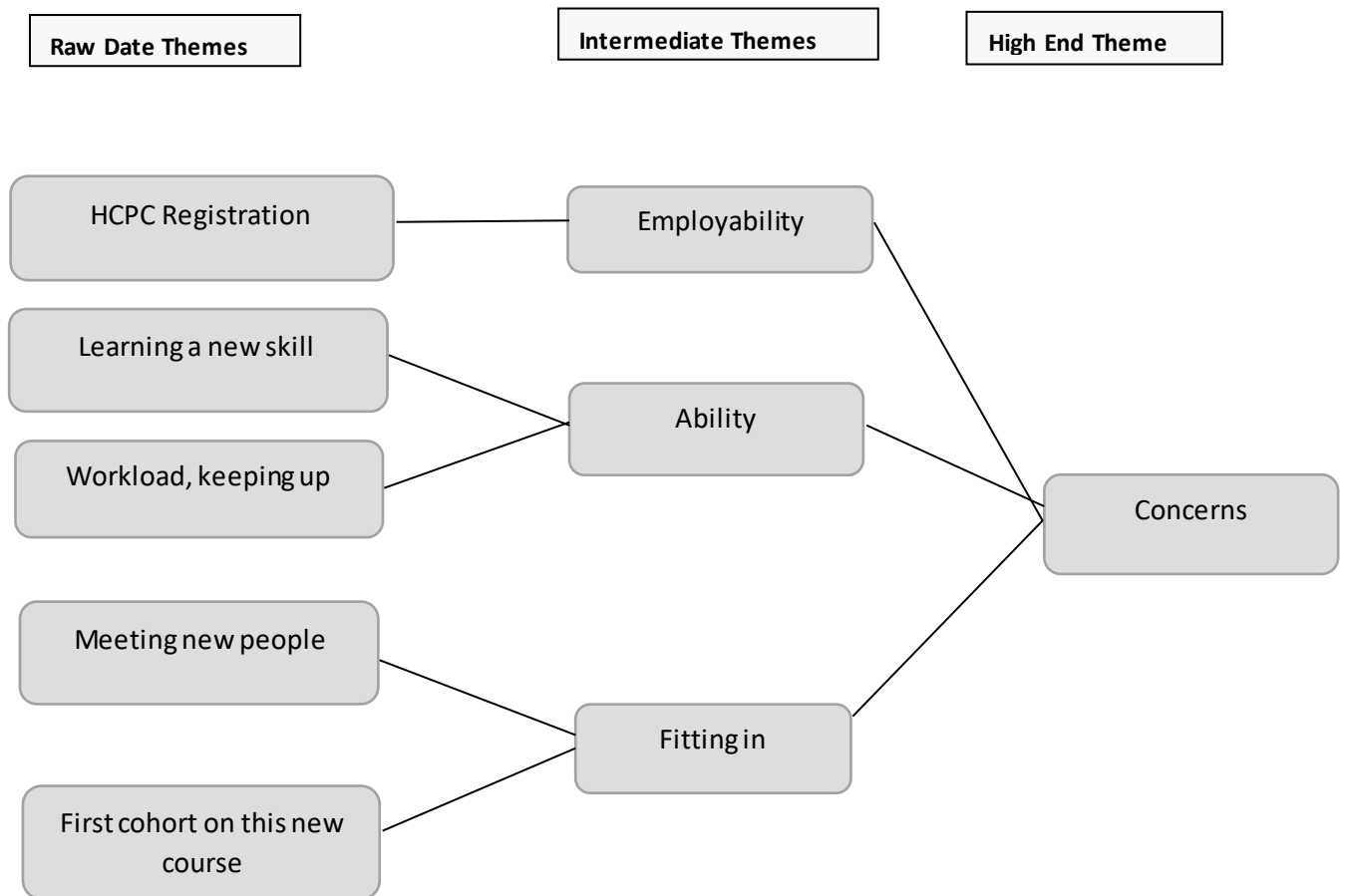
Figure 5: Initial expectations/concerns (students) – Concerns

Concerns were raised in respect to the issue surrounding HCPC registration or lack of it; this was felt to be a limitation when looking for employment at the end of the course. Clinical and academic workload were also raised as a concern due to the accelerated nature of the 2-year Masters programme as well as learning a new skill. Meeting new people is a common worry amongst individuals entering a new work or training environment and one student also

raised concerns regarding being on the first cohort of this new ultrasound educational route, in regards to the welcome she may receive.

The HCPC [issue] was a bit worrying …. Saying that hospitals are more open to it now

My concerns were keeping up with the reading. There was a lot at the beginning

My initial concerns were my ability; I have not been in education for so long.

Am I going to be able to do it, will they think I am rubbish

It's scary learning a new skill

I knew it was going to be a lot of hard work so I was pretty concerned about the workload, and also going into placement and not knowing anybody.

Initial anxieties were being around new people

It was the nervousness of joining a new team

I was a bit dubious with being the first ones, but hopefully I will fit in

It is worth noting that although all the students expressed concerns prior to starting on the programme of study most described also being excited and looking forward to getting started.

I was actually looking forward to it

I was excited

Considering the findings from the clinical lead interviews, which are schematically outlined in Figures 6 and 7 (below) it is evident that there were both (a) concerns and (b) no concerns prior to the students' commencement. It is worth noting here that concerns regarding the student previous background has been discussed in the previous section. There was an even distribution of positive and negative comments and many of the concerns raised mirror the concerns often reported in the literature available on direct entry ultrasound. Concerns elicited from the clinical lead interviews are schematised in Figure 6 (below)

Location of student will they stay?

Increased workload for staff

New route, will it work?

Loss of traditional route

Full MSC so concerns they will be more qualified

Retention

Workload

Change
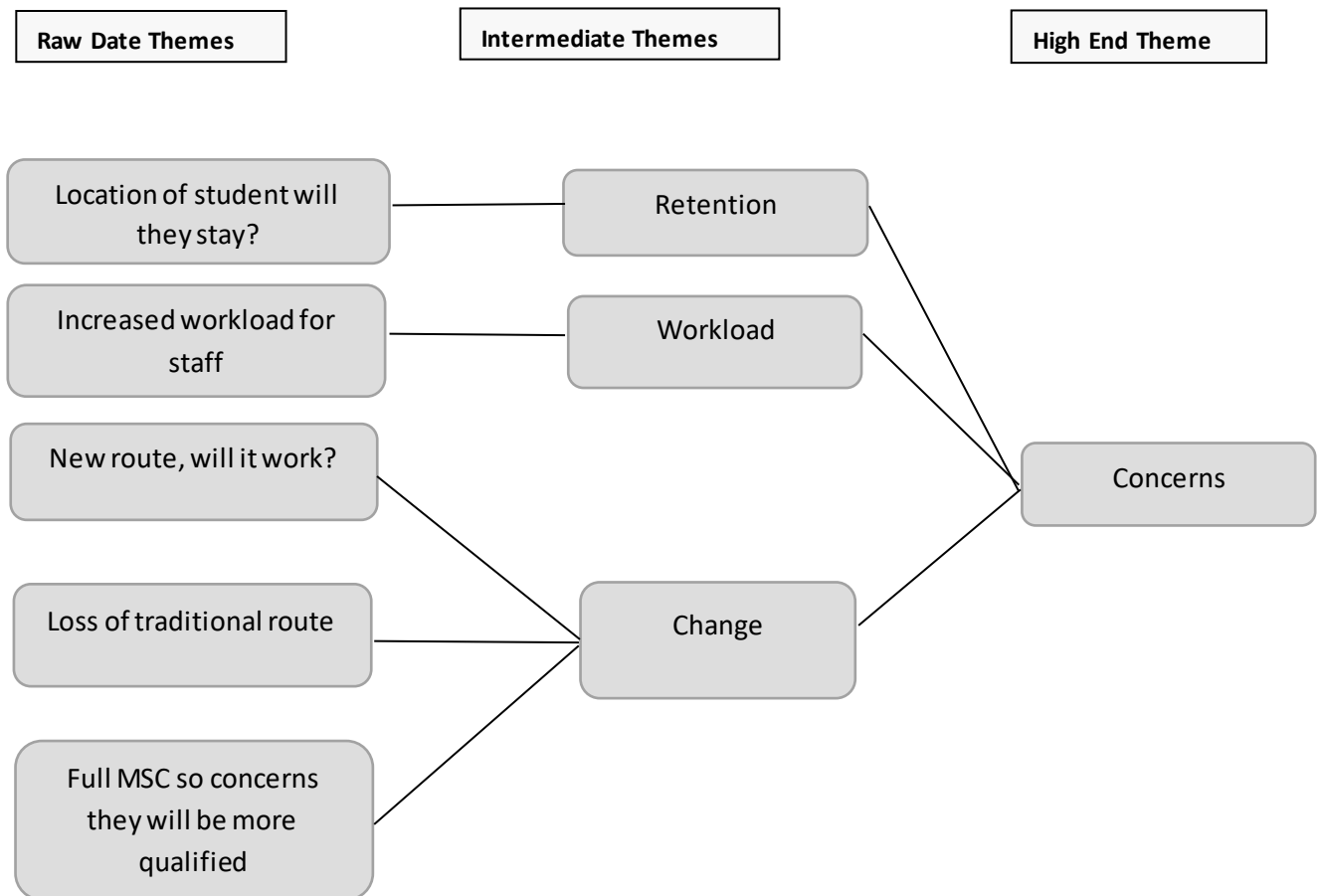
Concerns

Figure 6: Initial expectations/concerns (clinical leads) – Concerns.

Concerns were raised in respect to the geographical location of the students. Several respondents were concerned that if a student was travelling a distance to undertake their training there was the potential for the student to gain employment closer to their home when qualified. This concerned departments as it is widely accepted that clinical departments invest a lot of time and effort into training students it was also suggested that this workload might increase with direct entry students due to their perceived lack of ability as well as the fact that traditional route students were also training at the same time.

There was a bit of negativity as our student was from miles away so there was a bit of 'oh well they aren't going to stay'. A bit of disappointment, that perhaps we wouldn't be able to keep them.

There was a bit of apprehension around us training students and possible not having the benefit of that student [when qualified]

[There were] concerns about what level of teaching would be required [for the direct entry students]

There were some serious concerns [about] the volume of students in the department given that we had also committed to CPD students at the same time.

By far the majority of the concerns were centred around if the new model of education would actually work; a resistance to change was evident throughout the respondents' replies.

There was a lot of resistance to the thought of direct entry.

We we're quite sceptical, we were used to the old route. We didn't know how it would fit in.

[I was] apprehensive as to how it was going to work

I think [my team] were initially sceptical because I think everybody is inherently quite conservative in that they resist change.

It was the unknown, we weren't sure as it was the first intake

Concerns were also raised in regards to losing the traditional route into ultrasound for existing health professionals and the fact that these direct entry students would qualify with a full MSc leading to existing PgDip students feeling in some way inferior.

There was some concern in the rest of the radiology department that we were going to stop any traditional route training.

I think there was maybe slight concern about these students having an MSc, a lot of our team don't have MSc's. I think there was slight concern [that] these students were going to be better in some way

Matters raised by the clinical leads suggesting a lack of concern regarding this new route are schematised in Figure 7 (below)
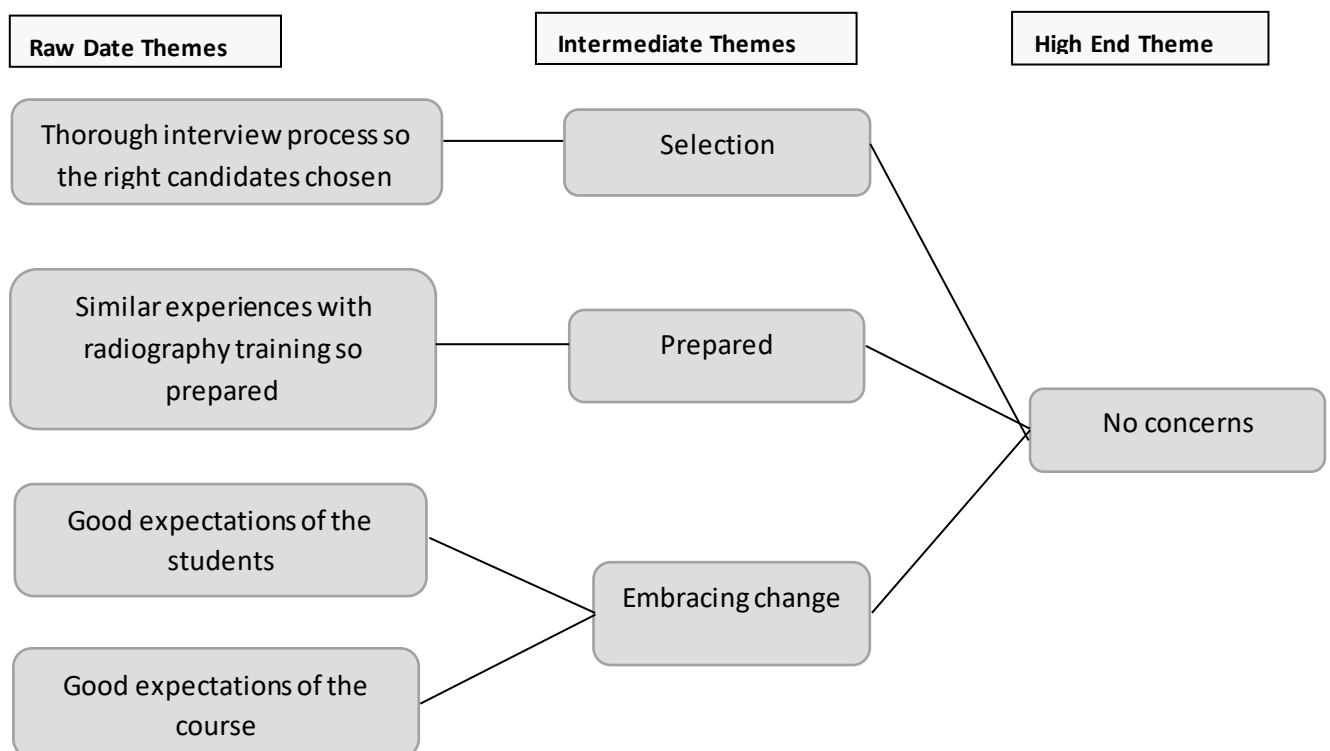
Figure 7: Initial expectations/concerns (clinical leads) – No concerns

Not all clinical leads had concerns regarding this new route, which is evidenced by the fact that they agreed to act as placement sites for these students. Many departments are eager to embrace changes to the education of future sonographers and the rigorous selection process employed reassured the clinical leads that the right candidates had been chosen. In general, many of the clinical leads interviewed had good expectations of both the students and of the course.

