Philosophy and quality? TAPUPASM as an approach to rigour in critical realist research

Abstract

Background

Philosophical principles should guide how research is designed, conducted and appraised. The more traditional and commonly used approaches to positivist (validity and generalisability) or interpretivist (trustworthiness) research do not necessarily complement the philosophical principles of post-positivist critical realism.

Aims

To discuss an approach to ensuring scientific rigour in post-positivist critical realist research using an enhanced version of the quality assurance model, TAPUPAS, that has an additional criterion: modified objectivity.

Discussion

The authors present examples of the quality framework TAPUPASM in the planning, design, conduct and dissemination of a realist research study. These strategies include choices about the collection and analysis of data, as well as how to disseminate findings using methods other than traditional academic approaches. They also provide a practical example of how they used TAPUPASM to ensure rigour in a critical realist ethnographic study in pre-registration nurse education.

Conclusion

TAPUPASM provides a framework for quality in post-positivist critical realist research. Implications for practice Nurse researchers can use the strategies provided to plan, design, conduct and disseminate critical realist research.

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Keywords

Ethnography, methodology, research, research methods, study design

Introduction

Measures of quality, such as validity, trustworthiness and rigour, are essential in the planning and conduct of nursing research. There are four common philosophical approaches to nursing and educational research: positivism, interpretivism (often referred to as postmodernism), critical and postpositivism (not to be confused with postmodernism) (Phillips and Burbules 2000, Buchanan and Bryman 2011, Lincoln et al 2011, Howell 2013). Researchers' philosophical perspectives should guide the choice of these measures (Collier 1994).

This paper is a methodological discussion of the basis for the design, conduct, dissemination and appraisal of a postpositivist critical realist (PP-CR) ethnographic study (CRE). The quality framework used is transferability, accessibility, propriety, utility, purposivity, accuracy and specificity (TAPUPAS) (Pawson et al 2003). However, based on the philosophical principles of PP-CR (Box 1), the study also used the criterion of 'modified objectivity', transforming TAPUPAS into TAPUPASM.

Traditional measures of quality

Validity, trustworthiness and rigour can be appraised in many ways. What is acceptable to one field may not be to another, and the approach taken in a study is typically based on the researchers' philosophical perspectives and methodological views – for example, qualitative research it is not usually judged on its validity and generalisability (Hammersley 1992, Porter 2007, Bryman 2008, Ryan 2018).

Many approaches to the appraisal of validity or rigour have typically been developed as part of either positivism or interpretivism, so place value on the principles of these philosophies. Quantitative research, for example, is designed and appraised on the basis of validity.

It values criteria, such as minimising bias or repeatability, that reduce any variation in measurements and observations caused by a single person, machine or piece of equipment.

In contrast, qualitative research values rigour or trustworthiness. It acknowledges the influence of participants' and researchers' perceptions and values on the research. However, different philosophical perspectives and methodological choices in qualitative research - such as

phenomenology, grounded theory and ethnography – mean researchers differ about what criteria to use (Hammersley 1992, Porter 2007, Polit and Beck 2014).

Mixed-methods approaches, which are commonly valued in post-positivist research (Buchanan and Bryman 2011), add further complexity to decisions about rigour. For example, what might be deemed as credible in interpretivist grounded theory research may not be in ethnographic research (Hammersley 1992). Bryman (2008) and Lincoln and Guba (1985) suggested two approaches to the measure of quality (Table 1).

TAPUPAS has been used for some time to conduct and appraise research in the fields of education, social work and social policy (Pawson et al 2003, Long et al 2006, Gough 2007, Porter 2007). Several authors have been advocates of realism and using TAPUPAS to appraise research and service improvement in nursing (Wainwright 1997, McEvoy and Richards 2003, Porter 2007, Clark et al 2008, Speziale et al 2011, Angus and Clark 2012, Nairn 2012). However, realist nursing research does not yet favour TAPUPAS as an approach to rigour (Clark et al 2007, Bergin et al 2008, Kontos et al 2011, Sword et al 2012)

Method of application

To illustrate the strategies that can be used to consider adopting TAPUPASM in the design and conduct of nursing research, an example of a post-positivist critical realist ethnography will be discussed. Table 2 shows a summary of a CRE study, the research question of which was: what is the relationship(s) between the pre-registration nursing student, Facebook and professional accountability during professional socialisation?

