



First Steps impact evaluation report

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Introduction

The Royal College of Nursing (RCN) recognises that education and training are vital in enabling clinical staff to deliver high quality, compassionate care. As noted by Francis (2013), Cavendish (2013) and Willis (2015), there has been a widespread lack of consistency in standards for health care assistants' (HCA) education for many years.

The RCN developed the *First Steps for HCAs* learning resource in 2011 to support HCAs in acquiring the foundation skills and values that are vital to their role. First Steps is an online resource providing interactive training across six key topic areas: communication skills; health, safety and security issues; personal and people development; quality of care; equality, diversity and rights; and clinical skills. It is designed to complement local training schemes and is one of the many resources that the RCN has developed as part of its professional offer for members of the nursing team.

Impact evaluation

In 2014 the RCN undertook an impact evaluation of First Steps to assess its quality and impact on HCAs' learning outcomes, as well as explore important contextual factors influencing people's experience of and access to the resource. The results of this impact evaluation will inform the continued development of First Steps in line with user needs, and provide the strategic direction for the RCN in advancing its professional offer to the HCA workforce.

The evaluation took a mixed methods approach across four phases. A mixed methods study design allowed a comparison of results from each phase against each other in order to triangulate the data. This increased the quality of the research, and supported development of robust recommendations for decision makers.

- Phase 1: a scoping review of existing literature examined the effectiveness of learning or training provision for HCAs, together with an analysis of analytics from current usage of First Steps. This initial analysis allowed us to scope and shape three further concurrent phases of data collection.
- Phase 2: an online analytical questionnaire was distributed to a sample of 62 previous First Steps users to measure self-reported learning outcomes amongst different types of users, and to understand context and experience of using the resource.
- Phase 3: a cohort group of 21 HCAs currently working in a front line setting with no previous experience of using First Steps undertook a health care knowledge test both before and three months after using the resource to assess any changes in their knowledge.
- Phase 4: a series of semi-structured interviews with eight HCAs and 12 representatives from health care providers (HCPs) explored the contextual reasons behind the impact and implementation of First Steps.

Results

An evaluation was required because our knowledge of the impact of First Steps was limited

- Intelligence about the approach and impact of HCA training and education is limited. Our literature review found that, while there are many local foundational training and education programmes for HCAs, few studies evaluate their impact and effectiveness, with most being single site, narrow in scope and descriptive in nature.
- Analysis of metrics of visitor data suggested that First Steps is widely accessed and engagement is growing, with the First Steps website being the most highly visited of the RCN online resources. However such analytics alone are not a proxy for success. Further systematic assessment of learning outcomes from completion of First Steps, together with an exploration of user experience, motivation and engagement serves to enhance existing research findings and provides robust evidence for the RCN in further development of First Steps and planning the strategic direction for professional activities.

HCAs who used First Steps found it useful, easy to use and learnt from the resource

- Respondents to our survey and interviews reported that the First Steps website was generally well regarded, easy to use, and the foundation level material informative and well-pitched for the target audience.
- The use of dynamic and interactive features in First Steps was rated highly and contributed to the clarity and accessibility of the resource.
- There was an overall perception that First Steps had contributed to improvements in individuals' clinical practice, and findings from the survey and cohort studies give some further indication of this contribution.
- In the survey, self-reported learning outcomes were statistically significantly higher in the period after using First Steps than in the period before for each of the six modules that were covered in the learning resource.
- In the cohort study, health care knowledge scores were statistically significantly higher in the period after using First Steps than in the period before using it.
- Improvements in health care knowledge amongst HCAs is expected to lead to improvements in the delivery of patient care.
- Learning from *First Steps* can benefit all groups within the target audience, and has potential for further reach and uptake. Although it is likely that our survey respondents were from a particularly well-motivated and self-directed group of learners, within that group age and years of clinical experience made no difference to user learning outcomes.
- Some interview participants believed that inexperienced HCAs were not the only ones who benefited from First Steps, and suggested that registered nurses, experienced HCAs and managers may also

benefit from using the resource. Others indicated that they made additional use of First Steps as a reliable source of information for continued reference.

- Compatibility was also an important reason for First Steps being considered a good educational tool and supplement to in-house training. Many respondents felt that, as well as meeting the skills and core knowledge required of the HCA role, First Steps content also had close synergies with national targets and educational qualifications. Compatibility with the Care Certificate and the Qualifications and Credit Framework was mentioned in particular.

The RCN is viewed as a recognised and trustworthy brand and this enhances the credibility of First Steps. At the same time, awareness of First Steps improves the RCN's professional reputation

- Credibility of First Steps as a resource was aligned with perceptions of the RCN brand as producing trustworthy and quality material.
- Experience of high quality and responsive support to First Steps queries from the RCN also contributed to the described value of the resource
- By investing in the development of First Steps whilst making the resource freely accessible, the RCN increases its professional reputation to members and non-members.
- Survey respondents indicated they were more likely to join (80per cent) or retain membership (100per cent) of the RCN as a result of their experience with First Steps.

First Steps enjoys unique advantages as a learning resource and the RCN should maximise this potential

- Due to its brand name and status, educational resources developed by the RCN enjoy a comparative advantage over its competitors. As there is currently an increasing demand for educational resources aimed at HCAs, there is real potential for the RCN to lead the way by further developing First Steps to meet this need.
- First Steps is now one of the few foundational training resources for HCAs which has been systematically assessed for effectiveness and found to be associated with improvements in learning outcomes for motivated users.
- As an online learning resource which can be utilised by many users with only minimal increases in variable costs, First Steps enjoys considerable economies of scale.

There is potential for First Steps to reach further

- Visitor data alone can provide a misleading idea of the impact of a resource; our findings indicate that the use of First Steps has predominantly been driven by champions both within and outside the RCN. The dissemination of First Steps to new audiences has been overly reliant on peer-to-peer

endorsements and there remains a large group of HCAs who could benefit from First Steps but are unaware of the resource.

- Our findings are limited by the First Steps users we have been able to reach, and it is likely that respondents to all phases consist predominantly of well-motivated and self-directed learners. While our evaluation suggests that First Steps has enjoyed considerable success in reaching this substantial group of what may be termed ‘early adopters’ amongst HCAs, continued success will depend on a strategic approach to understanding and targeting users currently unaware or unable to access First Steps, or in some way disenfranchised from it.
- IT infrastructure in the health care sector was identified as an impediment, due to both access to the resource and the use of its dynamic and interactive elements which was one of its identified strengths. These issues obliged many to take up use of the resource at home in their own time, and it is unclear how this barrier may affect use by less motivated learners.
- It is likely that there remains a substantial number of HCAs for whom First Steps is out of reach, through an inability to gain access, due to a lack of available time or motivation, either personally or from their organisation. More understanding is needed of the extent of this group, together with possible mechanisms to reach them.
- Workplace cultural norms such as a perception that when HCAs are using computers in the office they are ‘not working’ was cited as another barrier. When this is combined with work pressures, the successful use of First Steps is likely to be dependent on buy-in and understanding from senior managers.

Recommendations

- It is of fundamental importance that a learning resource is effective in improving learning outcomes for those who use it. **Visitor metrics alone from the First Steps website should therefore not be used as a proxy for its success and should instead be combined with a systematic assessment of the resource based on learning outcomes and user experiences.**
- First Steps has been found to be successful in improving learning outcomes for our group of predominantly well-motivated and self-directed early adopters. **A strategy needs to be developed to identify and reach out to other groups who may face challenges and barriers that deter or prevent them from using the resource.**
- It is likely that the use of new technologies and innovations such as the First Steps resource will be increasingly used to overcome traditional barriers and costs to learning. **The RCN is trusted by HCAs for its brand name and the RCN should utilise this advantage by further developing new material and new features to support First Steps become the go to online educational and reference resource for HCAs.**
- **The material on First Steps can be increased in breadth and complexity so that it supports tiered learning to support the outputs from the Shape of Caring review (Willis, 2015). The structure of First Steps can also be optimised to improve its functionality as an online reference tool.**

Table of contents

This report consists of the introduction, a preliminary background research stage (phase 1), three data collection stages (phases 2, 3 & 4) and the final conclusion and recommendations.

The introduction sets out the background to the First Steps resource and the mixed methods impact evaluation model used to assess the effectiveness of First Steps on HCA learning outcomes whilst exploring contextual factors associated with its success and limitations as an educational resource.

Phase 1 summarises our rapid evidence review which examines the research landscape associated with the evaluation and assessment of foundational training programmes for HCAs and our descriptive analysis of visitor metrics from the First Steps website. Findings were used to develop our overarching questions which helped to shape our impact evaluation of the First Steps resource and, in particular, identified the nature of the contextual information that would be captured in addition to HCA learning outcomes. The full literature review and the report from our analysis of visitor metrics can be found in Appendices A and B respectively.

Phase 2 describes our use of an online analytical questionnaire to a sample of previous First Steps users to measure self-reported learning outcomes and experiences of using the First Steps resource. This phase captures indirect information on HCA learning outcomes and user experiences (N=62).