I thought everything was going to be pretty straight forward [we had] done a thorough interview process and put them through their paces .. we were going to get students that were going to be OK.

Within the department we had quite a high level of buy in so there were no real concerns from staff.

I knew what we would have and I felt like I knew the programme was going to run well, on paper it seemed fine.

Nobody had any major issues

I had quite good expectations of what we were going to get ourselves into.

My expectations were that we'd get an equally competent trainee out of it

I expected [the student] to be similar to the traditional route, I was expecting them to learn in the same way.

Some clinical leads suggested that the new route would replicate the well established radiography training programme and as such would work well.

[I felt that] the programme would emulate what we do in radiography

3.1.3 Reality

The previous section highlighted the concerns the students and the clinical leads had prior to the commencement of the course so it is important to investigate how it progressed. The next major theme looks at the actually reality of how or if this new model of education worked after the students had commenced the course and established themselves into their training departments. Considering the findings of the student interviews, which are schematically outlined in Figures 8 and 9 (below), the overall feeling, was one of positivity in regards to how the programme of study was going. All students were happy with how well the course was going and felt accepted in their clinical environment however; some did recognise the high workload and felt a little unprepared for the degree of work. Within this meta-theme, these issues were divided into two high order themes (a) positives and (b) negatives. These are addressed in turn, with reference to participants' comments. The positive comments gained from the students interviews are highlighted in Figure 8 (below).

| Raw Date Themes | Intermediate Themes | High End Theme |

```
┌──────────────────┐      ┌──────────────────┐
│ Happy with how it│──────│ Good experience  │
│    has gone      │      └──────────────────┘
└──────────────────┘
┌──────────────────┐      ┌──────────────────┐        ┌──────────────┐
│ Fit in well,     │──────│   Acceptance     │        │              │
│ accepted as part │      └──────────────────┘        │  Positives   │
│ of the team      │                                   │              │
└──────────────────┘                                   └──────────────┘
┌──────────────────┐
│ Well prepared for│
│  the programme   │
└──────────────────┘
┌──────────────────┐      ┌──────────────────┐
│ Clinical         │──────│  Well prepared   │
│ departments      │      └──────────────────┘
│ pleased with     │
│ level of         │
│ knowledge        │
└──────────────────┘
┌──────────────────┐
│ Simulation helped│
│  with clinical   │
│  preparation     │
└──────────────────┘
```
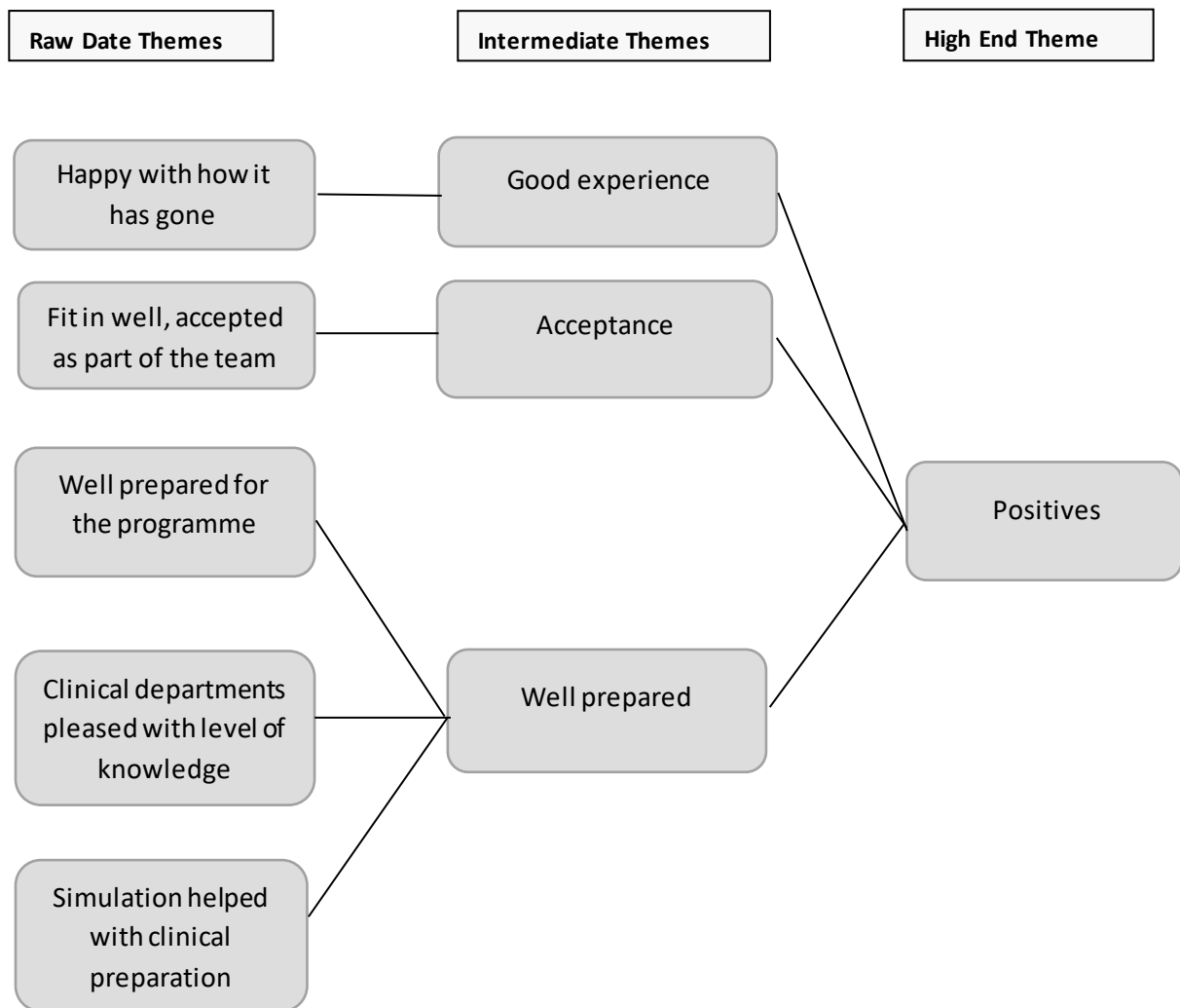
Figure 8: Reality for the students – positives

The student respondents reported a positive experience in regards to their clinical and academic studies and unanimously felt welcomed and accepted in their clinical departments.

I am so glad I have chosen to do it.

It's really interesting and I like learning it all, it's just really exciting, I really like it.

I have been really happy with how it has gone, I think it's smooth running, I think it's gone really well

I absolutely love it, I think every day when you go into work if you come home and you still like it in the end it's good isn't it.

The people I have worked with have been quite open-minded.

The feedback from the students suggested that overall, the clinical departments were pleased with the level of background knowledge and scanning skills and this was attributed to the preparatory work provided by the university and the simulation equipment available. The students were provided with extensive workshops in the University of Cumbria ultrasound skills hub, which consists of several ultrasound machines as well as transvaginal and transabdominal scan trainer simulation units. These were made available to the students during a 6-week induction period prior to clinical placement.

I don't think I could have been more prepared

I think [the clinical staff] were all quite impressed with the amount of knowledge that we came in with.

I think my mentor was quite impressed because I could answer basically all the questions she asked me.

'You know a lot more than we would expect you to know' [comment from clinical mentor]

My mentor was really impressed how good I was at TV scanning already

I noticed when I went to placement a lot of sonographers commented [on my scanning skills] the scan trainers gave me that initial head start.

The simulators were really good because it helped me with the orientation.

The level of work was highlighted as a negative aspect to the programme and one student felt a little overwhelmed in clinical practice in the early stages. These themes are schematised in Figure 9 (below)

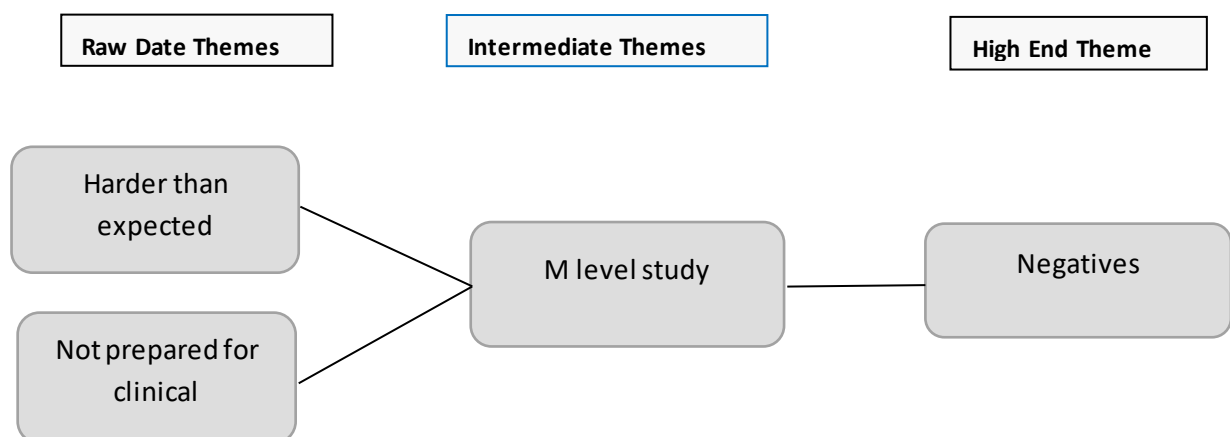Figure 9: Reality for the students – negatives

The academic and clinical level and high expectations of the programme of study surprised some of the students although it was recognised that M level study was always going to be challenging but ultimately worth the effort.

I didn't expect it to be quite so heavy at the beginning because I hadn't been in education for two years before I started.

There was just a lot to do!

I expected it to be a little bit easier that the course actually was, its been hard work but definitely worth it.

Its stressful, I'm not used to so much stress, but I always knew it was going to be hard.

Additionally, one of the students who did not come from a healthcare background noted that they felt underprepared for the clinical environment

I don't think I was as prepared as I would have liked to have been [for clinical placement] I think there was so much to take in and I felt that I was under a lot of pressure. It was all new to me; I haven't been in clinical practice before.