Transparency

'Transparency' considers how researchers came to their research's questions, aims, objectives and methods (Pawson et al 2003). It also requires them to be explicit about their philosophical approaches and values and to consider their own assumptions and background. They should also be able to justify why the topic is of importance to the professional field.

In the case of the exemplar study, what were the researchers' views about professional accountability, why was more knowledge needed and why use realist ethnography? How would this affect and improve practice in nursing and nurse education? Transparency was achieved by: including a personal reflection about experiences and assumptions of the topic; conducting a review

of the current research literature and identifying gaps in knowledge; and examining and scoping the proposed problem through a review of current evidence. This included a scoping review of Nursing and Midwifery Council (NMC) competency hearings linked to social networks (Ryan 2015), academic (peer) reflections and discussion, personal observations online, and media coverage of relevant themes.

There was also a review of the methods available for sampling, collecting and analysing data, including justification on why one was rejected in favour of another. In addition, the research protocol was written to be explicit and clear enough for others to repeat the study in their locale (for example, the schedules for interviews, focus groups and observations and the method of analysis). Colleagues reviewed the protocol to provide an external critique and to debate the methodological decisions and choices.

An additional exercise included explaining the method, design and philosophy to a group of postgraduate students, which provided a different approach to questioning and response. This started a discussion with two colleagues and a group of students about the methodological choices in realism and interpretivism, which was of particular interest as most of the group had never heard of or considered realism.

As a result, the rejection of interpretivism written in the protocol was simplified and illustrations were included to make the explanation of CR principles more accessible to nurses from different fields and backgrounds.

Accessibility
In TAPUPAS, 'accessibility' predominantly involves the dissemination and implementation of findings, while 'utility' refers to the relevance and fitness for purpose of the study's findings. Porter (2007) suggested that accessibility requires researchers to consider who may access their research's findings, as well as how, when and where they may do so.

Porter's (1993) CRE on the topic of racism and professionalism in a medical setting made conclusions about structural racism in professional healthcare environments and provided a different perspective of the social structures that exist in healthcare; however for frontline nurses, managers and even patients, the knowledge arguably had little to no impact as the study was not in an

accessible or usable format and did not meet the needs of all important stakeholders and knowledge users, who translate the research findings into practice.

Collecting and analysing data and the eventual findings are of no use and inaccessible if they are not disseminated and do not have any effect (Higher Education Funding Council England 2016, National Institute for Health and Care Excellence 2017, Kelly and McMahon 2017).

Accessibility requires the researcher to consider what purpose the research will meet, the people the research is for and whether they will be able to apply its findings in their practice. If front-line staff, patients and the public are not engaged in the research's planning and process, how will it be accessible and usable? If the outcomes are descriptive, how useful will they be in making changes, improvements or decisions in practice? If the researchers only conclude that 'more research is needed', how useful is it? If the research will only be published in expensive, 'high impact' academic journals, how will it benefit and/or include patients and the public?

A process similar to that in Reed (2016) was used when planning the study to create a dissemination strategy. An 'interestpower' stakeholder analysis (World Health Organization (WHO) 2014, Reed 2016) was conducted and the evidence relating to methods of dissemination was reviewed.

A strategy was then developed, indicating how to disseminate the findings to each group of stakeholders: academics, practice-based nurses, policy-makers and organisations (professional and education), nursing students and personal networks (Finch Group 2012, Agency for Healthcare Research and Quality (AHRQ) 2014, WHO 2014, Morton 2015, Kite et al 2016, Reed 2016, Higher Education Funding Council England 2016).

Methods of dissemination included traditional academic routes, such as conference presentations and articles in journals, as well as the lead author's professional social media networks and her employer's Twitter feed.

An animated presentation was also shared using YouTube and a weblink embedded in the researcher's workplace WordPress blog and social networks (Tabak et al 2012, AHRQ 2014, Archibald and Clark 2014, WHO 2014, Timmins 2015, Bayliss 2017).

Purposivity

'Purposivity' refers to the researcher's approaches to enquiry and whether they achieve the aims and objectives of the research. Are the methods fit for purpose, for example?

Table 3 provides examples of the strategies used in the exemplar study.

The strategies in Table 3 worked in combination with the strategies used to address the other TAPUPASM criteria to ensure that the overarching aim and objectives of the study were philosophically informed, and the chosen methods and design enabled the research to successfully achieve them.