Phase 3 describes our use of a cohort study to assess changes in HCAs' health care knowledge before and after using First Steps. This phase provides a direct assessment of HCA learning outcomes that is intended to complement self-reported outcomes from phase 2 (N=21). The assessment tool that we used to estimate health care knowledge can be found in Appendix C.

Phase 4 describes our use of semi-structured qualitative interviews with HCAs and representatives from health care providers (HCPs) to explore themes relating to the use of First Steps such as user experience and motivation, as well as determining any drivers and barriers. Data collected from this phase was

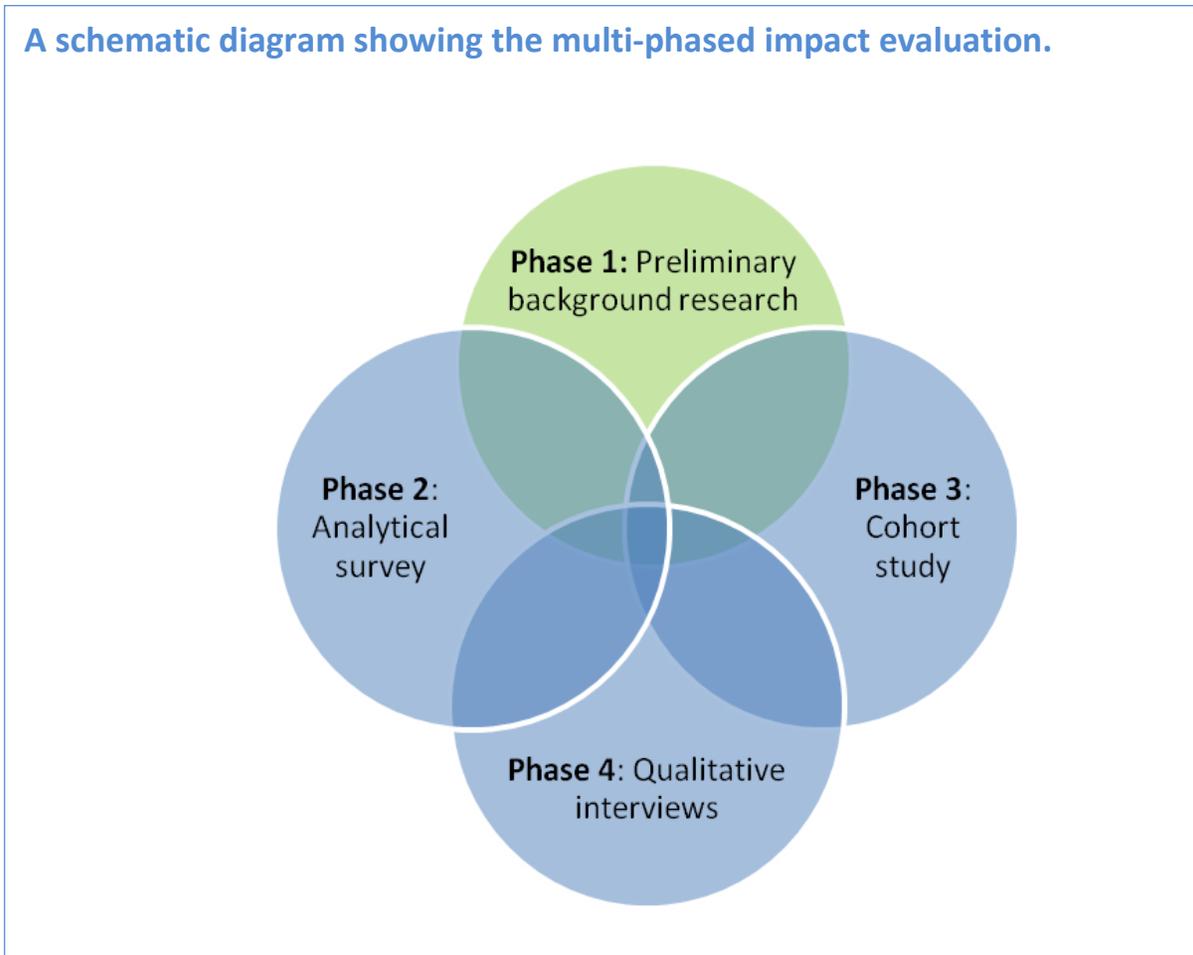
intended to complement our HCA learning outcomes from phases 2 and 3, providing the ‘why’ and ‘how’ information relating to the impact of First Steps on learning outcomes (N=20).

Conclusion and recommendations synthesises the findings from phases 1, 2, 3 and 4 and explores the results of the impact evaluation, relating HCA learning outcomes to contextual factors before providing recommendations for the further development and dissemination of the First Steps resource.

Appendix A: Literature review examining effectiveness of foundational learning or training provision for HCAs

Appendix B: Report on the analysis of visitor metrics from the First Steps website.

Appendix C: Assessment tool used to estimate health care knowledge in our cohort study.



Statistical analyses used throughout the report were conducted using SPSS 22 and STATA 12.

Introduction to First Steps and our impact evaluation model

INTRODUCTION

In this section of our report, we establish the contextual background leading to the development of the RCN's First Steps online learning resource. We then introduce the role and the value of conducting an impact evaluation¹ to assess the effectiveness of First Steps as an educational resource.

BACKGROUND TO FIRST STEPS

The Royal College of Nursing (RCN) represents nurses and nursing and has welcomed health care assistants² (HCAs) into membership since 2001. The RCN recognises that education and training are vital in enabling clinical staff to deliver high quality care. However, whilst training for doctors and registered nurses has long been established and regulated, training and education for HCAs in the UK varies widely in terms of structure and quality and this has negative implications in terms of delivering high quality patient care, quality assurance and role identity (McKenna et al, 2005; Spilsbury et al, 2010). As a symptom of the problem, training for HCAs has historically been underfunded and undervalued; HCAs are estimated to be responsible for 60 per cent of direct patient contact in the NHS but are only allocated around 5 per cent of the whole training budget (Health Education England, 2014).

The Cavendish Review: An Independent Review into Health care Assistants and Support Workers in the NHS and Social Care Settings was published in July 2013 following the Francis Report (Mid Staffordshire NHS Foundation Trust, 2013) and further highlighted the widespread lack of consistency in standards for HCAs. The *Cavendish Review* made recommendations that all HCAs should undertake the same foundational training that is based on current best care. However it is not enough for foundational training programmes to be based on best care alone, they must also be effective on HCA learning outcomes. This is an important point because the quality of foundational training programmes has been found to vary widely. In her review, Camilla Cavendish recounted that training for some HCAs consisted

¹ Impact Evaluation model as defined by Gertler et al (2011)

² We will use the term HCAs to describe all unregistered health care workers who are part of the nursing team and who provide care to patients but are not nurses. This includes health care support workers, nursing assistants and assistant practitioners.

of being given a DVD to watch at home. Supporting an HCA to complete a training programme that is ineffective suffers a loss at least equivalent to the opportunity cost of supporting the HCA to instead complete a training programme that is effective and falsely assuming that HCAs are adequately trained when they are not can be detrimental to patient care. In the interest of promoting high standards in patient care, foundational training programmes for HCAs should be assessed and evaluated for effectiveness and it is expected that this approach should have the additional advantage of discouraging the creation of training programmes for expediency rather than with any genuine learning in mind.

FIRST STEPS

First Steps³ was launched in 2011⁴ and is an online interactive training resource that aims to support HCAs to acquire the foundational knowledge and values that are vital for their role in providing direct patient care. First Steps takes a holistic approach to education and the learning material has been organised into six modules that reflect the NHS Knowledge and Skills Framework whilst being relevant to all health care settings:

- Communication
- health, safety and security
- personal and people development
- quality
- equality, diversity and rights
- clinical Skills

First Steps was designed to complement local foundational training programmes and to be suitable for both new and experienced HCAs as well as other members of the multidisciplinary health care team who also provide direct patient care across all clinical settings in the UK. While First Steps has strong contextual support in light of the Cavendish Review and research which suggests that e-learning can be as effective as traditional modes of learning (Imperial College London & World Health Organisation, 2015), the RCN's support for research and innovation meant that we needed to evaluate the impact of First Steps on HCA learning outcomes. To achieve this aim, we sought to measure the effectiveness of

³ www.rcn.org.uk/firststeps

⁴ The latest version of First Steps is due to go live from April 2015 and has been extended so that it now maps to all UK countries' codes and standards for HCAs.

First Steps on improving learning outcomes for HCAs and conducted an impact evaluation of this resource which took place between April 2014, when the project was initiated, and April 2015, when this report was produced.

WHAT IS AN IMPACT EVALUATION?

The term evaluation can vary within the research literature and we will use the definition provided by Gertler et al (2011):

“Evaluations are periodic, objective assessments of a planned, ongoing, or completed project, programme, or policy. Evaluations are used to answer specific questions related to design, implementation, and results.”

Zinovieff & Rotem (2008) describes the three fundamental dimensions of evaluations:

1. Process evaluations describe and assess the extent and nature of programme implementation and are an important first step in studying programme outcomes.
2. Outcome evaluations study the immediate or direct effects of the programme on participants.
3. Impact evaluations look beyond the immediate results of interventions to identify broader effects as well as unintended consequences.