Carrying on with the reality theme, considering the findings of the clinical leads interviews, which are schematically outlined in Figures 10 and 11 (below), the overall feeling was again one of positivity in regards to how the programme of study was going and how the students had adapted to the clinical environment. The respondents felt their students had fit in well and they were happy with how well the course was going. Some negatives were highlighted but these were related to the student's previous backgrounds resulting in some overlap with the data analysed in the previous section. Within this meta-theme, these issues were divided into two high order themes (a) positives and (b) negatives. These are addressed in turn, with reference to participants' comments. The positive comments gained from the clinical lead interviews are highlighted in Figure 10 (below)

Raw Date Themes	Intermediate Themes	High End Theme

```
Student exceeded
expectations ─────── Good students ─┐
                                     │
Seen as the same                     │
as the traditional ─┐                │
route students      │                │
                    ├── Accepted ────┼── Positives
Fitted in well with │                │
the team ───────────┤                │
                    │                │
Opposition has      │                │
faded ──────────────┘                │
                                     │
Very well                            │
prepared                             │
academically and ─── Well prepared ──┘
clinically
                    
Scan trainer
good for clinical
preparation
```
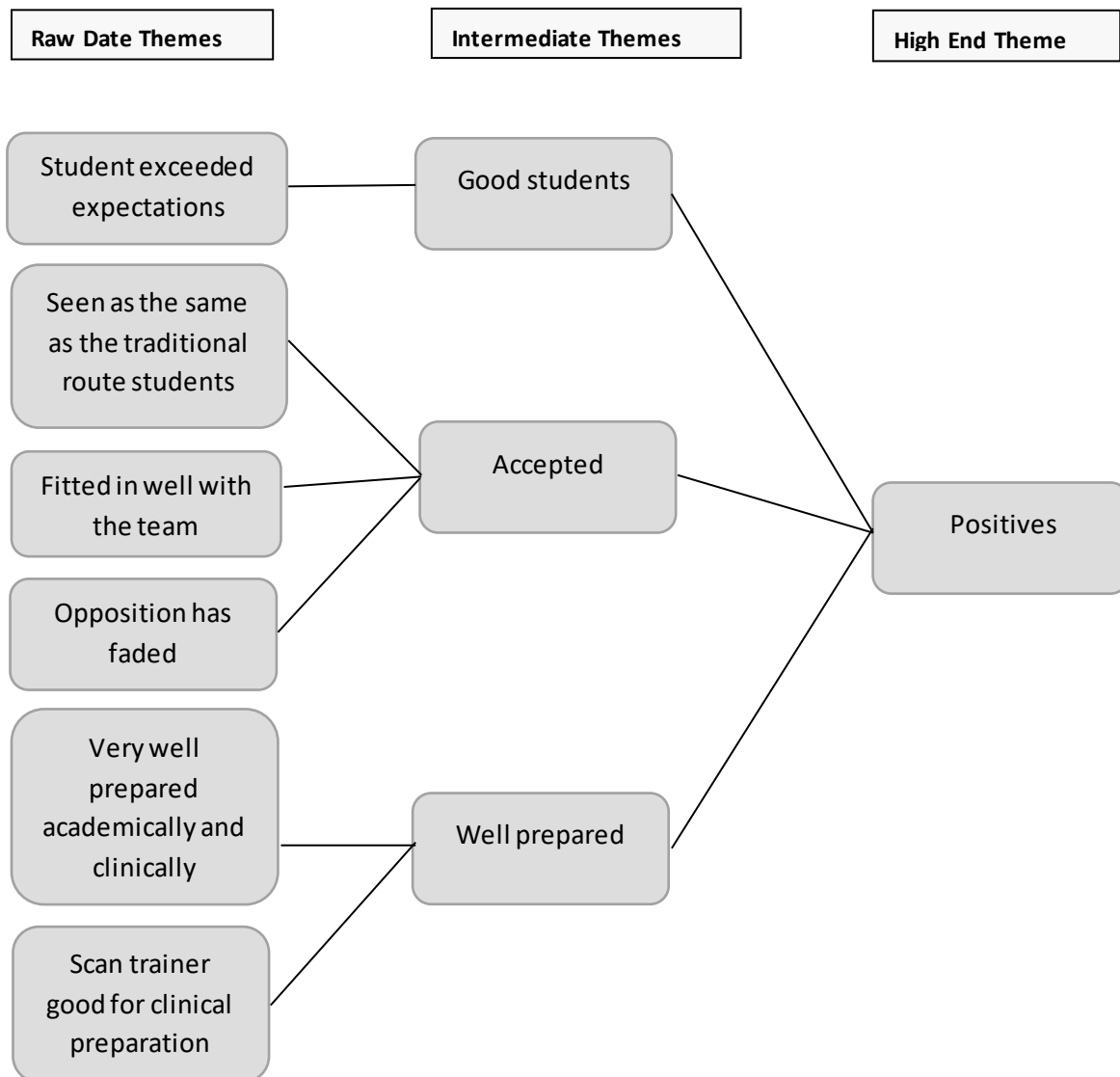
Figure 10: Reality for the clinical leads – Positives

The overall feeling amongst the respondents was one of positivity in regards to the programme itself and the progress of the students. Many of the clinical leads reported a high degree of satisfaction with their students in terms of the ability and attitude.

It's exactly what we were expecting, it's been what we hoped.

Initial expectations were a lot less than what we got – they are very dedicated to what they are doing.

She hit the ground running.

We've actually had some positive compliments from colleagues, radiologists and other support staff around the direct entry student.

She is often praised to me by the team, and compared to some of the other radiography students that are training she's progressing quicker.

Compared to other students at this stage in training she is probably further ahead and more confident, more able.

There was unanimous agreement that the students fit in well in the clinical departments with some respondents suggesting that the high standard of the direct entry students had helped to ease initial concerns and quash and opposition to this new route of ultrasound education.

We don't differentiate between her and the other qualified radiographers that we have as students.

We had three students when she started and they have all blended in quite well.

I don't think the team have noticed any difference to be honest.

I think [the team] have embraced it really. I don't think they've had any qualms because our direct entry student has fit in so well.

The things that we were maybe worried about have started to settle and I think will continue to settle, as we get further down the road.

I think the opposition that was there has faded as we've got to know out student and know how capable she is.

As our student has progressed [the teams], opinion has started to change and they're now very supportive of direct entry.

Another factor that was highlighted related to the progress of the students was how well prepared they were for the programme of study. Once again, the respondents recognised that the academic teaching and the clinical skills hub at the university had a part to play in this.

The standard of scanning and the standard of knowledge that our direct entry student has is excellent.

She was very prepared in many respects; she was probably better prepared than our employed students.

We were all very surprised at the standard they came in at, she seemed very knowledgeable and scan wise she knew how to use a transducer. She came in above where we expect a radiography student to start.

[The student] was well prepared; she came in knowing what to do with the machines and her anatomy …. and a good basis of how to scan.

She had a very good foundation knowledge and it became very apparent that [she had] some experience by scanning on the simulators.

[The student] was a lot better than anticipated, I put it down to the scan trainer really, she was already that three steps ahead.

Isolated negative themes emerged from one of the interviewees but as previously discussed these related more to the previous background of one of the students. These issues are schematised in Figure 11 (below)
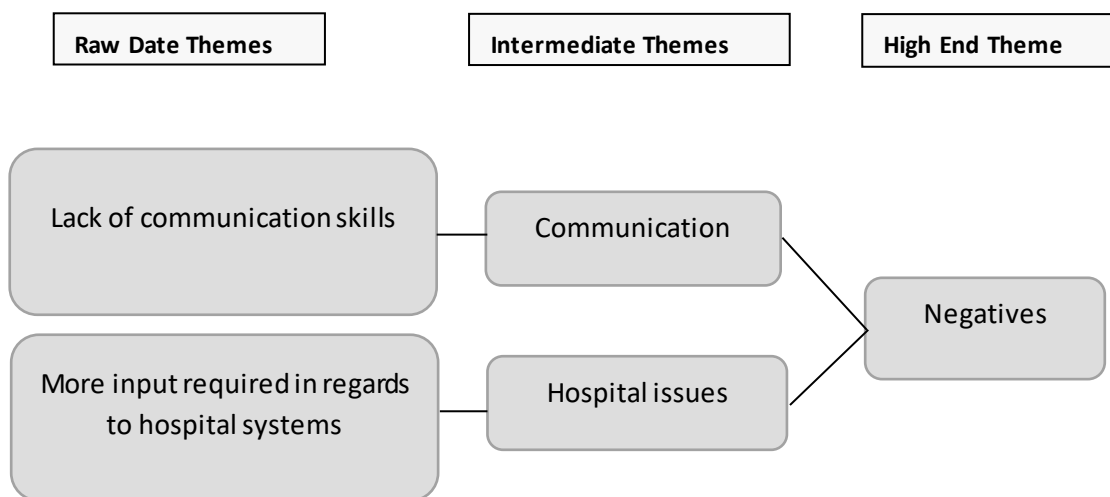
Raw Date Themes   Intermediate Themes   High End Theme

Lack of communication skills — Communication

More input required in regards to hospital systems — Hospital issues

Negatives

Figure 11: Reality for the clinical leads – Negatives

She hadn't been in a patient facing role before so we did quite a lot of work regarding how to deal with patients, how to communicate rather than just scanning. I think the communication thing was a challenge.

There is a little more input required with our direct entry student with regards to hospital systems so the team had to adapt a little bit in that respect.

3.1.4 Workload (Academic and Clinical)

The next emergent theme arising from the analysis of participants' feedback relates to the issues of workload associated with a two-year vocational accelerated MSc programme. The process of studying at Masters level at the same time as learning a new clinical skill is well documented as being challenging with high anxiety and stress levels reported extensively in literature.

Considering the findings elicited from the student interviews, which are schematically outlined in Figures 12, 13, 14 and 15 (below), there was an even distribution of opinions on whether both the academic and clinical workload was manageable. It was apparent that overall, the students found the clinical objectives of the course more manageable but it could be argued that this is related to the fact that they enjoyed this aspect of the course more.

To gain a useful insight into the opinions on the workload associated with the academic and clinical sides of the programme this section will be separated in to two meta themes, academic workload and clinical objectives.

Within the academic workload meta-theme, these issues were divided into two high order themes (a) manageable (Figure 12) and (b) not manageable (Figure 13). Within the clinical objectives meta theme these issues were divided into (a) achievable (Figure 14) and (b) challenging (Figure 15). These are addressed in turn, with reference to participants' comments. The findings elicited from the feedback in regards to the academic workload being manageable are highlighted in Figure 12 (below)

| Raw Date Themes | Intermediate Themes | High End Theme |

Expected level of workload for 'M' level

Able to keep up with deadlines

Prepared for workload

Academic assignments spaced out

Given enough time for academic work

Course structure

Manageable

Lots of support

Provided with adequate information

Enough support

Provided with study time/breaks
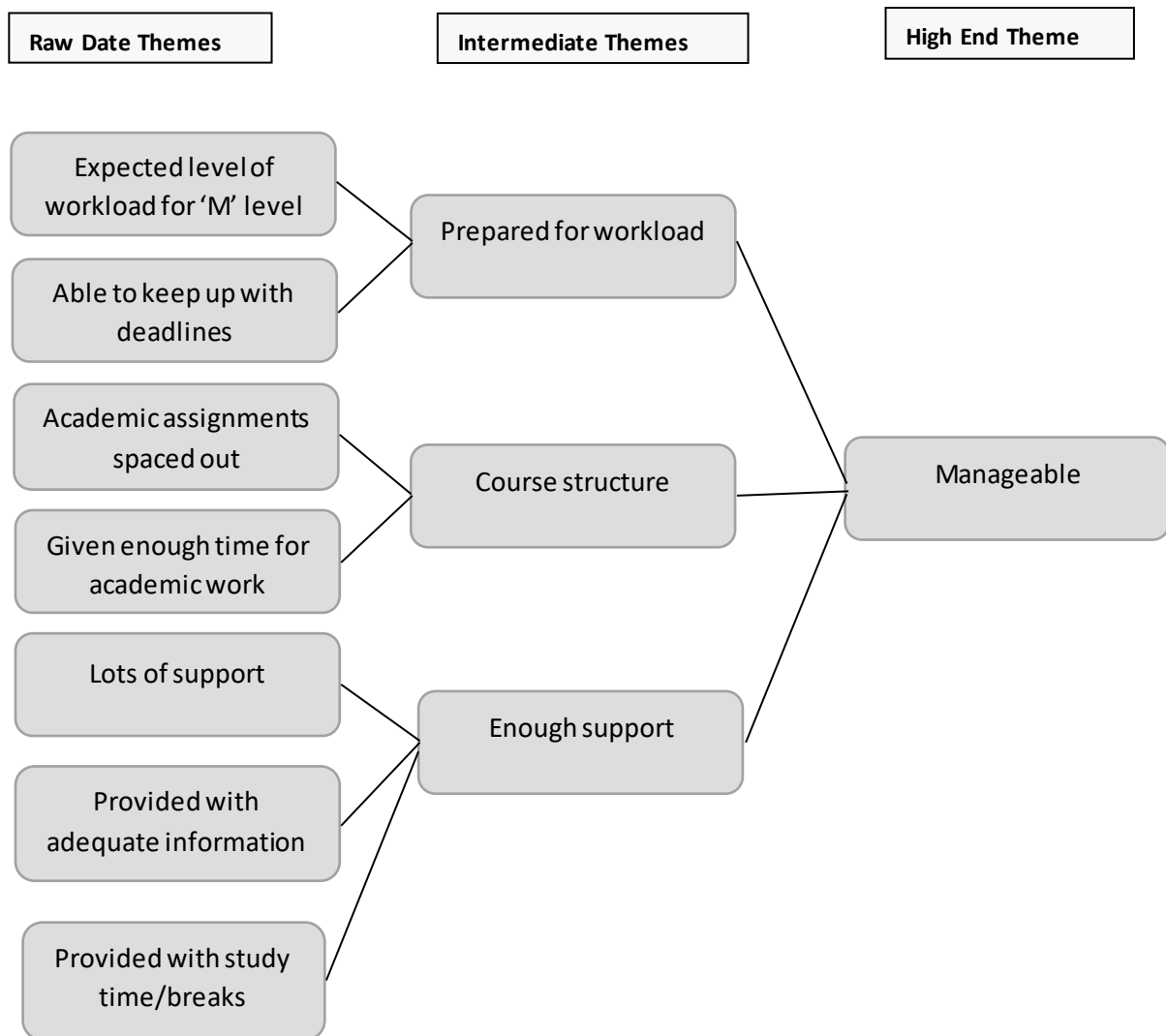
Figure 12: Academic workload for students – Manageable

It was agreed amongst the respondents that the academic workload was challenging however, some of the students were accepting of this and felt they were able to manage this workload and keep up with the deadlines. It was noted that the course structure allowed ample time between assignments to ensure enough time was given for completion.