Utility

"Utility" refers to whether the knowledge generated by a study is of use to the practitioner or fit for use and the results respond explicitly to the research question (Porter 2007). Accessibility and utility are often met through similar activities. Utility was considered during the project's inception, justification and planning. Weidman et al's (2001) theoretical model of professional socialisation was used to outline some of the key parties involved and influences on pre-registration nursing students during their professional socialisation and acted as the underpinning framework for the study. This enabled each stakeholder group to be considered and – where relevant – engaged in the design of the study or the collection of the data (Figure 1).

A scoping survey was conducted as part of the literature review to evaluate preregistration nursing students' views and informal conversations with registered nurses were held to confirm the direction of the study. These confirmed the direction of the study.

To be fit for purpose, the study's findings needed to be usable in nursing education. The methods used to collect and analyse data and to develop the findings therefore needed to produce knowledge that could assist academics, nursing students, nurses, organisations and institutions:

- When making decisions about what to post and share and how to use social networks professionally.
- To assess their levels of awareness of online behaviours compared to their actual activity (for example, an individual might believe that they only share limited information when, in

reality, their profile is publicly accessible) and identify methods they could use to reduce the risk of unprofessional behaviour.

- To assess and make informed and consistent decisions about whether an action in social networks is unprofessional (requiring further action) or unacceptable (possibly requiring a warning or increased 'awareness'). In the exemplar study, the proposed method of analysis aimed to assist in the development of practical frameworks that can be used in nursing and nurse education (Figure 1). Instead of presenting themes that described what the relationships were (theoretical evidence), the analysis had a sixth, final step that informed the development of a framework stakeholders can use in their practice. This Awareness to Action (A2A) framework is a tool to help decision-makers take a consistent and evidence-based approach to incidents in social media – it takes the theoretical components of the study and makes them usable.

Propriety

'Propriety' requires research to be ethical and legal. Approaches and ethical principles in internet-mediated research are widely debated and so the relevant legal and ethical guidelines available at the time were consulted during the planning and design of the study, as well as its ethical approval and following Facebook privacy policy (Bryman 2008, Angrosino and Rosenberg 2011, Gatson 2011, British Psychological Society 2013, Facebook 2018). The primary issues here related to publicly accessible information and the extent to which information can be recorded for observation in social networks.

In addition to internet-based research, other common ethical considerations were addressed. These included data protection, confidentiality and informed consent (RCN 2011, Economic and Social Research Council 2016). However, an additional professional and organisational perspective was considered, based on the combination of publicly accessible, internetbased, professional and personal aspects of the research. Primarily, this related to 'fitness to practice' (NMC 2015) and so the researcher developed a standard operating procedure for managing unprofessional practice, the use of which could be observed during the study. The procedure was presented in the form of a decision-making flow chart, informed by organisational and professional policy, guidance and standards. It explicitly and simply outlined the procedure for responding to malpractice for each of the groups involved in the research.

An ethical application was submitted to the researcher's employing organisation and approved.

Accuracy

In terms of accuracy, Porter (2007) asked researchers to consider the question: 'Are the claims made based on relevant and appropriate information?' Pawson et al (2003) provided further detail for considering accuracy.

The study's findings should represent participants' perceptions and experiences and the research should use sources appropriate and relevant to the context being investigated.

Traditional, more interpretivist approaches to ethnography use participants' perceptions and experiences to understand the social actors or context. However, CRE uses them to determine the one reality. The researcher therefore retains the role of expert and critical reviewer of what the reality is likely to be, because they are privy to sources of evidence to which the participants do not have access – it is assumed that the participants do not know what they do not know (Danermark et al 1997). Therefore, while methods for ensuring credibility similar to those used in interpretivist ethnographic studies were used to confirm accuracy in the study – verbatim quotes from participants to demonstrate their views and 'member checks' of the proposed findings (Fine et al 2009) – there was a different, philosophically driven purpose for these.

Member checks involved informal discussions with academics and practising nurses, assisted by diagrams of the three frameworks developed. This sought to confirm that the understanding of participant and knowledge user interpretation of the framework. Additionally, a conference presentation was used to obtain feedback from the clinical and academic community about how representative the framework is of what is experienced and observed in nursing and nurse education.

Accuracy was also ensured by using covert observation of online behaviours, other data sources and the eventual triangulation of these during analysis (Figure 1) (Webb et al 1966, Bryman 2008). These observations helped the researcher to confirm ideas, reflections and thoughts emerging in response to the research question, by evolving the schedules for the semi-structured interviews and focus groups (Bryman 2008).