Impact evaluations are part of a broader agenda of evidence-based decision making and are especially useful for assessing the effectiveness of an innovative and promising but unproven intervention such as First Steps. An impact evaluation is structured around a specific research question addressing likely cause and effect and seeks to identify changes that may be directly attributable to the intervention in order to produce evidence on programme effectiveness. At its most succinct, an impact evaluation would ask ‘what was the impact of a programme on a defined outcome of interest?’ However, thorough impact evaluations also explore the important contextual ‘why’ or ‘how’ factors associated with the success or failure of the intervention in addition to defined outcomes (Gertler et al, 2011).

OUR IMPACT EVALUATION MODEL

In the context of our report, we expected the use of the First Steps resource to improve health care knowledge and for this to lead to an improvement in patient care. Ideally, we would have been interested in investigating how the use of the First Steps resource affects the delivery of patient care but it is difficult to capture likely cause and effect if we attempt to directly associate changes in patient care with use of the First Steps resource. On the other hand, health care knowledge is easier to quantify and improvements in health care knowledge should in theory lead to an improvement in the quality of patient care provided.

Figure 1.0: Our theory of change predicts that improvements in HCA health care knowledge leads to improvements in the delivery of patient care

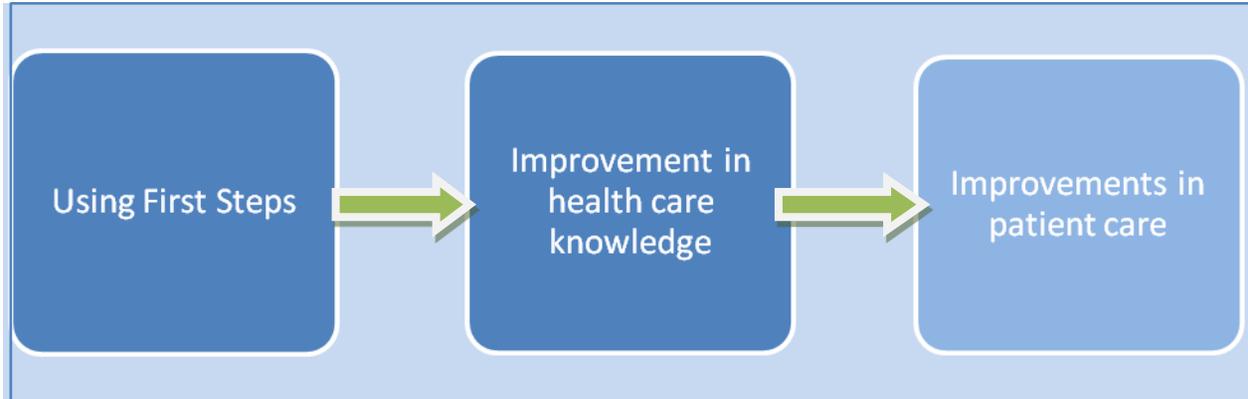


Figure 1.0 shows the use of health care knowledge as a measurable intermediate outcome. Our impact evaluation therefore focuses on assessing user learning outcomes rather than assessing patient care and our quantifiable research question would be:

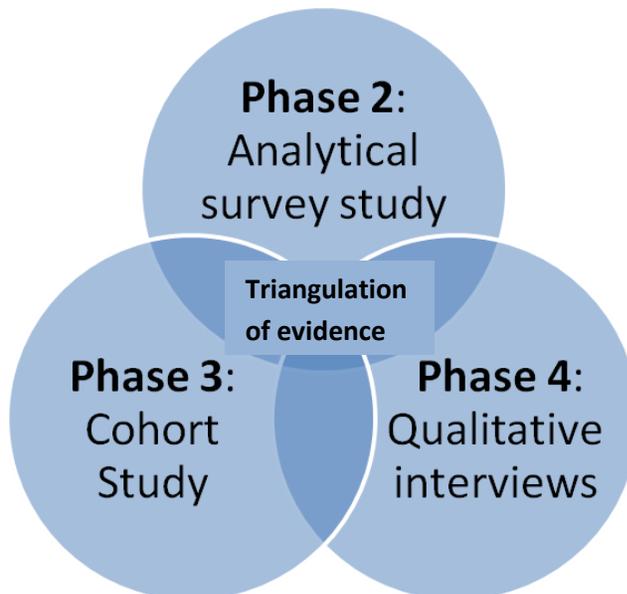
Does the use of the First Steps resource improve health care knowledge for HCAs who use it?

The impact of First Steps could be measured as the difference in health care knowledge of HCAs who have used First Steps and health care knowledge of HCAs who have not. However, in order to explore the important why and how factors relating to the use of First Steps, we have also assessed user experiences such as how it was discovered, why it is being used, how it is being used as well as drivers and barriers associated with its uptake and dissemination.

MEASURING LEARNING OUTCOMES AND EXPERIENCES

Evidence of learning and experiences can be collected in many ways but methods are usually classified as either direct or indirect assessment. Direct assessment utilises objective measurement of user learning outcomes such as the application of a written test to measure theoretical knowledge. Indirect assessment is based on self-reporting of perceived learning and attitudes relating to an intervention (Schilling & Applegate, 2010). Both direct and indirect assessment have their relative advantages in terms of objectivity, data quality, logistics of data collection and the richness of data gathered. Our impact evaluation utilised each approach in three separate but complementary data gathering studies as shown on Figure 1.1. Our mixed methods⁵ study aimed to compare and confirm results from each study against each other in order to triangulate⁶ our data. Triangulation is a powerful technique which can be used for both qualitative and quantitative data and we expected that it would partially counter weaknesses and biases inherent to each of our approaches and increase the validity of our results. One of the primary advantages from utilising a mixed methods approach was the triangulation of evaluation findings from qualitative and quantitative sources (Bamberger, 2012).

Figure 1.1: The three separate but complementary data gathering phases of the First Steps impact evaluation



⁵ A mixed methods study design combines research methods from both qualitative and quantitative perspectives (Grey, 2014)

⁶ The Department for International Development (2012) defines triangulation as “confirming and corroborating results reached by one method with other results reached by another method”.

Figure 1.1 shows our conceptual design for the data gathering phases of our impact evaluation and our plan to triangulate data from these phases against each other in order to increase their validity. Our approach aimed to utilise the quantitative data from phases 2 and 3 to measure HCA learning outcomes and the qualitative information from phases 2 and 4 to provide a detailed contextual perspective to our study.

CONCLUSION TO THE INTRODUCTION

In addition to our conceptual model, it was also important to draw on available background evidence to shape and scope our study. We therefore conducted:

- 1) A literature review to identify foundational educational or training programmes for HCAs that have been assessed for effectiveness.

- 2) An analysis of the visitor metrics associated with the First Steps website.

A summary of this background research will be described in the next section of our report. Full reports are available in Appendices A & B.

Phase 1: background research to our impact evaluation of First Steps

1.0 INTRODUCTION

In this background phase of our report, we have summarised our preliminary research which shaped our impact evaluation of the First Steps resource and, in particular, identified the nature of the contextual information which we intended to capture in addition to measuring HCA learning outcomes. The preliminary research consisted of a rapid evidence review that examined the effectiveness of foundational training programmes for HCAs and a report that summarised our analysis of visitor metrics from the First Steps website.

1.1 BACKGROUND REVIEW: FOUNDATIONAL TRAINING PROGRAMMES FOR HCAS

We conducted a rapid evidence literature review to identify and examine existing foundational training programmes for HCAs which have been assessed for effectiveness. Our findings suggested that whilst there are many local foundational training and educational programmes for HCAs, there appeared to be few studies which evaluate their impact and effectiveness and – to compound this limitation – these studies tended to be narrow in scope, single site, and descriptive in nature. From this restricted evidence, it seemed that the training programmes that were assessed were generally beneficial and associated with improved confidence (Griffin et al, 2012) and improved team working (Griffin and Blunt, 2011). The limitations of the evidence base meant that it was difficult to generalise and draw conclusions regarding the effectiveness of foundational training programmes for HCAs. However, the lack of evidence did raise concern that HCAs across the UK appear to be undertaking training programmes that may or may not be effective. The lack of evidence also suggested that there was a pressing need for further research into the effectiveness of foundational training programmes on learning outcomes for HCAs.

Our full rapid evidence review can be found in Appendix A.

1.2 BACKGROUND REVIEW: ANALYSIS OF VISITOR METRICS

Our interest in evaluating the First Steps resource was initially influenced by metrics of visitor data from Google Analytics such as number of monthly sessions and number of page views which appeared to suggest that the First Steps resource was being widely used and that this engagement was growing. From July to September 2014, the First Steps website received more monthly user sessions than all other RCN educational online websites combined together. However visitor analytics alone are not a proxy for the success of an educational resource. A systematic assessment of user learning outcomes from completion of First Steps, together with an exploration of user experience, motivation and engagement, was required to provide robust evidence for the RCN for further development of First Steps and planning strategic direction for professional activities. Our analysis of Google Analytics from First Steps identified important gaps in our understanding of the First Steps resource that were not adequately explained by analysis of visitor metric data; the most evident being the effect of using the First Steps resource on HCA learning outcomes and whether this was dependent on demographic factors such as age and clinical experience. We are also lacking important contextual information relating to HCA learning outcomes such as the motivations and experiences of HCAs who have used First Steps and the motivations and experiences of Health Care Providers (HCPs) who have supported and encouraged their staff to use First Steps.