I do find it difficult but I knew I would so it wasn't something I wasn't expecting.

It [academic workload] was a lot but I would expect it to be its Masters. I've been able to keep up with the deadlines.

I feel I've done really well academically; they were spaced out well enough for us to achieve realistic goals.

The actual [academic] workload I've found fine.

I don't think I've struggled with the academic work really.

Now I've got into the swing of things its ok.

Once you know what you have to do you can plan your time effectively.

Another important factor that arose from the student interviews was related to the support provided in regards to study time/breaks, academic support and preparatory teaching. Many of the respondents felt this aspect of the course helped them achieve their academic goals.

The dissertation was a bit of a rush but we had enough time off.

I have had a bit of a break over the summer; I think I really needed a break

Going home, having a breather made a big difference

Academically I do feel I have had the support [from university] with my assignments

The first academic block we did learn loads and that was beneficial in lots of ways.

We learnt quite a lot in the first block, even coming back we've had a recap on everything, it just shows how much we know, we learned all the pathologies leading up to the exam.

The academic stuff we'd done, that load of information we'd got it really helped.

High stress levels were widely reported in the student's feedback in response to the academic workload, for a variety of reasons. The issues relating to the struggles associated with the academic workload are schematised in Figure 13 (below)
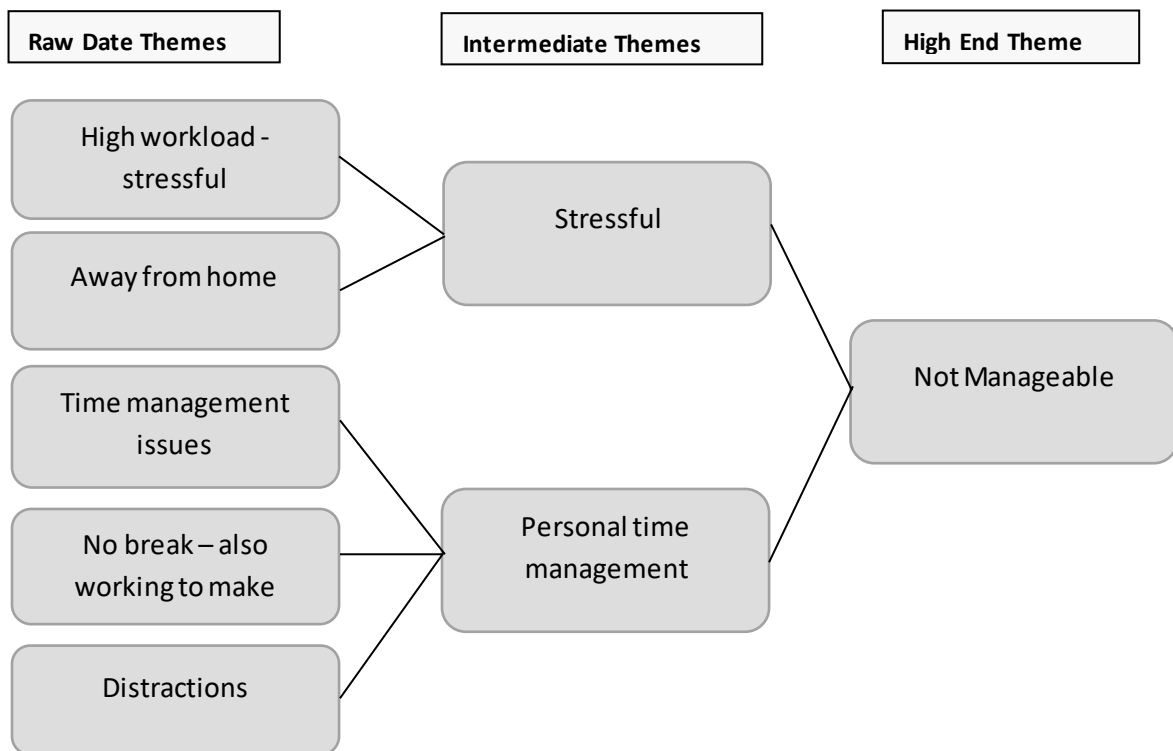

Figure 13: Academic workload for students – Not manageable

Although the students accepted that the academic workload was always going to be high some did find it more stressful and in one case this was exacerbated by the fact that the student was living away from home to undertake their studies.

I was so stressed with [the academic workload], it just seemed so much.

[The academic workload] stresses me out a lot, I still get that panicky feeling

I am also away from home so that adds to the stresses.

Some of the students found that keeping up part time work to help with financial struggles added to the workload stresses. Whilst other students admitted that, their own time management issues and distractions affected their academic performance.

It has been tough honestly, you feel like you're on a conveyor belt, you can't really have a break. I've also wanted to earn money so I've not had a day off this year yet.

Academically I do struggle and it was time management, managing my assignment, hand in two in one day was a struggle for me.

I did not manage my academic workload to the best of my ability

I've always found academic work quite hard, to get that balance between home life and work life, I get distracted very easily.

The data elicited from the feedback in regards to the clinical objectives being achievable are schematically represented in Figure 14 (below)

| Raw Date Themes | Intermediate Themes | High End Theme |

No issues, found them achievable

Formative assessments helped to prepare for summative assessments

Well organised which helped in achieving goals
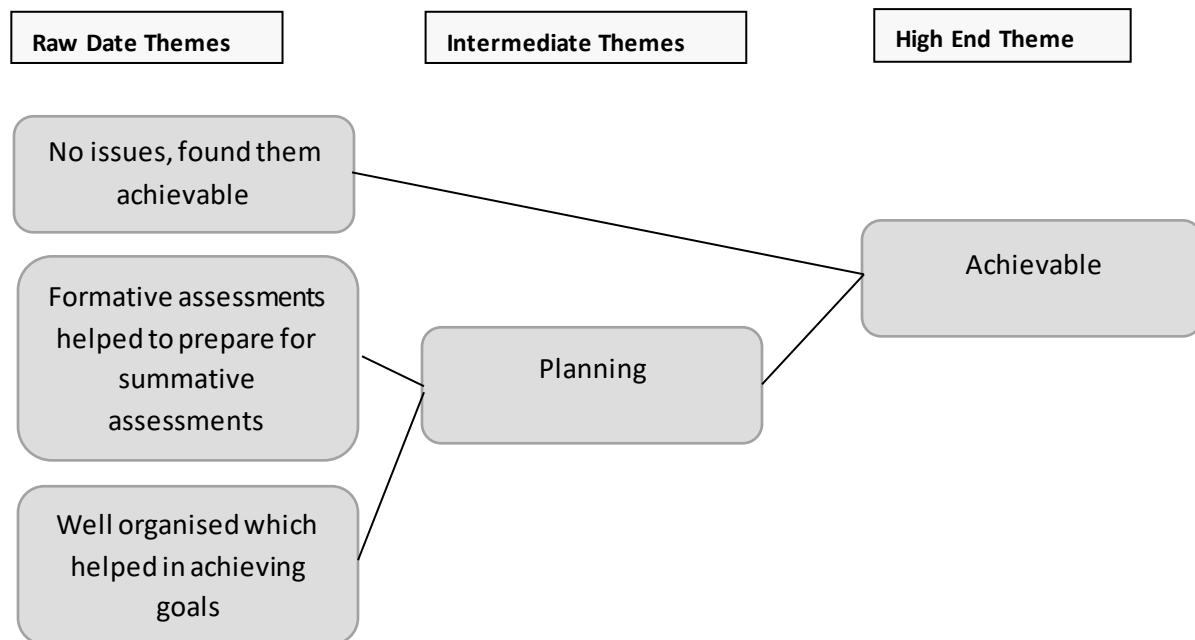
Planning

Achievable

Figure 14: Clinical workload for students – Manageable.

Some students reported that they encountered no issues at all with the clinical objectives of the course and found them achievable.

I've found [the clinical objectives] quite achievable.

I think they are achievable, I think I can do it

Clinically I think I am quite comfortable with the scanning

I think the [clinical assessments] are quite fairly set

I found them very achievable

The students were expected to undertake several practice or formative assessments prior to their final summative assessments and this was highlighted as a useful element to the clinical programme in ensuring the clinical objective were achievable

I think the formatives prepared me quite well for the summative's because I panic quite a lot.

One student felt that their clinical department was well organised in their approach to the clinical objectives and this really benefited them.

My clinical assessments have been really organised, which has helped me.

The issues relating to the struggles associated with the clinical objectives are schematised in Figure 15 (below)

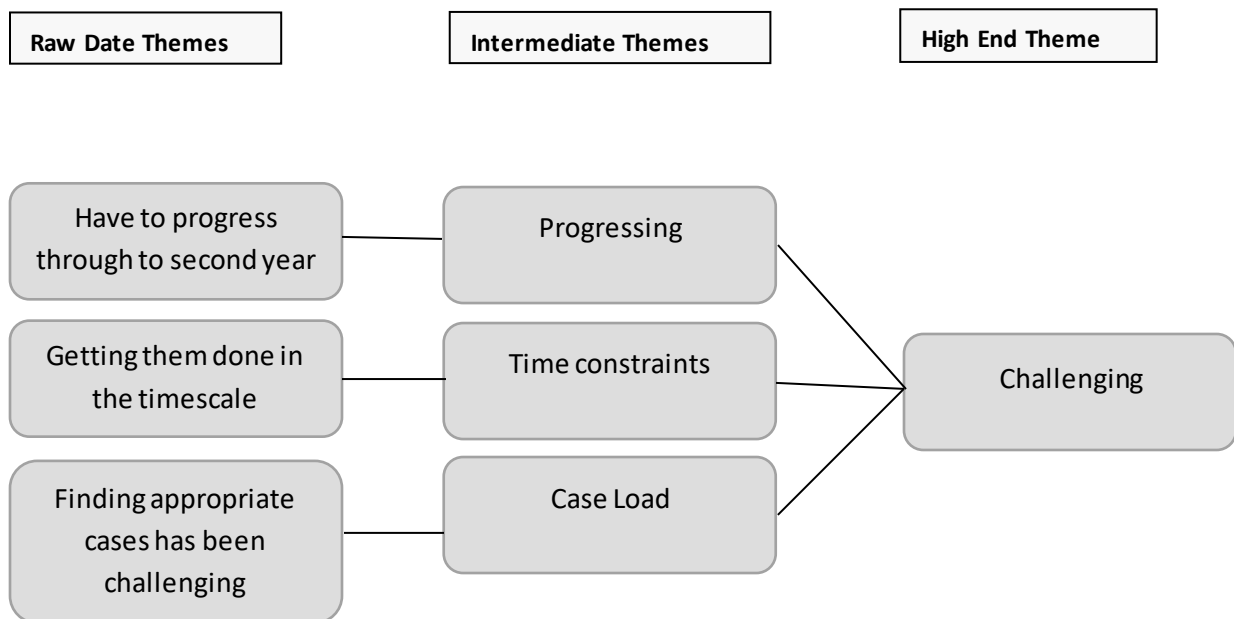| Have to progress through to second year | Progressing | |
| Getting them done in the timescale | Time constraints | Challenging |
| Finding appropriate cases has been challenging | Case Load | |

Figure 15: Clinical objectives for students – Challenging.

Analysis of the data gained from the students suggested that there were challenges associated with the clinical assessments but these tended to be related to time scale and caseload issues rather than clinical ability. No students reported that they did not feel clinically ready to meet the clinical objectives. The students were allocated their required summer break and with academic teaching blocks on top of this, some felt this left limited time to arrange and undertake their clinical assessments.

I think there is quite a lot of concern between us about getting the clinical assessments done [on time]

I am getting quite concerned about the summatives though, about getting them in on time

I've just not found the time scale achievable. Not because of my ability but because of how the clinics works.

The clinical assessments were designed to be very prescriptive in terms of the range of scans that had to be undertaken to confirm final competency. Some of the clinical placements are large, specialist teaching hospitals whilst others are district general hospitals and as such, the caseload in each placement did vary. This led to issues when trying to arrange clinical assessments for some students.

The nature of the hospital I am at [means] finding patients to scan has been a bit challenging

Finding the right patients was a bit hard, it wasn't that I was struggling to achieve it was just struggling to find patients.

An additional issue raised by one student related to the fact that the students had to meet certain clinical levels at the end of the first year, in order to progress into year two. This student felt that this added extra pressure on the direct entry students, which was not the case for the traditional route students.

I think our course actually has been a little bit harder because with assessments we've had to progress

I think it is relevant to include the opinions of the clinical leads in relation to the clinical objectives. Clinical education is facilitated by the placement departments, and they managed this aspect of the programme, so it is important to consider their opinions on this theme.

Considering the findings elicited from the clinical lead interviews, which are schematically outlined in Figures 16 and 17 (below), there was overall general agreement that the clinical objectives were achievable and that the students had progressed well clinically. Concerns

were raised around the issue of the students progressing in to the second years as well as time limitations and hospital patient caseload.