Specificity

'Specificity' refers to whether the knowledge generated by a study meets the standards of its sources (Porter 2007). In this case, the sources were 'those involved in the professional socialisation

process' (Weidman et al 2001) – the university, academic staff, peers and placement-based staff, as well as the professional guidance documents.

A literature search and content analysis (Ryan 2016) were conducted as part of the original literature review and justification of the project, to assess the advice and guidance given to nurses when using social media. An additional scoping search of professional conduct hearings identified commonly reported incidents involving nurses using social media. These not only informed the justification and design of the study, they also produced data that were included in the study's analysis and dissemination strategy and so informed the findings of the study.

Modified objectivity

'Modified objectivity' is a principle adopted by PP-CR researchers, based on the assumption that there are three layers to the world:

1. Real: there is one reality.
2. Actual: this reality may exist outside our knowledge of it and we may never completely observe it, although social actors may feel and experience its effects.
3. Empirical: social actors and researchers can measure and observe the effects of this reality.

A combination of the actual and the empirical may explain the most likely reality.

PP-CR assumes that researchers can never completely overcome their own assumptions and perspectives in such complex social systems. However, it also assumes these are part of the experience of reality and therefore should be acknowledged and considered – they are likely to have led the researcher to the research question in the first place.

It also assumes that complex social systems cannot be completely controlled or measured, so the objectivity required of positivists can never be achieved (Table 1). Conversely, it also rejects interpretivist assumptions about subjectivity and the idea that social actors create their own reality and that there are many different realities depending on your position and experience of the world.

The TAPUPAS criteria were developed from a more practical, rather than philosophical, academic or research perspective (Pawson et al 2003), so there is no comparator for objectivity and subjectivity

(Table 1). As these criteria reflect the epistemological assumptions of these philosophical approaches, modified objectivity was added for this study to reflect those of PP-CR as well.

Hence, CR research should consider – and demonstrate that it has considered – what sources of knowledge are available, what the evidence base is and how combining such evidence can:

Inform the aims, objectives and design of the research

The researcher set out with a research question in mind, along with overarching aims and objectives. However, the process of scoping and reviewing research evidence enabled the refinement of these before the final design was confirmed.

Demonstrate any of the researchers' underlying assumptions

Underlying assumptions were addressed through a reflective component in the background and justification of the project. This included a frank discussion of the researcher's beliefs about Facebook and professional accountability, as well as the journey that led to the inception of the research question.

Conversely, the study's conclusion included critical reflection relating to the study's limitations – to acknowledge the fallibility of knowledge (Box 1) – and the research journey, including any learning or changes in the researcher's assumptions. It also discussed issues and researcher's perspective of matters including bias, objectivity and subjectivity.

Triangulate available knowledge and evidence to advance the knowledge in the field

Data were collected using a variety of methods – literature review, observation, semi-structured interview and focus groups – from a range of sources and stakeholders identified in the model of professional socialisation (Weidman et al 2001). This meant there was sufficient scope and quantity of data to consider a range of perspectives of reality to explain what reality most likely is (Danermark et al 1997, Ackroyd 2009, Buchanan and Bryman 2011). Finally, to acknowledge the fallibility of knowledge, further areas of research and an action plan to evaluate and build on the study's findings were also included in the conclusion and recommendations.

Conclusion

Quality criteria need to inform the planning, design, conduct, dissemination and application of research findings. More traditional models of quality, validity and trustworthiness tend to reflect the

philosophical assumptions of positivism and interpretivism and, therefore, there is opportunity to use TAPUPAS in PP-CR research. However, TAPUPAS lacks a philosophical 'steer' so the criterion of 'modified objectivity' can be used to enhance this framework as TAPUPASM.

This paper used a practical example of a critical realist ethnography relating to preregistration nurse education, professionalism and the use of social networks to demonstrate how nurse researchers might use TAPUPASM in the planning, design, conduct and dissemination of PP-CR research. It may also be informative for researchers who want to appraise PP-CR research.

Nurse researchers should consider what constitutes evidence when planning, designing, conducting and disseminating their research to policy-makers, patients, front-line staff and organisations. This emphasises the importance of a stakeholder analysis and the use of non-traditional methods in any dissemination strategy, from conception to completion (Reed 2016).