Our full report analysing visitor metrics to the First Steps website can be found in Appendix B

1.3 OVERARCHING THEMES THAT WILL GUIDE THE IMPACT EVALUATION

The rapid evidence review, the analysis of visitor metrics data and advice from the project advisory group⁷ assisted us in identifying four overarching thematic questions relating to the *First Steps* resource that we wanted to investigate in addition to our HCA learning outcomes.

⁷The Project Advisory Group is external to the RCN and consisted of learning and educational facilitators who had a professional and expert interest in HCA training and development.

1) How do users discover the First Steps resource?

- What leads users to access the *First Steps* resource; are they directed by their employers, recommended it by peers or do they discover it from other means?
- If users are directed by their employers – HCPs – then how are these users supported in the workplace?
- Does the nature of support from HCPs affect the learning experiences of users?
- What were the motivations of HCPs who have directed their staff to utilise the First Steps resource?
- Is the relative popularity of the First Steps resource based on visitor metrics due to a higher demand for HCA educational resources or simply because the First Steps resource is better known?

2) What are the users' experiences of using First Steps?

- What do users think of the usability of the First Steps website?
- Do users trust the quality of the material on the First Steps website?
- Does it matter to HCAs and HCPs if the First Steps resource is accredited?
- Which parts are the most useful/least useful?
- What would make it easier to use the resource?
- How do the characteristics of the First Steps resource such as its online structure affect the dissemination and success or failure of First Steps?

3) Does completion of the First Steps resource make a difference to clinical practice?

- Have users been able to apply what they have learnt into their everyday clinical practice?
- Are there barriers which prevent users from implementing what they have learnt into practice?
- Do users think that completion of First Steps has made a difference to their clinical practice and delivery of care?

4) How does the First Steps resource align with the RCN's professional offer to HCAs?

- Would members be more likely to retain their RCN membership as a result of contact with the First Steps resource?
- Would non-members be more likely to consider joining the RCN as a result of contact with the First Steps resource?
- First Steps is publicly available for everyone: what is the reputational impact of the RCN's First Step resource on members, non-members and HCPs?

1.4 SUMMARY OF PHASE 1

This preliminary background phase combined findings from our rapid evidence review and our analysis of visitor metrics to the First Steps website to produce our overarching thematic questions which outlined the contextual information that we wanted to collect to complement our HCA learning outcomes. Our next sections describe the three data gathering stages of the impact evaluation (phases 2, 3 and 4).

Phase 2: self-reported questionnaires

AIM

2.0 AIM OF PHASE 2

The aims of the impact evaluation can be broken down into three broad categories:

- 1) Evaluate the effect of using the First Steps resource on HCA learning outcomes.**
- 2) Explore HCAs' experience in discovering, accessing and using the First Steps resource.**
- 3) Explore HCPs' experience in discovering and supporting the use of the First Steps resource.

For phase 2, we attempted to achieve **1)** and **2)** by creating and disseminating an online analytical questionnaire to measure retrospective self-reported learning outcomes and user experiences.

INTRODUCTION

2.1 SELF-REPORTED QUESTIONNAIRES

Analytical self-reported questionnaires are a form of cross-sectional study and have the primary advantage of being easy to administer and an online questionnaire has the potential to reach a large number of respondents and provide a wide breadth of information on a subject. However whilst questionnaires are easy to administer, they suffer from several weaknesses when used for research purposes:

- Questionnaires are not flexible and are not the best instruments to use for in-depth exploration of themes.

- Self-reported methods may suffer from response biases such as social desirability biases where respondents systematically give answers that are socially acceptable or pleasing to the researchers.
- Self-reported methods may suffer from recall bias where respondents systematically under or overrate their experiences.
- Generalisability is typically reliant on obtaining a sample that is representative of the population of interest otherwise the data may be subject to sampling bias.

For our purposes, we plan to partially counter the weaknesses of self-reported questionnaires with the cohort study (which is unlikely to be subject to response and recall biases) and the qualitative interviews (which can allow deeper exploration of themes of interest).

DATA COLLECTION AND SAMPLING

2.2 DEVELOPING AND DISSEMINATING THE QUESTIONNAIRE

(i) Measuring user learning outcomes

We were interested in quantifying the effects of using First Steps on HCA learning outcomes and captured learning outcomes. We used a ten-point before and after self-rated score on a simulated visual analogue scale⁸ for each of the six modules that were covered in First Steps.

- 1) Communication skills
- 2) Health, safety and security
- 3) Personal and people development (PPD)
- 4) Quality
- 5) Equality, diversity and rights
- 6) Clinical skills

⁸ Visual analogue scales are considered to be more precise than categorical scales (Reips & Funke, 2008)

(ii) Measuring user experience

Measuring user learning outcomes are a necessary component of a thorough impact evaluation but they are alone not sufficient without understanding the contextual 'how' and 'why' factors associated with the success or limitation of the resource. Therefore we were also interested in the user experiences of HCAs as identified by our overarching questions from phase 1 and we created questions to explore how HCAs discovered First Steps, why they used it, the perceived value of it, whether using it translated into improvements in clinical practice, and how First Steps aligned itself with the RCN's professional offer to HCAs.

(iii) Demographic information

In addition to learning outcome and experience measures, we also created questions that captured a variety of demographic variables including age and number of years of clinical experience. Our plan was to use demographic data to provide a context to our findings and to model HCA learning outcomes against experience and age. In this way we could potentially investigate the effect of age and clinical experience on HCA learning outcomes.

HYPOTHESES

2.3 PREDICTIONS: LEARNING OUTCOMES

Respondents were asked to retrospectively rate their level of knowledge for each of the six modules on a simulated visual analogue scale that ranged from 1-10 (with 1 being the least knowledge and 10 being the highest) before and after they used First Steps⁹. We expected the use of First Steps to have a beneficial effect on respondent's health care knowledge and our null hypotheses (which we expected to reject) were as follows:

- 1. There are no differences between self-reported knowledge scores pre and post First Steps for the communication skills module.**

⁹Providing that they said they looked at the module, if they did not then they were not asked to rate their learning outcomes for the module.

2. **There are no differences between self-reported knowledge scores pre and post First Steps for the health, safety and security module.**
3. **There are no differences between self-reported knowledge scores pre and post First Steps for the personal and people development module.**
4. **There are no differences between self-reported knowledge scores pre and post First Steps for the principles of quality care module.**
5. **There are no differences between self-reported knowledge scores pre and post First Steps for the equality, diversity and rights module.**
6. **There are no differences between self-reported knowledge scores pre and post First Steps for the clinical skills module.**

We could also add the pre-First Steps scores for all of the six modules together to create a total pre-First Steps score and add all of the post-First Steps scores together to create a total post-First Steps score. Our next null hypothesis (which we again expected to reject) were:

7. **There are no differences between total self-reported knowledge scores pre and post First Steps.**

2.4 PREDICTIONS: LEARNING OUTCOMES IN RELATION TO CLINICAL EXPERIENCE

Since training for HCAs has traditionally been undervalued and underinvested, we believed that the use of First Steps would generally have a beneficial effect on learning outcomes for HCAs of all levels of experiences and would not therefore expect an association between years of clinical experience and overall learning outcomes. Our next null hypothesis (which we did not expect to reject) was as follows:

8. **Respondent's years of user clinical experience is not associated with improvements in overall learning outcomes.**

2.5 PREDICTIONS: LEARNING OUTCOMES IN RELATION TO USER AGE

We believed that First Steps would be beneficial to respondents of all ages and would therefore not expect to find an association between age and overall learning outcomes. Our last null hypothesis (which we again did not expect to reject) was as follows:

9. User age is not associated with improvements in overall learning outcomes.

An important point to note is that our sampling methods would tend to capture HCAs who are IT literate regardless of their age and this underpins hypothesis 9. It does mean that the generalisability of hypothesis 9 may only be relevant for HCAs who are IT literate and/or who have access to online resources.

RESULTS

2.6 THE FINAL QUESTIONNAIRE

Our questionnaire was developed using an iterative process of testing, feedback and modification. It included the use of an online pilot to test the questions on our population of interest, namely HCAs who have used First Steps. We used opportunity sampling methods to obtain our sample; the final questionnaire was created online on the Questback¹⁰ website and a link was advertised on the RCN webpage, on the First Steps webpage, on social media profiles used by the RCN and by bulk email to RCN members along with a message inviting readers who have used First Steps to complete the questionnaire. The questionnaire was online for 9 weeks and drew 129 initial respondents but only 62 of these respondents reported that they had used First Steps (and so were eligible to complete the questionnaire). We had a final sample size of 62 respondents. The relative lack of eligible responses was surprising because visitor metrics to the First Steps website showed an increasing high volume of online users and we expected a higher response rate. The low response rate may reaffirm our earlier findings that online visitor metrics alone are not always an accurate proxy for the outreach of a resource.