Within the clinical objectives meta-theme, these issues were divided into two high order themes (a) achievable (Figure 16) and (b) challenging (Figure 17). The findings elicited from the clinical leads feedback in regards to the clinical objectives being achievable are schematically represented in Figure 16 (below)
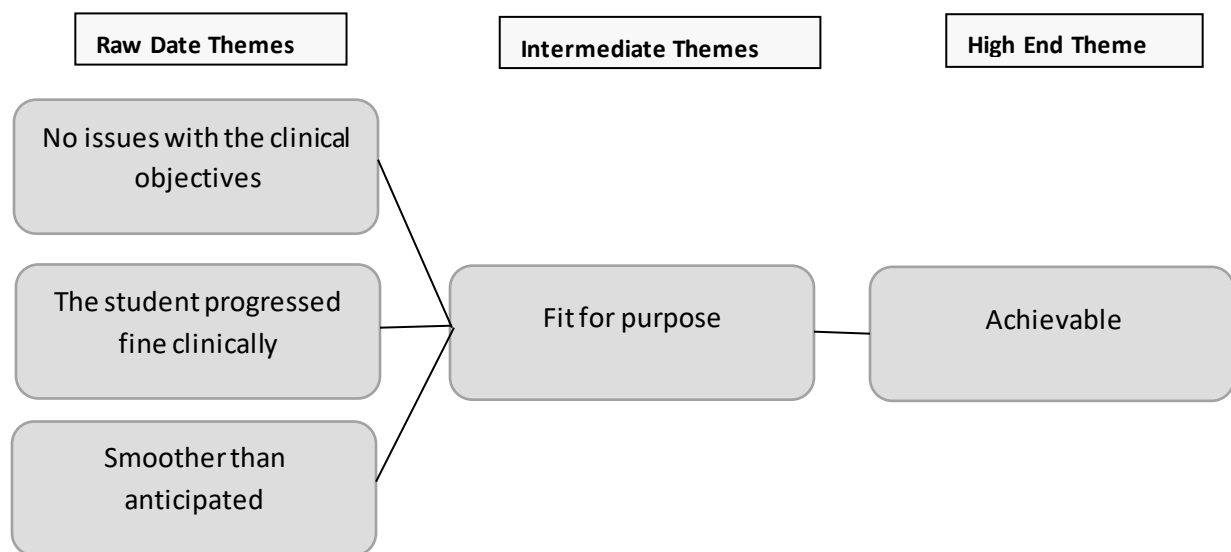

Figure 16: Clinical objectives for clinical leads – Achievable.

Overall, the clinical leads agreed that their students had progressed well on the course and that the clinical objectives were fit for purpose.

The course has not led to any problems with the student progressing clinically

There have been no issues in terms of the [clinical] objectives

[The student] is clinically capable and making good progress across all aspects of her clinical activity

[The student] is progressing well, very well actually

Clinically [the student] is excellent, absolutely excellent. I have no concerns I am sure she will fly through the summative assessment.

In terms of the clinical objectives I think that we have found them more than fit for purpose

One clinical lead found the clinical assessments and objectives actually ran smoother that anticipated

I have found [the clinical objectives] fine to be honest, in fact a lot smoother than I would have anticipated.

Issues were raised by the clinical leads in resects to the clinical objectives and these are schematised in Figure 17 (below)
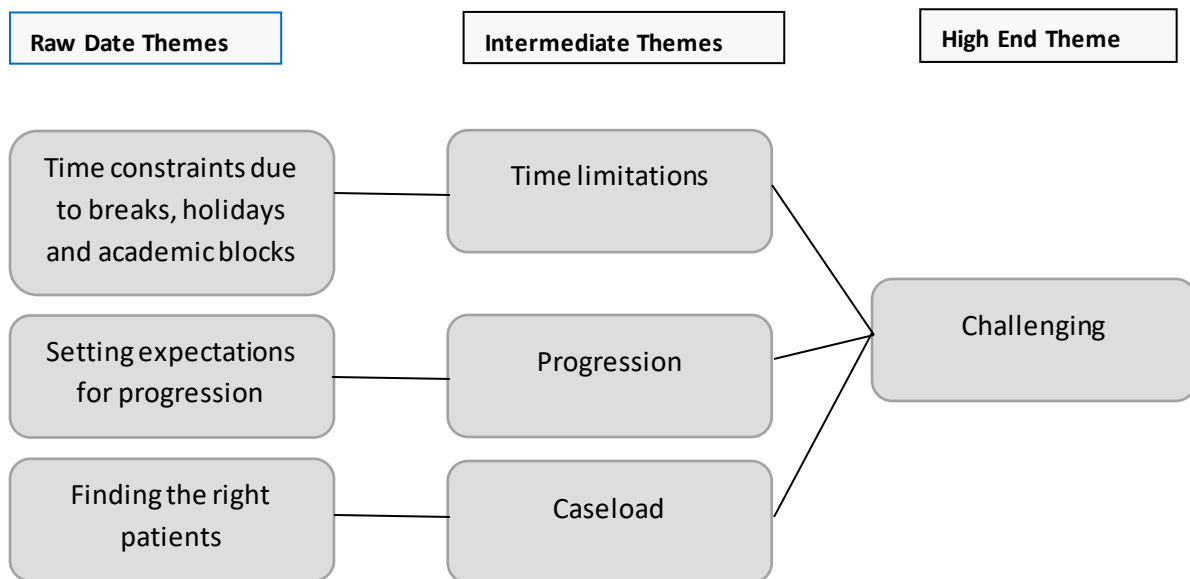
Figure 17: Clinical objectives for clinical leads – Challenging.

The most widely reported challenge related to the clinical objectives was time limitations in the build up to the clinical assessments at the end of the first year. As mentioned previously the students had their holiday entitlement in the summer and any other breaks allowed in the timetable. In addition to this, there was also a two-week academic teaching block to attend. This led to concern amongst some of the clinical leads that there was not enough time allocated to preparing the students for their clinical assessments.

There were some concerns that they weren't going to have enough contact time in the department to be able to meet their assessments

[There were] some challenges in terms of the clinical time scanning, particularly because there was a long holiday break and long blocks of non-clinical attendance … on occasions we have taken two steps forward and one step back [clinically] during those periods

We have found the clinical assessment target dates a bit of a challenge based on how the clinical assessments fit in with the timetabling of attendance at the university

[There has been] quite a big block of holidays and then they've had reading weeks, and then gone back to college for another big block which cuts down time quite a bit for us to do their summative.

Another challenge that emerged from the data pertains to the issue of progressing from the first year into the 2nd year. Traditionally, our ultrasound students are required to undertake final summative assessments in the relevant clinical areas at the end of the training period to assess final competency to practice. It was decided when developing the direct entry programme that students would be required to undertake assessments at the end of the first year and these had to be successfully passed in order to progress in to year two. This was achieved by asking the departments to assess them on the fundamentals of each area at this point and this proved challenging as the concept of 'fundamental scanning' was new to the departments. Some struggled to know what level was expected at this stage and felt more clarification was required.

[Need to] tweak the clinical levels and make it clear what we are expecting at each point

I think we've had to use a bit of common sense about what we are going to expect of them in less than 12 months

Maybe we need to find a different way of wording some of the assessments so that assessors are very clear we know [year one assessments] are non-qualificators

It's very difficult sometimes to say that someone has passed an assessment when we know there is still a big gap in their knowledge

When you're assessing them on being partly competent, that was the bit that was more difficult

As previously discussed the clinical placements ranged from large, specialist teaching hospitals to smaller district general hospitals (DGH) and this led to some challenges for the DGH placement hospital in regards to finding appropriate patients for the more complex scans required for assessment at the end of year two.

In a district general, it is very hard to get a twin pregnancy so it's difficult finding the correct patient sometimes

3.1.5 Support

The next theme to arise from analysis of participants' feedback relates to the topic of support, both clinical support and support available from the academic faculty. Due to the accelerated nature of the direct entry programme, ensuring the appropriate support is available to both the students and the clinical departments can be fundamental to ensuring the programme is successful. Feedback elicited from the student data is thematised in Figures 18 and 19 below. It is evident that overall, the students were happy with the level of support they received with issues noted in regards to academic assignment feedback and support. Within this meta-theme, these issues were divided into two high order themes (a) Adequate support, and (b) Support was lacking. These are addressed in turn, with reference to participants' comments.

Clinical co-ordinator role very supporting

Clinical co-ordinator

Academic support good

Adequate support

Supportive clinical department

Well supported
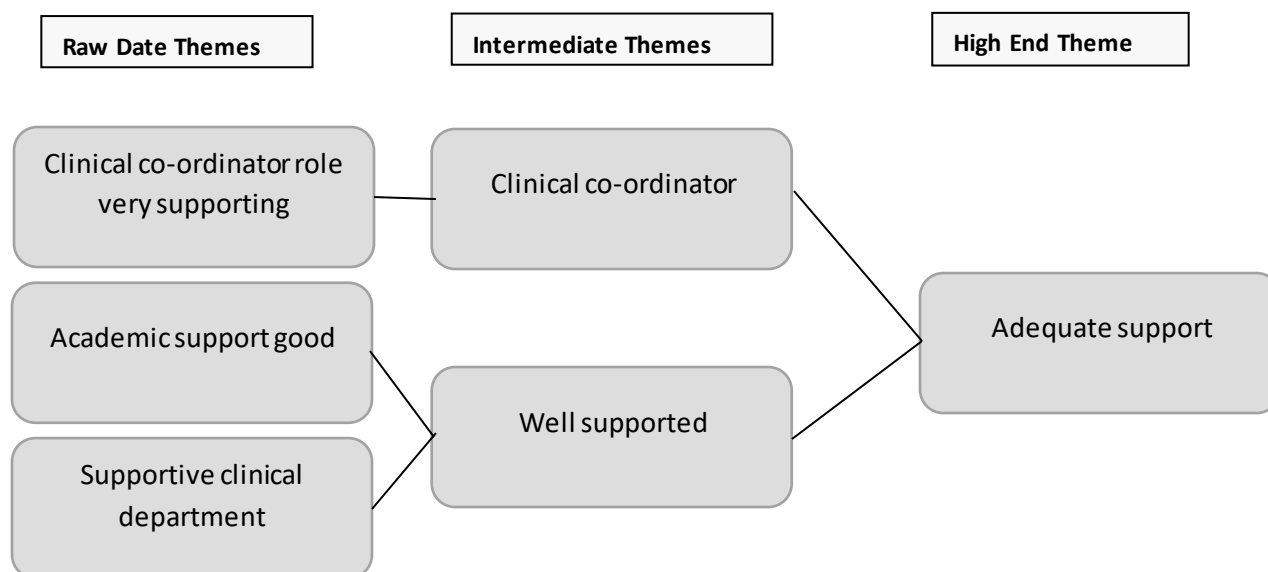
Figure 18: Support for students – Adequate support

Overall, the students were satisfied with the level of academic support they received from the university and felt the faculty were approachable and contactable when necessary.

I've found [university staff] really approachable and if I've needed anything, even on placement we can email with any concerns

[Academically] I found it really good, anything I asked I just emailed and they've always replied

I've found that everybody [academically] has been really supportive and there for us …. Everyone responds really quickly

I feel academically you have all been great, any problems I've had I've been able to approach you all, you've all been really supportive

[Academically] we've had ample support so it's helped in that respect

The students unanimously agreed that the clinical departments were supportive and welcoming with no issues raised in this respect.

My [clinical department] is really supportive and they're all really helpful whenever I need extra help

Both my [clinical] mentors have been lovely, they couldn't have done more to make me feel welcome

[Clinical staff] have all been really supportive and really welcoming and I feel like one of the team here

Clinically they have all been absolutely fantastic, they've been really understanding, I can't praise them enough

[The clinical department] have treated me as a member of staff

An additional aspect that came through in the analysis is the benefit afforded to the students by the appointment of a clinical co-ordinator. This role was developed as part of the initial funding provided by HENW, the aim of this role was to offer additional clinical support to the ultrasound departments and the students and to build good links between the placements and the university.

[The clinical co-ordinator] coming out to placement has really helped

Having [the clinical co-ordinator] around has been really beneficial

[The clinical co-ordinator] would be there to support us and would come round and speak with our clinical leads and work out any problems

[The clinical co-ordinator] has been a go between for placement and university. Someone that I can just go to that will definitely sort it out

If I've got an issue in clinical placement I think [the clinical co-ordinator] is quite useful in sorting it out, it gives me the reassurance that it will get done.