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Box 1. The assumptions of post-positivist critical realism

- There is one reality, which can never be completely known and may be seen differently, depending on where we are situated. What we observe, feel, measure and analyse are simply representations of what this reality is
- Reality may be viewed and interpreted by different people in different ways but the 'reality' they experience is one single reality being seen from different angles or perspectives (a concept of 'modified objectivity')
- Social systems are open, complex and may continuously change. They can never be completely controlled, so can never be free from what positivists believe to be bias (a concept of modified objectivity)
- What we currently know to be true is fallible – knowledge evolves and progresses over time and what we believe to be fact now may be proven wrong or improved on in future. This reflects many professional standards of evidence-based practice, which require nurses to use the 'best evidence available' at a given time
- What might be a fact in one circumstance may not be in another. For example, we can use the best evidence we have, evidence that has been shown to be a fact, to help a patient but it will never work consistently for every single patient in every circumstance. There are underlying mechanisms in reality that we can never control or see
- Knowledge should be generated from a range of sources and through a range of methods and we should aim to explain – using theoretical frameworks, previous knowledge, research and the collection of primary data – what the most likely reality is, based on the best evidence available at the current time and in the current circumstances
- Knowledge should be fit for purpose. For example, it should be accessible, applicable, usable and relevant to the context for which it is intended

(Adapted from Phillips and Burbules 2000, Buchanan and Bryman 2011)

	Positivist	Interpretivist	Post-positivist realism
Quality criteria	Reliability Are the results of the study repeatable and replicable?	Dependability Can the results be replicated and be relevant in other times and places?	Transparency Is the process of generating knowledge explicit and clear? Accessibility Does it meet the needs of those seeking the knowledge?
	Internal validity (construct validity) • Can the conclusions and relationships be trusted? • Do measures do what they say they will?	Credibility How believable are the findings?	Accuracy Are the claims made based on relevant information? Purposivity • Do the methods achieve what they claim to achieve? • Are they appropriate to achieve the aims and objectives? Propriety Is the research legal and ethical?
	External validity (Ecological validity) • Can the findings be generalised more widely to a community or population? • Can the findings be applied to natural social settings?	Transferability Can these findings be applied in other contexts?	Specificity Does the research generated consider and apply to source-specific standards? Utility • Is the research appropriate to the setting • Does it provide answers to the practical questions? •
	Objectivity Consideration of bias	Confirmability To what level have the researchers allowed their own values to influence the process?	Modified objectivity Does the research review a range of evidence and draw the most likely conclusions based on this?

Table 1. Comparison of TAPUPASM with positivist and interpretivist indicators of quality

(Adapted from Lincoln and Guba 1985, Bryman 2008, Pawson et al 2003)

	Table 2. The basis and outcomes of the exemplar study
Background	The rapid proliferation of social networking sites such as Facebook has presented a wealth of challenges and opportunities for the nursing profession. A large majority of nursing students have adopted Facebook but – as developing professionals – may not understand the implications and unintended consequences of sharing information in a personal or innocent way
Aim	To explain the context of and relationships between professional accountability and Facebook for pre-registration nursing students during their journey of professional socialisation
Methods	Critical realist ethnography using online observation of three cohort groups, 30 public profiles and professional group discussion topics, focus groups (academic and practising nursing staff – *n*=8) and semi-structured interviews with nursing students over two geographical sites (*n*=16)
Results	Critical realist retroductive analysis (Bhaskar 1998) was developed as part of this study. Three relationships were identified and six models were generated to explain and test proposed mechanisms in the data that cause these relationships: • The concept of professional accountability • Patterns of use • Behaviours and activities • Physical versus online reality • Unacceptable, acceptable, professional or unprofessional behaviours • Perceived knowledge and awareness versus actual behaviours • Three theories were then confirmed and used to develop three explanatory critical realist frameworks: • Socialisation, professional socialisation, online socialisation (SPO) • Unacceptable, acceptable, unprofessional, professional (UAPU) • Awareness to Action (A2A)
Conclusion	• SPO: This study has indicated a potential tertiary or online socialisation process and illustrates the factors, context and socialisation that informs accountable behaviours, linking the physical and online (personal, public, professional) • UAPU, A2A: The lack of physical context and presence in the online environment causes dissonance between perceived and actual behaviours and confidence versus competence • A2A is a tool for assessing self-efficacy, risk and decision-making for nursing students to proactively and educators, employers and professional groups to reactively manage self-awareness and behaviours online. The relationships between accountability, Facebook and the pre-registration nursing student are individual, complex and evolving