¹⁰<http://www.questback.com/uk/>

2.7 DESCRIPTIVE STATISTICS

A descriptive analysis of respondent demographics is important because it provides the context for the results of our learning outcomes and experience measures. Although we would advise caution because we have a relatively small sample size and because we used non-probability sampling methods, a descriptive analysis of the demographic variables can be useful to identify any obvious selection biases from our sample.

Figure 2.0: The average age and gender makeup of our questionnaire sample

Demographics	Our sample average	NHS average	Social care average
Age	41.58	45	35
Gender	77.4per cent female	84per cent female	84per cent female

NHS and social care averages taken from the Cavendish Review (2013)

Figure 2.1: Summary of our sample's demographic information

- **Experience:** The mean years of clinical experience reported by respondents was 10 years with a standard deviation of 8.81 years.
- **Job role:** 87.1per cent of respondents said that they worked as HCAs and 12.9per cent said that they worked in other roles which included being a porter, an administrator and a research assistant.
- **Clinical speciality:** Respondents reported that they came from a range of clinical specialities including older adults (58.1per cent), general adults (37.1per cent), children (19.4per cent), mental health (17.7per cent), learning difficulties (9.7per cent), public health (6.5per cent), education (4.8per cent) and maternity (3.2per cent), 30per cent of respondents listed having two or more clinical specialities
- **Area of work:** Working in a hospital setting was the most common response (48.3per cent) followed by home care (26.7per cent) and the community (16.7per cent).
- **Working hours:** 73.3per cent of respondents reported that they worked full time, 15per cent part time and 11.7per cent said they worked variable hours.
- **Contract status:** 86.4per cent of respondents said that they were employed on permanent contracts.
- **RCN membership:** 41.9per cent of respondents reported that they were members of the RCN.

The only metric which immediately stood out as disproportional from figure 2.0 and 2.1 would be the higher than average proportion of respondents who were members of the RCN and this indicates that our sample was overrepresented in terms of RCN membership. This was not surprising considering that our methods of disseminating the online questionnaire were through RCN communication channels and we did not believe that this was a major problem as long as we kept this in mind whilst making our analysis.

2.8 LEARNING OUTCOMES

Respondents' mean post-First Steps scores were higher for each of the modules than their mean pre-First Steps score. A visual depiction can be found in figure 2.2 below.

Figure 2.2: Learning outcomes across the six foundational modules covered in First Steps (n=62)

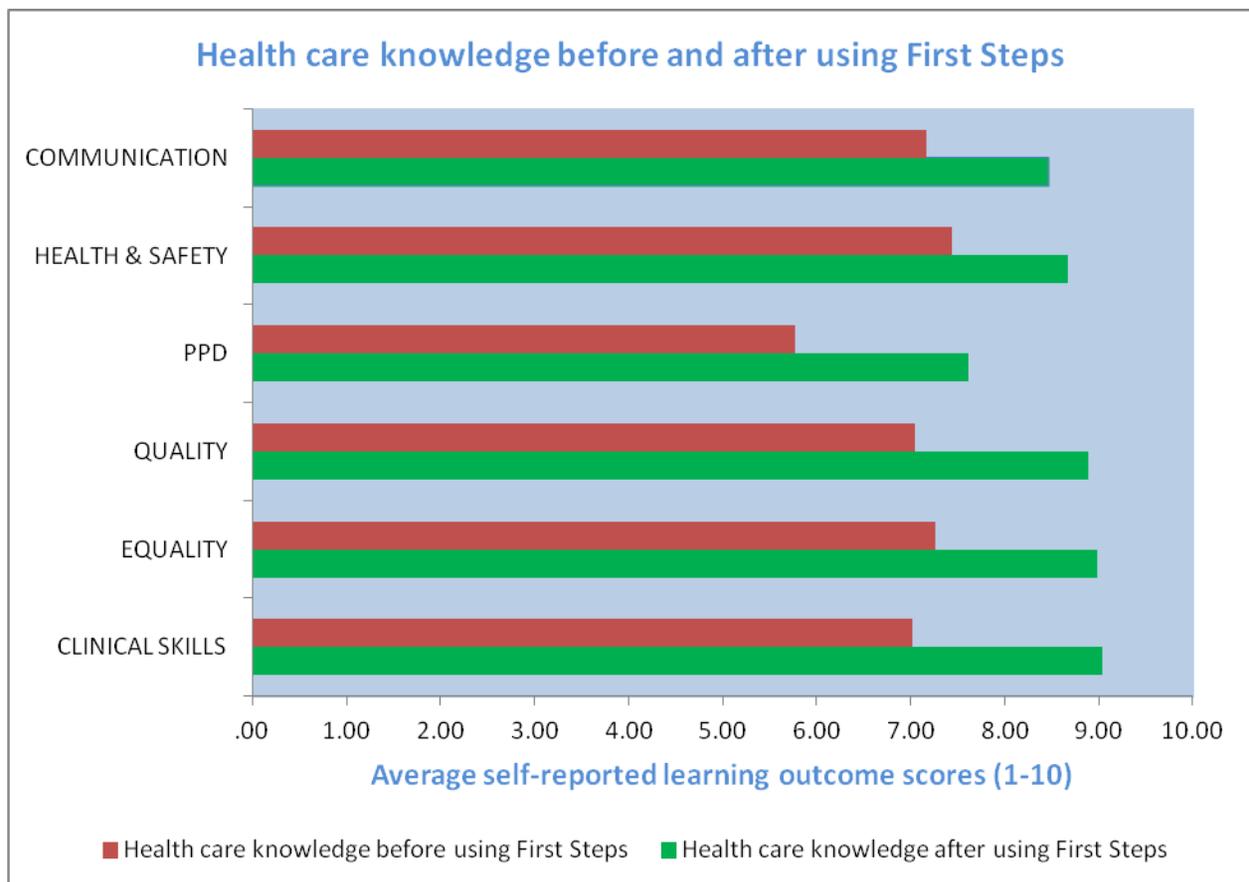


Figure 2.2 shows before and after First Steps average self-reported knowledge scores for all six of the modules covered on the learning resource. Clinical skills shows the largest absolute change in knowledge scores whilst baseline knowledge of the personal and people development (PPD) topic (5.78, SD = 3.082)

was significantly lower ($t = -3.368, p < 0.001$) than the average score of the other modules (7.19). This suggests that PPD topics are generally not well understood amongst HCAs, at least in our sample. It is interesting to note that a lack of understanding of the principles of lifelong learning and personal development amongst HCAs fits the narrative we found in our introduction where HCA training and development was underinvested and undervalued. In addition, our findings may support the ecological validity of our self-reported outcome measures; the discovery of clinically intuitive differences between baseline module knowledge scores (between PPD and other modules) may indicate that respondents are on average choosing the number that represents their knowledge. To assess if differences between before and after First Steps scores were statistically significant, we used a related samples t-test for each of the 6 modules and for the total score as shown on figure 2.3.

Figure 2.3: Learning outcomes across the six foundational modules covered in First Steps

Paired outcomes for module	Mean difference in score	95per cent lower confidence interval	95per cent upper confidence interval	t value	Significance (2-tailed)	Effect size (Cohen's d)
Communications	-1.283 (2.455)	-2.012	-0.553	-3.543*	0.001	-0.8624
Health and safety	-1.245 (3.044)	-2.084	-0.406	-2.978*	0.004	-0.8683
PPD	-1.833 (1.851)	-2.338	-1.328	-7.280**	0.000	-1.0374
Quality	-1.844 (1.637)	-2.336	-1.353	-7.558**	0.000	-1.4821
Equality	-1.717 (1.875)	-2.234	-1.200	-6.668**	0.000	-1.2958
Clinical	-2.020 (1.750)	-2.523	-1.518	-8.082**	0.000	-1.6042
All modules	-9.583 (9.524)	-12.806	-6.361	-6.037**	0.000	-3.1022

* Significant at 1per cent level

** Significant at 0.1per cent level

Absolute value required for significance have been adjusted with a Bonferroni correction to account for our multiple hypotheses

Figure 2.3 indicates that the differences between before and after self-reported knowledge scores for each of the six modules and for the total score are highly statistically significant. We therefore reject the null hypothesis that there were no differences between before and after self-reported knowledge scores for each of the modules and for total scores across all the modules. However we would also like to know the magnitude of treatment effects and have calculated effect sizes for all treatment effects using Cohen’s D (Cohen, 1988)¹¹. We can see from figure 2.3 that all the treatment effects show large to very large effect sizes (Cohen, 1988). The module which shows the largest absolute effect size is the clinical skills module and it may be helpful to compare this result with our experience measures such as respondents’ ratings of the modules in terms of usefulness to clinical practice.