In terms of the students opinions on areas where support was lacking core themes are represented in Figure 19 (below)

Raw Date Themes	Intermediate Themes	High End Theme

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Assignment feedback
can be harsh            \
                         Academic  ———  Support lacking
Lack of support in some /
academic work
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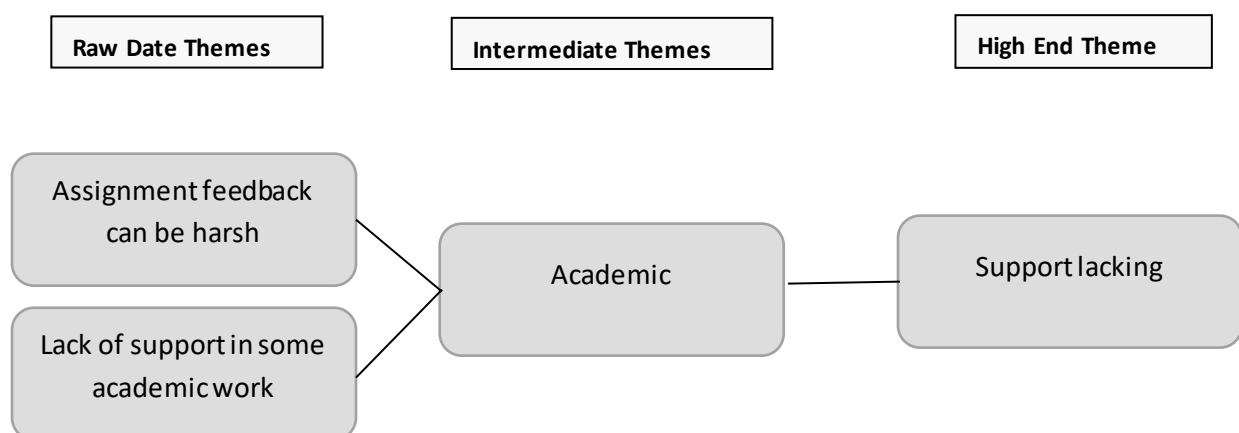
Figure 19: Support for students – Support lacking

Negative comments related to student support centred on the academic support offered with assignments. One student felt the feedback could be a little harsh and another issue that arose pertained to the fact that on some assignments more support would have been beneficial. This however, is a common complaint encountered in postgraduate study and is not necessarily unique to the direct entry cohort.

There were certain things academically that I might have felt a bit lost in, I just thought I might have benefitted with a little more support

Feedback can be quite harsh

I do feel that towards the end months I maybe didn't get as much support academically as I would have maybe liked but it was more personally

Considering the findings elicited from the clinical lead interviews, which are schematically outlined in Figures 20 and 21 (below) overall the clinical leads were satisfied with the level of support they received from the university and the clinical coordinator. Within this meta-theme, these issues were divided into two high order themes (a) Adequate support, and (b) Support lacking. These are addressed in turn, with reference to participants' comments.

| Raw Date Themes | Intermediate Themes | High End Theme |

Good support/contact with university staff

University staff always available

Good contact when clinical issues arise

Clinical co-ordinator role beneficial

Readily available
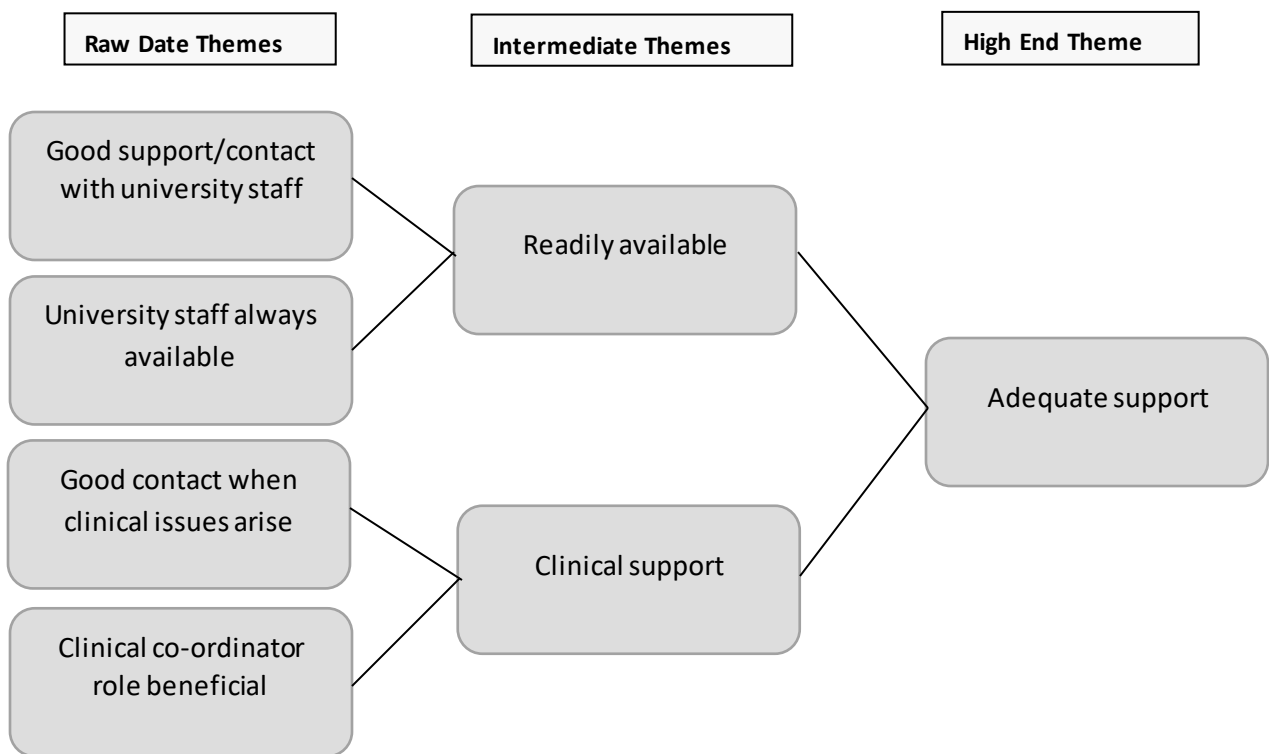
Clinical support

Adequate support

Figure 20: Support for Clinical departments – Adequate support

The clinical leads were unanimously satisfied with the level of support they received from the university course team in terms of their availability and the support they offered with any issues that arose be that clinical in nature or otherwise.

I think there has been no shortage of support from the course team

Not really had any issues with the support from the course team, we've got access to everything we need

It's nice to know [the course team] are always there

I think the [academic team] support has been good, I have a good rapport with the university

We can flag any issues to the university so they can step in and deal with those situations rather than it all being on our shoulders as it would be for a part time postgrad

I do feel we have had adequate support from the course team, we all liaise together to make sure that the direct entry student gets the best out of the course

We've had good communication with the university, we have a mutually beneficial working relationship

The appointment of the clinical co-ordinator was also highlighted as a positive step by the majority of the clinical leads in respects to providing that close link with the university as well as providing a source of support and advice.

Appointing a clinical co-ordinator is a big benefit to us, just having that extra support for advice

[The academic support] is even better with the appointment of the clinical co-ordinator

The appointment of a clinical co-ordinator we have seen as a very positive step forward and we have benefitted from her objectivity for our student in some of the challenges we have faced

The [clinical co-ordinator] coming out into the clinical placement is a very positive thing

I think the clinical co-ordinator coming out to visit the departments is an aspirational role

In regards to the negative issues raised by the clinical leads, where support was considered to be lacking core themes are represented in Figure 21 (below)

Raw Date Themes	Intermediate Themes	High End Theme

Clinical co-ordinator limited visits

Clinical co-ordinator role not clear

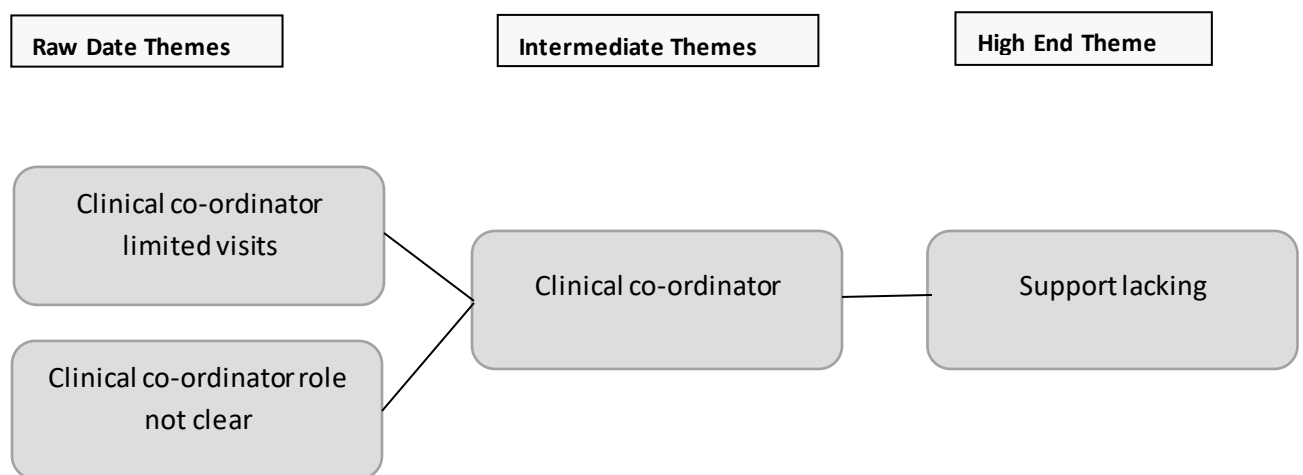Clinical co-ordinator

Support lacking

Figure 21: Support for Clinical department – Suboptimal

These concerns were centred on the role of the clinical co-ordinator and the frequency with which they visited the different departments. One clinical lead highlighted the fact that the exact role of this individual was not clear and felt some clarity on this would have benefited their team.

I still don't quite know exactly what the role is supposed to be, it will work well but I do feel there needs to be some clarity in terms of what their job role is and what, as a clinical team, we should expect from them

One department also reported that they had perhaps not seen enough of the clinical co-ordinator but recognised that this may have been because they had not encountered any difficulties with their student.

I haven't really seen [the clinical co-ordinator] but we have had no issues with our student.

3.1.6 Validity of the Direct Entry Postgraduate route

The final emergent theme to arise from the participants' feedback relates to the overall validity of the course. All interviewees, both students and clinical leads, were asked to provide their opinion of whether they felt this was a valid educational route going forward, that could help to address the current shortage of sonographers.

Considering the findings elicited from the students interviews, schematically outlined in Figures 22 and 23 (below) it is not surprising to find that all the participants agreed this was an appropriate and valid training programme but recognised the limitations they may encounter in terms of the issues surrounding HCPC registration. Within this meta-theme, these issues were divided into two high order themes (a) Valid training route, and (b) limitations. These are addressed in turn, with reference to participants' comments.

The course was a success

Proof that there is no requirement for a radiography/healthcare degree

A good route into ultrasound for non-healthcare professionals

Successful

Variety of backgrounds improves recruitment to help address sonographer shortage

Addresses shortages

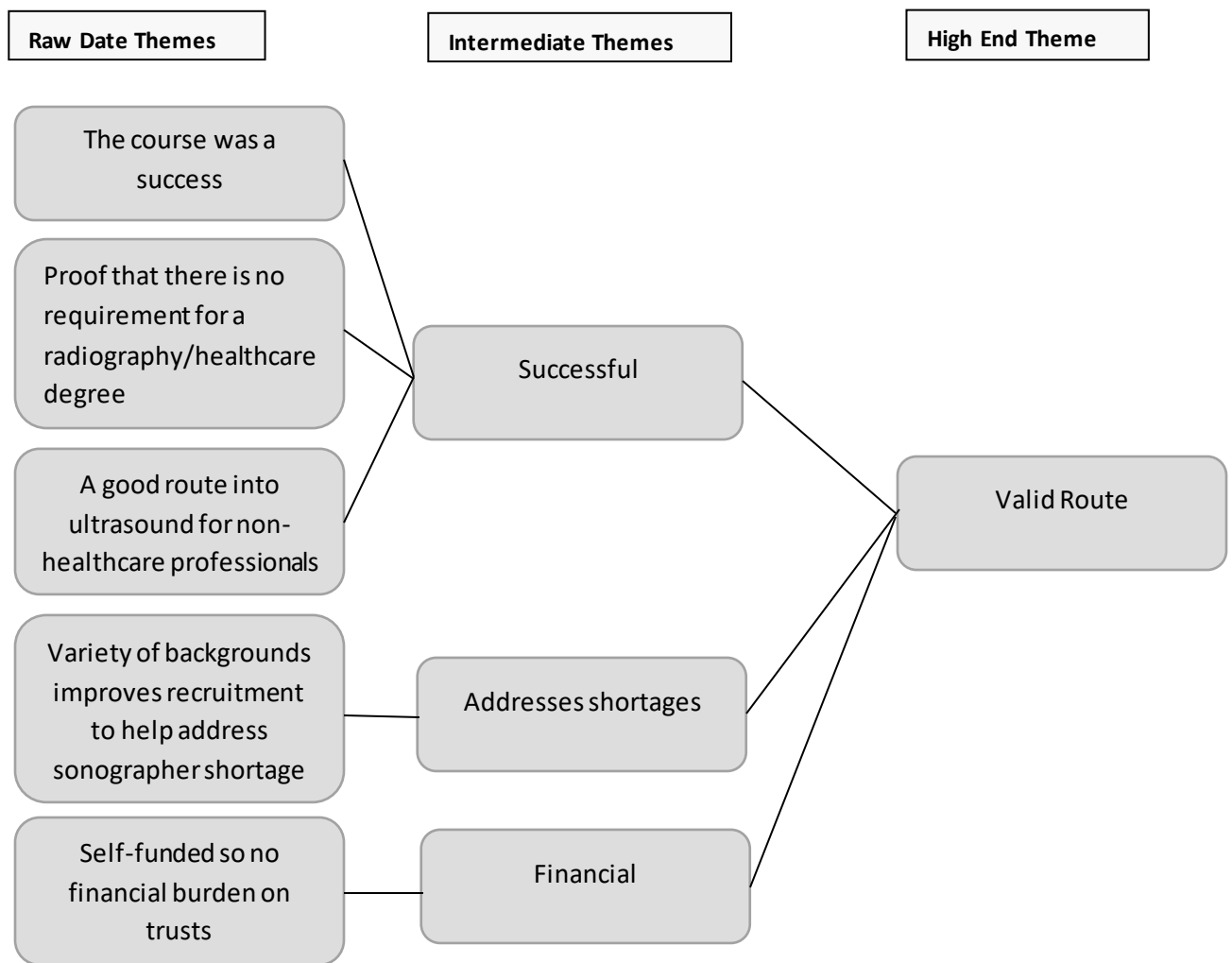Self-funded so no financial burden on trusts

Financial

Valid Route

Figure 22: Validity of the Programme students – Valid route

There was overall agreement among the students that the course was a success and that postgraduate direct entry programmes are a valid training route into ultrasound but maybe this was to be expected.