Table 3. Examples of how purposivity can be met	
Study objective	Purposivity met by
Use a model of professional socialisation to critically analyse the perceptions, behaviours and actions of those who influence the pre-registration nursing student as a developing professional in the context of Facebook	By using observation, semi-structured interview and focus groups (nurses and academics), the study considered the perceptions, observed behaviours and actions of the influencers outlined in the model of professional socialisation (the stakeholders)
Critically explore pre-registration nursing students' understanding of the concept of professional accountability in the context of Facebook	Semi-structured interviews enabled participants to consider their knowledge of professional accountability and this concept in the online environment. Field notes and researchers' reflective journals identified critical reflections and possible emerging themes. Although many of these were not explicitly reported in the final results (Barron 2013), they guided subsequent interviews to enable an ongoing critique of perceptions and experiences. A final reflection and revisit of underlying assumptions identified at the start of the study is included in the conclusion of the research
Critically analyse pre-registration nursing students' behaviours and publicly accessible information on Facebook in the context of professional accountability	
Critically analyse and explain underlying causal mechanisms that affect the relationships between Facebook, professional socialisation and the behaviours and actions of pre- registration nursing students on Facebook	Analysis was designed to be complementary to Bhaskar (1998) and Danermark et al's (1997) and therefore to reflect the principles of critical realism, but with sufficient detail to indicate that it is fit for purpose. The results presented an example of how each stage was practically applied so that the study may be repeated by other researchers to employ critical realist ethnography

Figure 1. An overview of the collection and analysis of data and the results

Data Collection

1. Semi-Structured Interviews → Pre-registration student nurses using interview prompts

2. Focus Groups → Academic Nursing staff – using prompts; Registered nurses from practice – using prompts

Transcription
Review transcriptions and make notes on initial thoughts

3. Observation/ Field notes →
- Public Facebook profiles 'student nurse' phrase search on Facebook
- Semi-structured interview participants public profiles
- Public student nurse Facebook groups
- Public professional student nurse groups
- Field notes based on reflections of semi-structured interviews and general observations in the media or changes to guidance documents e.g. NMC 2015a

Structured observation schedule:
- Entities
- Actions
- Outcomes
- Events
- Tendencies
- Structures (morphostatic/ morphogenic)
- Mechanisms

4. Literature review → Other research evidence in order to describe the current situation and level of knowledge. Important for analysis stage 1

Analysis

Critical Realist analysis stages

Stage 1. Describe the current situation

Stage 2. Data coding
Identify components
- Entities
- Actions
- Outcomes
- Events
- Tendencies
- Structures (morphostatic/ morphogenic)
- Mechanisms
(re-read and confirm)

Stage 3. Identify relationships
Conceptualisation and relationship maps for common themes

Stage 4. Visual mapping of models
how is relationship X possible? What has to occur with the components for X to be possible? Hypothesise the potential theories that may explain these models and the relationships within them

Stage 5. Compare, test and confirm the possible theories within the data. Confirm the most likely.

Stage 6. Theoretical and explanatory frameworks
Confirm most probable explanations in response to the research question

Results

Overview of results found within each stage of analysis

Stage 1. Chapter 2 – literature review revisited and included in analysis

Stage 2. Components: these are summarised in table 5-4

Stage 3. Relationships (3 proposed in response to the research question)
Relationship A – The pre-registration student nurses' understanding of professional accountability in the context of professional socialisation

Relationship B – The pre-registration student nurses' relationship with Facebook: perceptions, patterns, motivations and behaviours

Relationship C – The interaction between professional socialisation, the concept of accountability, Facebook and the pre-registration student nurse

Stage 4. Visual mapping of models (6 proposed)
Model I – the concept of professional accountability
Model II – uses of Facebook
Model III – behaviours and activities on Facebook
Model IV – physical versus online 'reality'
Model V – behaviours: unacceptable, acceptable, professional or unprofessional?
Model VI – perceived knowledge & awareness versus actual actions

Stage 5. Compare, test and confirm the theories and therefore the most likely explanatory mechanisms (3 proposed)
Theory I - societal change, evolution and experiential learning
Theory II – primary, secondary and online socialisation, social capital & identity
Theory III - diffusion of innovation

Stage 6. Theoretical and explanatory frameworks in response to the research question (3 proposed)
Framework I SPO: socialisation-professional socialisation-online socialisation
Framework II A2A: awareness into actions
Framework III UAPU assessment: unacceptable, acceptable, professional, unprofessional