2.9 LEARNING OUTCOMES IN RELATION TO CLINICAL EXPERIENCE AND AGE

We used ordinary least squares (OLS) with robust standard errors to regress years of clinical experience and age against overall learning outcomes. Our results are as shown in Figure 2.4:

Figure 2.4: OLS regression results of years of clinical experience and age on overall learning outcomes

Variable	Coefficient	95per cent lower confidence interval	95per cent upper confidence interval	t value	Significance (2-tailed)
Experience	0.157 (0.163)	-0.176	0.491	0.96	0.343
Age	-0.064 (0.153)	-0.375	0.248	-0.42	0.680
Constant	9.098 (5.133)	-1.37	19.567	1.77	0.086

Our results suggested that years of clinical experience and age were not associated with overall HCA learning outcomes for the foundational level material covered in First Steps. We therefore accept the null hypothesis that users’ years of clinical experience was not associated with HCA learning outcomes. We also accept the null hypothesis that user age was not associated with HCA learning outcomes.

¹¹Note that the effect sizes are negative because we are subtracting pre-First Steps scores with post First Steps scores and a negative difference indicates that self-reported knowledge scores has increased.

2.10 EXPERIENCE MEASURES

We had not made quantitative predictions for our experience measures and provided instead a descriptive analysis of the results which we expect will provide contextual understanding to the results of our HCA learning outcomes. It should be noted that our sample size was relatively small and this limitation should be considered when reviewing results from both our HCA learning outcomes and experience measures.

Figure 2.5: Respondent's ratings on the ease of use of the First Steps website

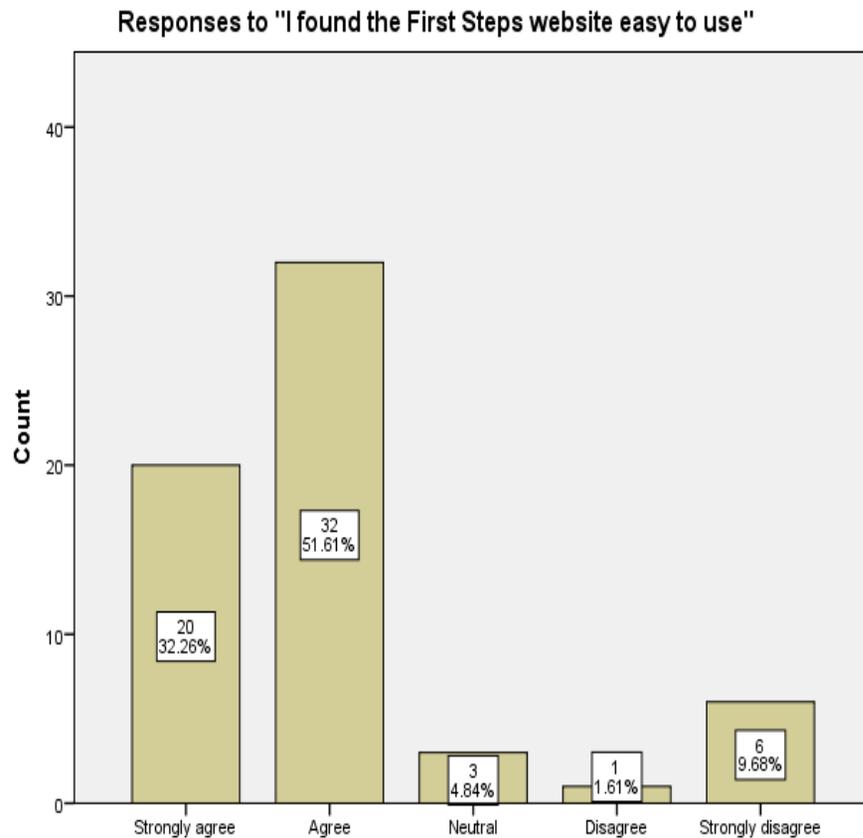
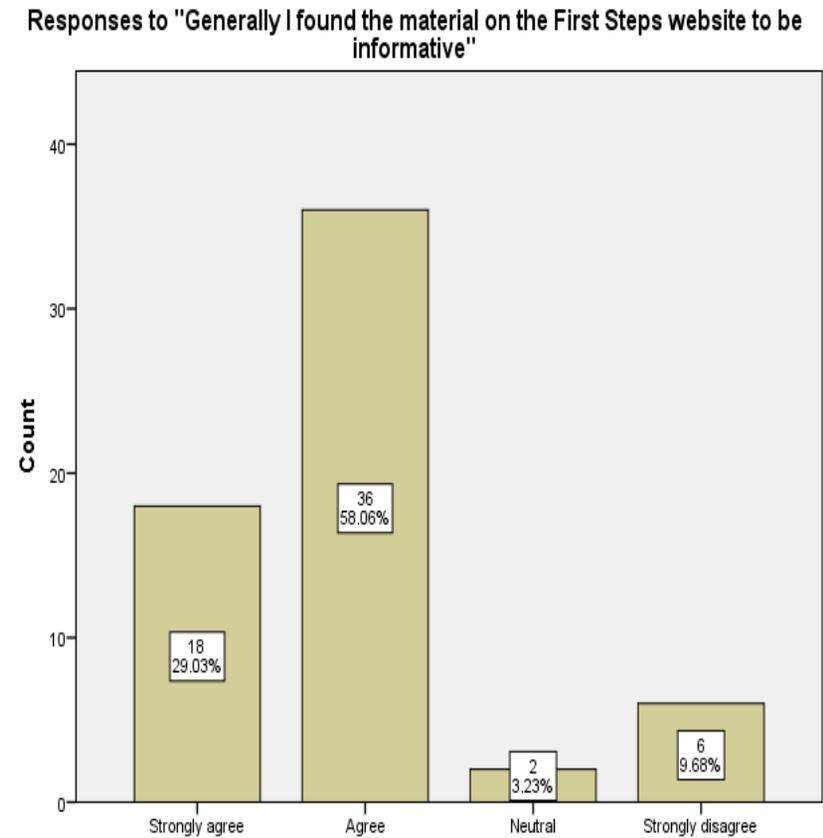


Figure 2.6: Respondent's ratings on the usefulness of the material on the First Steps website



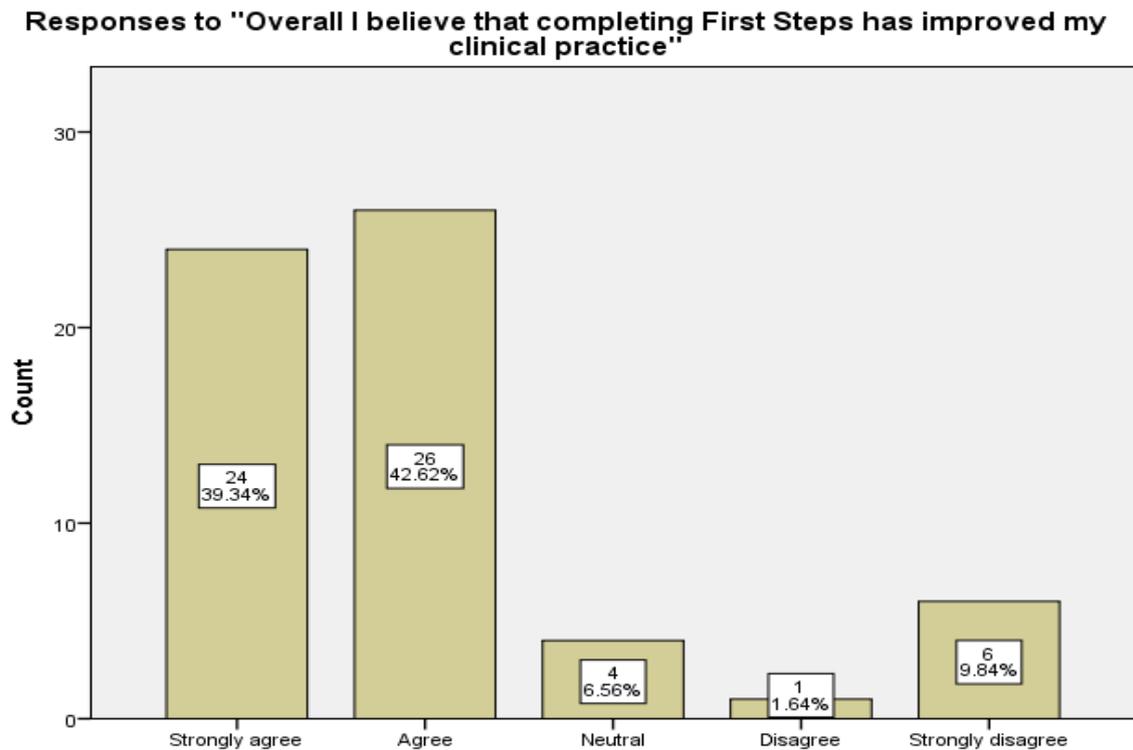
Figures 2.5 and 2.6 show the results from two questions measuring user experience namely ease of use of the First Steps website and the usefulness of the material on the First Steps website.

74per cent of respondents either agreed or strongly agreed that the First Steps website was easy to use.

87per cent of respondents either agreed or strongly agreed that they found the material on First Steps to be informative.

We can infer that in general, First Steps was felt to be easy to use and is viewed as informative but we need to bear in mind that there were a minority of users who strongly felt the opposite and this may need to be explored.