I think it's gone well, I'm so glad I've chosen to do it

I've been really happy with how it's gone

I think it's a good route to go down, the course itself in general I would say is a good idea

We've got to think of new routes [into ultrasound] and I think this is a good route in for people

I feel it's successful because I've got a job so I'm obviously doing all right

I do feel that the direct entry is a really good route to go

I really do feel like direct entry is the future

We are all [ultrasound students] just going through the same thing

The students highlighted several factors in support of this course including the fact that the course is self-funded by the students; as such the NHS trust or training provider does not shoulder this financial burden.

[Ultrasound] funding is so short so I feel like direct entry does benefit departments financially

The respondents reiterated that that a background in radiography or healthcare was not a prerequisite to studying ultrasound and that widening the intake and including individuals from a wide range of professional and educational background enriched the profession. It was also suggested that limiting the intake to healthcare professionals could result in the profession missing some excellent candidates.

We've proven that you don't need a radiography background to be able to scan and be successful on this course

It's a good way to get into sonography, I don't feel that you really need radiography as a background to come into ultrasound, you can always learn

I think it's a good route into ultrasound because you get a lot of different people, and people you might have missed out on who didn't do radiography

The rationale for developing this programme was to help to address the well-documented national shortage of sonographers. In this sense, it was recognised by the students, that this programme is fit for purpose and does fulfil this aim.

It's definitely a viable option and it's necessary because of the shortage of sonographers that we have

I feel [ultrasound education] needs to go in this direction only because there is such a big shortage

Some concerns were noted in regards to this programme of study and the limitations associated with the postgraduate direct entry route are schematised in Figure 23 (below)

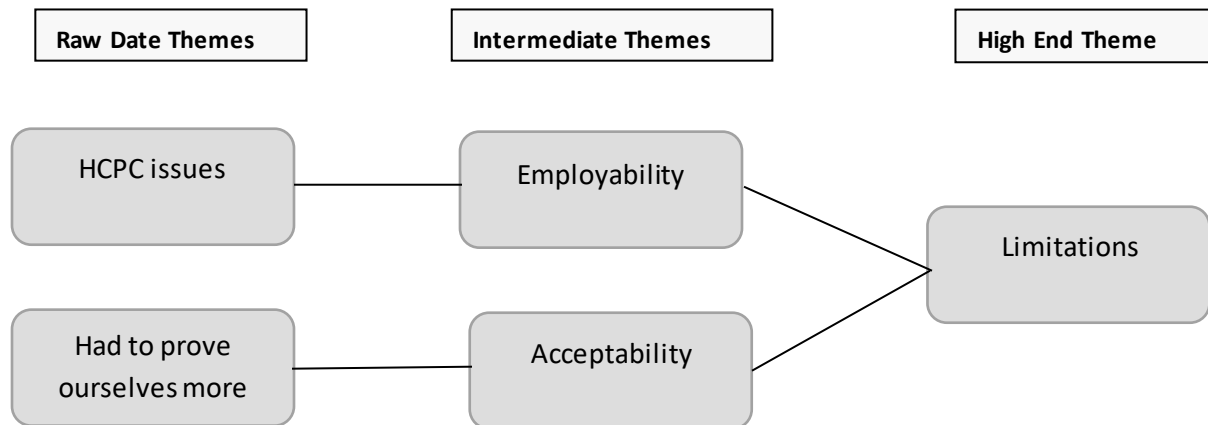| Raw Date Themes	Intermediate Themes	High End Theme
HCPC issues	Employability	
		Limitations
Had to prove ourselves more	Acceptability	

Figure 23: Validity of the programme Students – Limitations

One of the students raised the issue of HCPC registration as a limitation of direct entry. Many NHS trusts will not employ non-registered sonographers and even though the tide is turning and more and more trusts are overriding this requirement, this may still limit the employability of these graduates in some regions. Interestingly, one students also felt that they had to prove themselves to their peers more as a direct entry student, although this was not reflected in the clinical lead feedback.

Obviously, we have the issue of HCPC registration and I know a lot of jobs I have seen or tried to apply for have required this registration so that's the limiting area of [direct entry]

I think I have had to prove myself a lot more [than traditional route students] but hopefully after a few years they won't mind so much

Considering the findings elicited from the clinical lead interviews, schematically outlined in Figures 24 and 25 (below) all the participants agreed this was an appropriate and valid training programme but recognised the limitations they may encounter in terms of the issues surrounding HCPC registration. Within this meta-theme, these issues were divided into two high order themes (a) Valid training route, and (b) limitations. These are

addressed in turn, with reference to participants' comments.
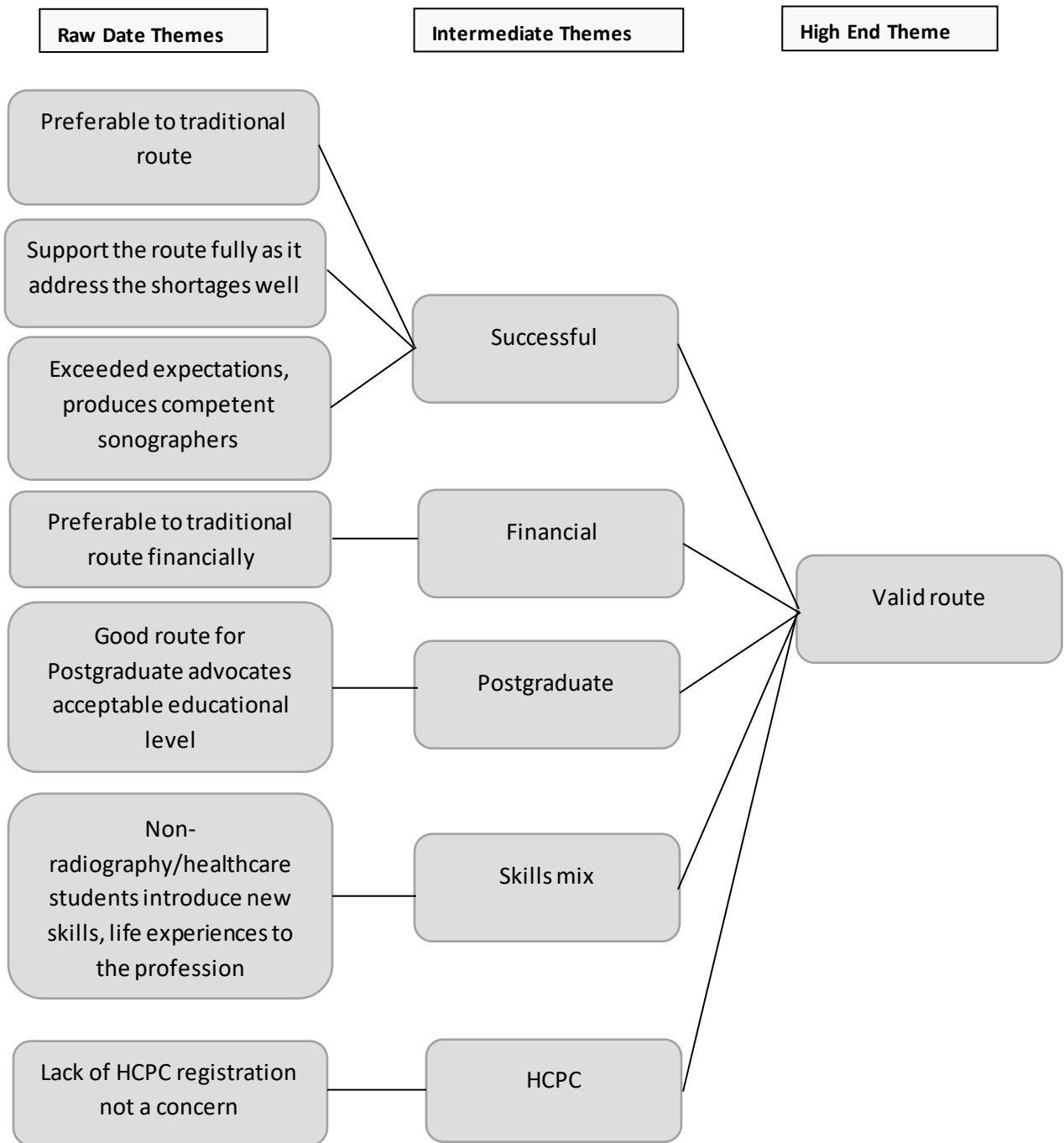

Figure 24: Validity of the programme Clinical leads – Valid route.

There was unanimous agreement that the programme was successful in producing competent sonographers to help address the national shortage of sonographers. All the placement hospitals stated that they would be happy to carry on supporting the course and in some cases the programme had exceeded expectations and several clinical leads even suggested that direct entry was more preferably than the traditional route.

It's exactly what we were expecting it's been what we hoped

I have found the experience to be very positive; I think that all the participants' trusts and university have worked collaboratively to form a course that is fit for purpose

It has taken a group of non-radiographers and equipped them with skills to become competent sonographers

We've ended up with a student that is competent at the end of it

The course has delivered us a clinically competent practitioner

Direct entry is a very positive way of increasing the sonography workforce

I do think it will help the sonographer figures

I have no opposition to training direct entry students

We are happy to carry on being a placement for the [direct entry] route

Direct entry as I see it is here to stay, I'd be very happy if it were expanded further and ultimately took over the traditional route

It's a good way of supplementing and then one day replacing the traditional route of training

I think it's probably preferable to the traditional route of training

Financial savings were reported as a major benefit to direct entry ultrasound training. The cost of employing a healthcare professional as they undertake their training as well as paying the course fees has been widely reported as unsustainable in respect to the tradition ultrasound training route. The fact that direct entry students self-fund themselves through this programme and are not employed by the placement unit was recognised a big advantage.

The financial driver is probably the biggest one. In terms of financial resources that is something that is freed up by direct entry training

The traditional route of training is quite expensive because we employ the student

Paying somebody as a Band 5 or 6 for two years or to do a PgD in ultrasound is largely unsustainable

Many ultrasound professionals feel strongly that ultrasound education should remain at postgraduate educational level; the reasons for this have been discussed in the introduction to this report. It was felt that this programme offered a balance between maintain the educational level 7 but widening participation. Many clinical leads also agreed that opening

ultrasound training to non –radiographer and non-healthcare professionals was a positive step as it enriched the profession by introducing applicants with a variety of experiences and skills

It's a go between option for people who are die hard advocates of the postgraduate route but it is a way of offering non-radiographers a way in

Recruiting students that are from areas of the healthcare spectrum and beyond introduces people into the workplace with a whole new, different set of skills and life experiences

The issue of HCPC registration is a contentious subject with many ultrasound practitioners disagreeing on the validity and value of HCPC registration. Many of the clinical leads interviewed as part of this report felt that the lack of HCPC registration was not an issue within their department; with others reporting that they already employed non-HCPC registered sonographers.

Our view at this trust is that HCPC registration is largely irrelevant. The students will qualify with eligibility to register with the Society of Radiographers voluntary register which, in my opinion, is of greater value than HCPC registration anyway

Recruiting sonographers that are not registered as radiographers is not necessarily a bad thing

There are other healthcare professionals within the NHS that are not registered with a regulatory body

I've got other members of staff who aren't HCPC registered and it doesn't stop me from dealing with them from a managerial point of view

We are a trust that employs non HCPC registered sonographers, that is not a concern for us

Some concerns were raised by the clinical leads in regards to this programme of study and the limitations associated with the postgraduate direct entry route are schematised in Figure 25 (below)
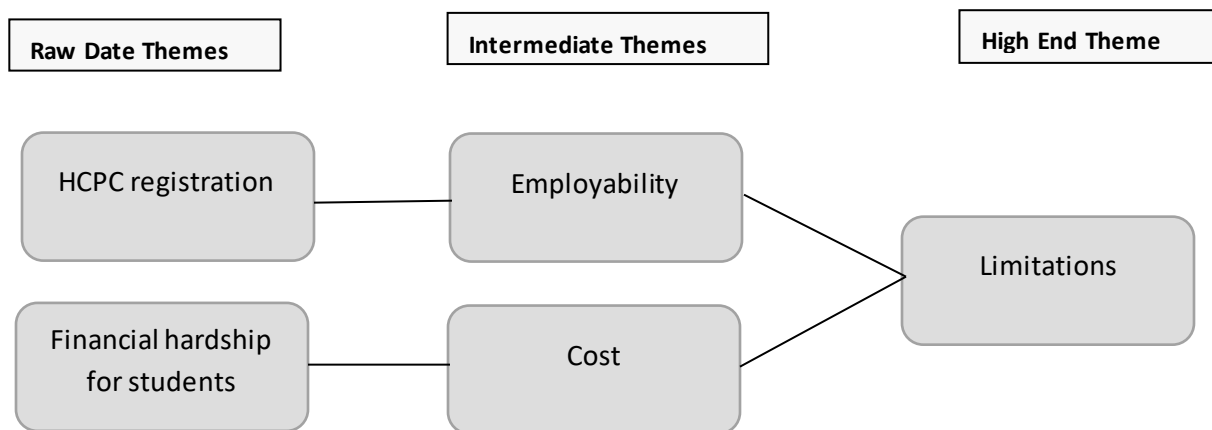

Figure 25: Validity of the programme Clinical leads – Limitations

The issue of HCPC registration was not as simple for all respondents; one placement site was not in a position to employ non-HCPC registered sonographers due to stringent HR stipulations. This was seen as a limitation as if affected the employability of their student at the end of the course.

The problem we have is the HCPC registration - that has not been ironed out yet with HR so it's that level of uncertainty if we are going to be able to be employed

A further very valid limitation to this direct entry route relates to the fact that these students self-fund themselves through the course and one clinical lead recognised that this may lead to financial hardships for some students.

I am aware of the financial hardships that the M level students will be facing because they are not receiving an income during their two year training course

Finally, lets allow one of our placement site clinical leads sum up the whole two-year experience perfectly.

It's been an interesting learning curve for the academic and clinical teams, I think we have learnt a lot but it's been good

4. Conclusion

In summary, it was unanimously agreed that the University of Cumbria direct entry postgraduate ultrasound programme is a valid educational route into ultrasound. That is not to say that there are no limitations associated with this programme but there are also well-documented limitations with the traditional ultrasound educational route, with many now accepting that this route is becoming unsustainable. Although challenges were encountered along the way, this first cohort of students all successfully completed the programme and both the academic and clinical teams have learnt many valuable lessons that have allowed them to adapt their practices accordingly and build on the lessons learnt over this initial two-year period.

As documented in the previous section six high-order themes emerged from the data elicited from the student and clinical lead interviews. The key findings are summarised here. They are:

1. Overall, the students did not feel they were disadvantaged due to their non-radiography or non-healthcare background, whereas the clinical leads did feel that the non-healthcare students did require a little more input in regards to healthcare issues and communication skills.

2. Although the students were looking forward to embarking on the programme, they did report minor concerns prior to commencing the course but these were related to the perceived workload and an eagerness to fit in. The concerns voiced by the clinical leads centered around the potential increase in workload, whether the programme would work and where would it leave the traditional route. Concerns regarding the geographical location of the students were also evident as it was felt that if students travelled a distance to train they may not stay at the placement department. Conversely, some departments did not report any concerns and were confident in the selection process with good expectations of the course and their students.

3. The reality for the students at the end of year one was encouraging. Although some felt the course was harder than expected and that maybe they were not as prepared as they could have been, they all felt that they were happy with how the course was progressing and they had fit in well in their clinical placements. Similarly, the clinical leads felt that in many ways their students and the programme had exceeded their expectations. The students had all settled in to their placements with ease and were

well prepared for clinical practice, it was generally agreed that the scan trainer simulations units at the university had helped with this.

4. The academic workload associated with a 2 year vocational MSc is high and it is understandable that some of the students encountered challenges in this aspect of the course. Several reported high stress levels exacerbated by the fact that some were living away from home to study and others were still working to ease financial issues. Overall, the students agreed that they were well supported academically and the course structure allowed time for breaks and holidays and enough time was allocated to complete assignments.

5. Several of the students and clinical leads agreed that the clinical objectives proved challenging in regards to the time frame for assessments, and the patient caseload. However, other respondents found them achievable and encountered no problems.

6. The students generally felt supported both academically and clinically and the clinical leads all agreed they had a good working relationship with the university. The clinical coordinator role was unanimously welcomed but one department felt that some clarification on this role was required.

7. All respondents agreed that this educational route was valid and was fit for purpose. Some suggest that this route in many ways is preferable to the traditional route but the issue of HCPC remains a concern for some clinical departments and students alike.

4.1 Previous background of student

It has been suggested that an initial healthcare qualification or related first degree allows the individual to build on previous experience in preparation for advanced level ultrasound practice. For this reason one of main disadvantages often reported when considering direct entry ultrasound education is a lack of imaging and healthcare background, and this was the case with some of the clinical respondents in this study. The non-healthcare student interviewees however, did not feel disadvantaged at all by their previous background. It is interesting to note that Masters level direct entry degrees have been available in the UK in other healthcare fields for many years and much of the literature suggests that these programmes attract older, motivated candidates with a wider academic base who work hard and perform well, ultimately producing high quality clinical practitioners. There are also recognised benefits in attracting this previously untapped pool of entrants, the experiences, interests and backgrounds of such a diverse cohort with a variety of first degrees adds a

richness and diversity to a profession. This appears to mirror the experience encountered on this programme as many clinical leads report that any concerns or objections to this educational route faded after the students commenced the course and proved themselves able to manage the expectations on them. Some additional support was required in regards to communication skills and appreciation of health care issues, but maybe this is to be expected in cases where the student has no healthcare background. They may have a wider academic base but have a shorter period to adapt to the professional side of the training.

4.2 Workload

Historically, it has long been postulated that higher educational levels lead to superior professionalism, credibility and autonomy but with Masters level study comes a substantial workload, and this is more acute in vocational studies when the student is acquiring new clinical skills alongside academic study. It has been suggested that this could lead to high attrition rates although this is not the case in this study where all the participants successfully completed the programme. There is the potential for high anxiety levels due to the accelerated pace of study and an excessive workload with some finding the study too intensive and it was certainly noted amongst this first cohort that the workload was considerable but most did find it manageable. Additionally, as noted in this study, if the student has other contributing factors such as financial concerns or is living away from home these can add to the anxiety and stress. The students who did encounter problems associated with the high workload did feel they received adequate support from both the academic and clinical teams and many of the problems highlighted related to the students own time-management issues and adopting and appropriate work/life balance.

4.3 Postgraduate direct entry Ultrasound

Many within the ultrasound community feel that anything less than postgraduate level study would 'water down' or devalue the profession, and this was the overall opinion elicited from the previous report submitted by the University of Cumbria in 2015. For his reason the decision was to develop this programme at educational level 7. Common benefits reported in regards to this education route include the financial savings for the training provider from both the cost of training and the issue of back-fill as the students are not

employed and are self-funding. Additionally, increased maturity of the students both academically and personally and the fact that sonography is currently taught at postgraduate level meaning that graduates from this route would fit into the current job description and pay band of a first post sonographer . The clinical respondents in this study recognised all these factors as benefits; many have suggested that ultimately they feel this route is preferable to the traditional route. The literature suggests that overall Masters level direct entry programmes have good outcomes and they are proving successful in addressing the workforce shortages in the relevant professions and this report does support this comment. It would seem from the data elicited that this programme has produced competent ultrasound practitioners and it was unanimously considered a valid option to help address the current staffing crisis facing the profession.

4.4 HCPC

It is important that employment potential be contemplated when proposing any new developments, as potentially the issue of professional registration could have serious implications when considering the employment of sonographers entering the profession through the direct entry route. There are currently many sonographers practicing in the UK who have no statutory registration because they are not eligible to register with the HCPC, NMC or GMC. These are often competent practitioners who are well qualified, many have undergone rigorous training to gain the necessary skills to practice competently and safely but are unable to gain recognition of these qualifications and skills, and this will include non-healthcare professional embarking on direct entry ultrasound training. This report highlights the fact that more and more employers are less concerned about HCPC registration and are more concerned regarding competency. All but one of the clinical departments involved in this study already employ or are happy to employ non-HCPC registered sonographers and none of students on this first cohort were eligible for registration but all that applied for jobs gained employment within the NHS.

4.5 Impact statement

There is a constant need for additional training in the field of ultrasound but currently the rate of sonographer training is barely keeping up with wastage. This study highlights that direct entry postgraduate ultrasound education does work and does produce competent

ultrasound practitioners able to meet the demand of this essential field of healthcare. It is not without limitations and there have been challenges, it is testament to the resilience of the students and the dedication of the clinical departments and the academic team that these challenges have been overcome. All the students on this first cohort successfully completed the course and although none were eligible for HCPC registration all that applied for positions gained employment within NHS trusts in the North of England. None of the students remained in their placement hospitals after qualifications but interestingly all these placement hospitals have continued to support the course with subsequent cohorts. The course is going from strength to strength and placements are slowly increasing, with ten placements available for the next intact of trainees.

Using a broadly Grounded Theoretical approach, this report highlights that direct entry postgraduate routes are a viable ultrasound option for ultrasound educational. Clinical departments need to accept that change is necessary. We need to support these new initiatives and accept the challenges these may present, as the workforce crisis in ultrasound is not abating and needs addressing in earnest.

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Appendix 1: Participants Information Letter

Medical and Sports Sciences Quality Group

Faculty of Health & Science

Lancaster Campus

Bowerham Road

LANCASTER

LA13JD

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Dear Participants,

The University of Cumbria has recently introduced a new Sonographic Educational Model to help to address the current issues with Sonographer workforce shortages. We have been asked by HENW (Health Education North West) to provide a report into the progress of the first cohort of students on this pathway.

This report will follow the progress of this first cohort throughout the full two year duration of the course and will investigate the experiences of the students, the teaching staff and the ultrasound department managers. In order to gather the necessary information I would like to perform a series of interviews with you all at key stages throughout the course, the interviews should take between 20 – 30 minutes, or longer if necessary.

The outcome of these interviews will be of major importance as we look into the future of Direct Entry Sonographic education to ensure this new model fits in to the expectations and requirements of our local departments.

The discussion will be conducted by means of a telephone interview and will be centred on your responses to several questions. It should last no more than 20- 30 minutes.

The discussion will be audio-recorded to allow accurate interpretation and analysis of the data. The identity of all respondents will remain confidential and the recording will be kept securely on a password protected PC only accessible by the researcher. The findings may be shared with a small group of academic colleagues within this institution, who will also adhere to the university confidentiality policy. No participants will be named in the report produced from this study.

Participation is voluntary, but will require verbal consent by all participants prior to commencement of the interview. You may withdraw this consent at anytime prior to engaging in the interview. Upon completion of the data collection, all recorded data will be used within the study.

Thank you for taking the time to read this information, if you have any further queries I am more than happy to discuss these with you prior to the interview.

If you have any complaints or concerns regarding the project at any point please address these to charles.sloane@cumbria.ac.uk

Best wishes,

Lorelei Waring, Senior Lecturer.

Appendix 2: Exemplar Student Interview Schedule

University of Cumbria

Direct Entry MSc : Student Questionnaire.

The aim of this questionnaire is to establish your experiences of the Direct Entry US training programme as it progresses through the first two year intake. The aim is to keep the interview quite open to allow you to express your views but some of the information we will ask you to provide is:-

1. What were your initial expectations or concerns regarding the programme of study?

2. Did you have any concerns regarding clinical placement?

3. do you feel you were supported adequately during your first weeks on the programme of study?

You have now been in clinical placement for over 6 months:

4. How prepared for placement do you feel you were following the initial academic block?

5. How useful did you find the Scan Trainers in preparing you for clinical placement?

6. How did the knowledge/learning provided in the initial academic block support/enhance your placement experience?

7. Have you received adequate support from the course team? Do you feel we could enhance this further now we have appointed a clinical coordinator?

8. How achievable have you found the clinical objectives of the course so far?

9. Do you feel you are coping with the academic workload?

10. Have you perceived any disadvantages in terms of your previous academic/work background?

11. Have your encountered or are you aware of any opposition from your clinical department?

Do you have any further comments on the new route of US education based on this first 6 month placement period?

Appendix 3: Exemplar Clinical Lead Interview Schedule

University of Cumbria

Direct Entry MSc : Clinical Lead Questionnaire.

The aim of this questionnaire is to establish your experiences of the Direct Entry US training programme as it progresses through the first two year intake. The aim is to keep the interview quite open to allow you to express your views but some of the information we will ask you to provide is:-

1. What were your initial expectations regarding the programme and your potential students?

2. Were you aware of any concerns within your clinical team regarding the new educational route?

3. Did you provide a forum for discussion around the implementation of the new course with your team?

You have now had your DE students in clinical placement with you for just over 6 months

4. How prepared for placement do you feel your student was following the initial academic teaching block?

5. Have you received adequate support from the course team and how do you feel we could enhance this further now we have appointed a clinical coordinator?

6. How achievable have you found the clinical objectives of the course so far?

7. How is your student progressing clinically?

8. Do you feel you student is coping with the academic workload?

9. Have you perceived any disadvantages in terms of your student's previous academic/work background?

10. How has your team adapted to the new route of US education?

11. Have your encountered or are you aware of any opposition to your DE student?

Do you have any comments on the new route of US education based on this first 6 month placement period?