Figure 2.7: Does First Steps improve user’s clinical practice?



82per cent of respondents agreed or strongly agreed that First Steps had a positive effect on their clinical practice. Figure 2.7 is important because it can be used to support our theory of change that improved user learning outcomes from First Steps leads to improvements in clinical practice.

Figure 2.8: Responses to “How did you first discover the First Steps resource?”

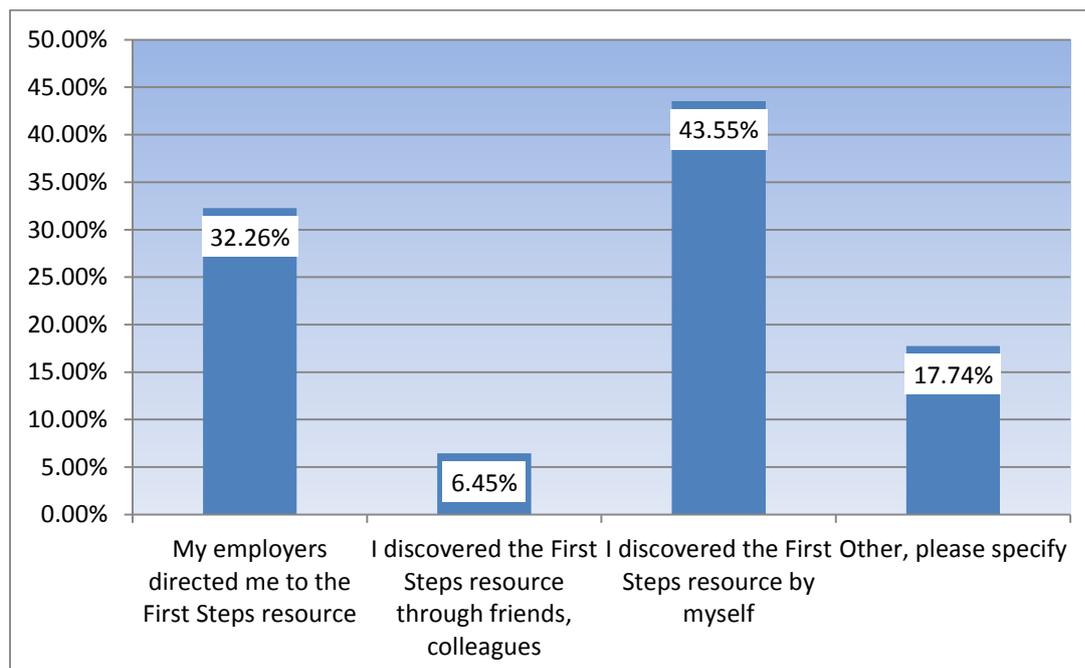


Figure 2.8 shows that 32.26per cent of respondents indicated that they found First Steps by their employers and 43.55per cent discovered it by themselves. Responses from the ‘other’ category predominantly included actions that could have been described in the other three categories of self-discovery, discovery by peers or discovered and directed by employers. We chose not to manually aggregate responses from the ‘other’ category to these three categories because of the risk of introducing experimenter bias.

Figure 2.9: Responses to “Why did you decide to complete the First Steps resource?”

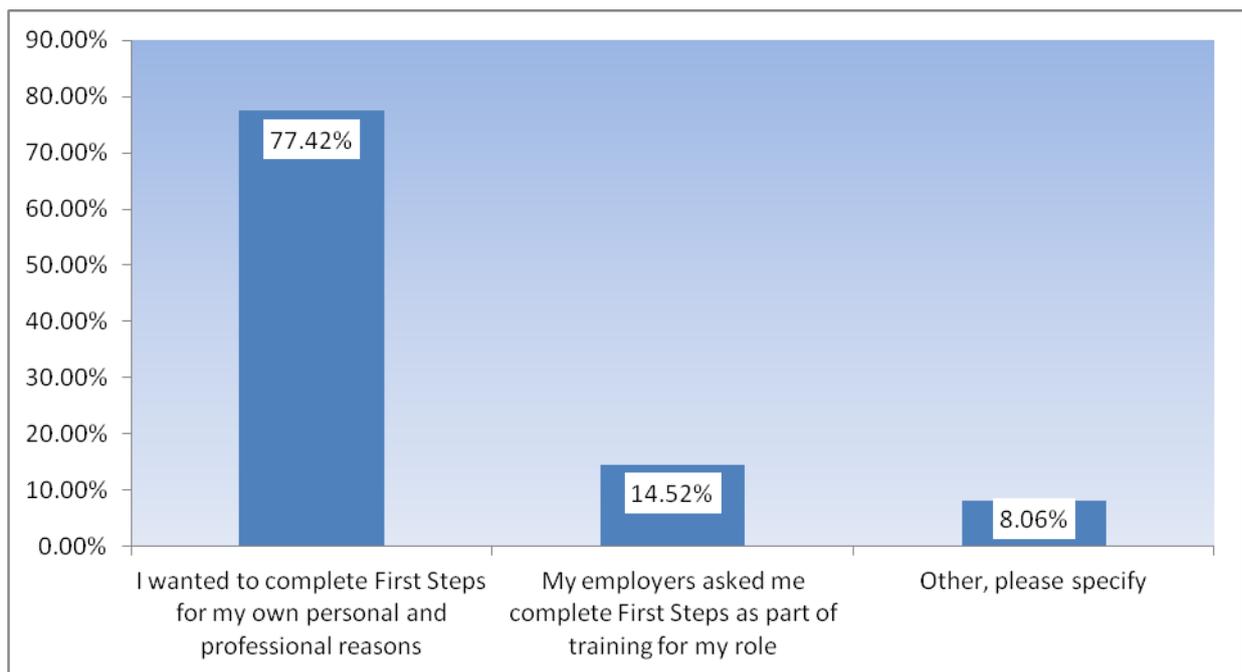
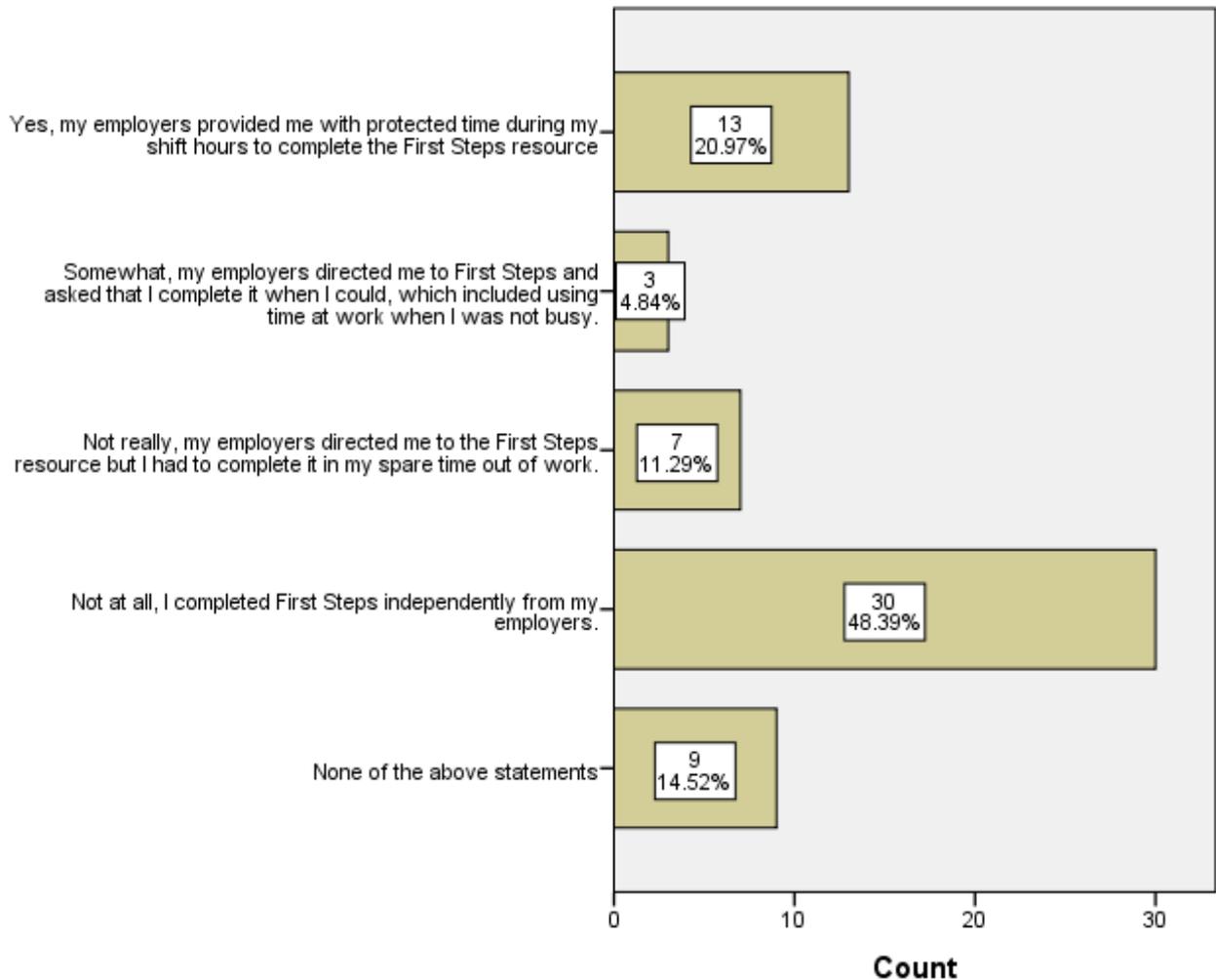


Figure 2.9 shows that 77.42per cent of respondents indicated that they completed First Steps for their own personal and professional reasons and 14.52per cent of respondents completed First Steps because they were asked by their employers. Answers from the ‘other’ category included using First Steps to aid with their foundation degree, for their pre-registration nurse education, and (from one respondent) because they were not able to afford academic studies which was an intriguing comment and may be worth exploring outside of this impact evaluation.

Our experience measures so far seemed to indicate that our sample was represented by a high proportion of well-motivated and self-directed learners and this may have implications for the generalisability of our results: would the same learning outcomes be achieved or achievable with HCAs who were less motivated and eager to learn? We explore this issue in phase 4 of our impact evaluation (qualitative interviews).

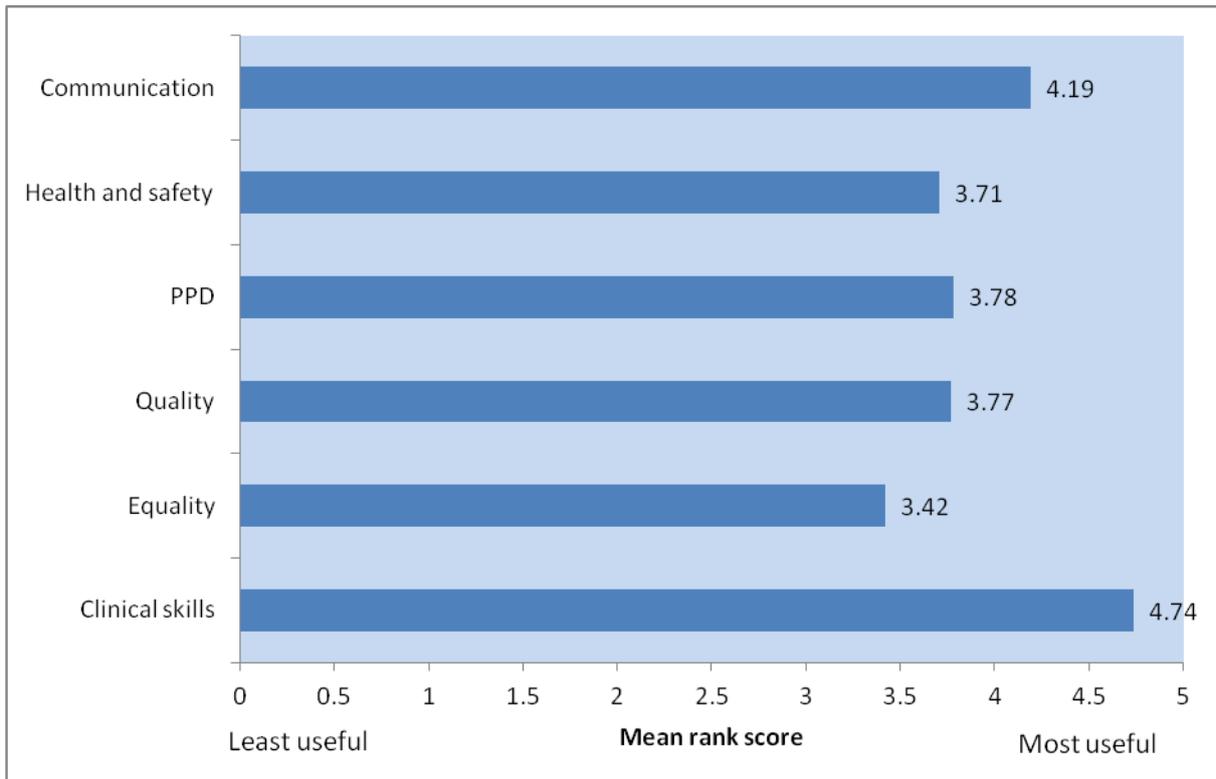
Figure 2.11: Responses to “Did your employers provide work time to support you to complete the First Steps resource?”



Almost half of respondents stated that they completed First Steps independently of their employers although 1/5 users reported that they were given protected time during shift hours.

The most common user profile from our sample was a user who discovered First Steps by themselves and completed it independently of their employers for their own personal and professional reasons. It would be interesting to assess whether user motivation and employer support is associated with learning outcomes and this may be explored in future studies with larger sample sizes.

Figure 2.12: Responses to “Please place in order the topics that you found most useful to topics that you found the least useful with 1 being the least useful and 6 being the most useful.”

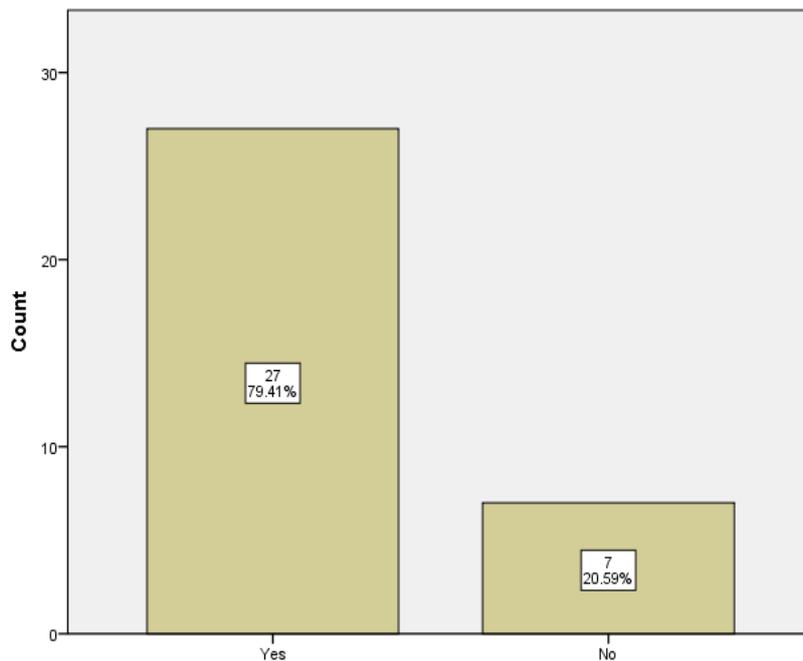


In order to assess the users’ relative value of each module, users were asked to rank each of the six modules on First Steps against each other in terms of usefulness. Figure 2.12 indicates that the clinical skills module was ranked as the most useful and the equality module as the least useful¹². Combining figure 2.12 with figure 2.3, clinical skills was also the module showed the largest effect size in terms of learning outcomes. However there did not otherwise appear to be any other noticeable relationships between modules which respondents found the most useful and their self-reported learning outcomes for these modules; for example the equality module showed the third largest effect size in terms of learning outcomes but was rated as the least useful module.

Our findings from figure 2.12 should always be take contextual factors into consideration and should not be used as definitive evidence alone for the usefulness of a module. It would be interesting to explore our findings and identify reasons why clinical skills was the most highly rated module and equality was the lowest, and we planned to either explore this in phase 4 of our impact evaluation or in future studies if this information was not captured by our qualitative interviews.

¹² This method relies on averaging user rankings and assuming that the data is interval in nature. The numbers do not add up to 3.5 because of missing values due to some respondents not ranking all modules. An alternative method of evaluating ranking is by counting the number of highest ranks given to a module. This also shows that the clinical skills module as the most highly ranked followed by communications whilst the equality module remains the lowest ranked module.

Figure 2.13: For respondents who were not members of the RCN, would they be more likely to join the RCN as a result of their experiences with First Steps?



79per cent (27/34) of respondents indicated that they were more likely to join the RCN as a result of their experiences using First Steps

For respondents who were members of the RCN, 100per cent (27/27) of our sample said that they were likely to retain their memberships as a result of their experiences with First Steps.

Our findings suggested that First Steps has the potential to greatly improve the RCN’s offer for HCAs, providing that the resource is known to HCAs and used. There is clearly a need for the RCN to promote this resource in order to maximise its positive effect on the RCN’s professional offer.

DISCUSSION

2.10 LEARNING OUTCOMES

There were statistically significant differences between before and after First Steps self-reported scores for all six modules as well as differences between before and after total scores. Age and years of clinical experience were not found to be associated with HCA learning outcomes for the foundational level material that is found on First Steps.

The direction and effect of the HCA learning outcomes supports our predictions that First Steps has a beneficial effect on respondents’ health care knowledge, although limitations from our study design

means that we are cautious against making any causal inferences. Although the results are statistically significant, we need to be aware of possible limitations including our relatively small sample size, our dependence on self-reported outcomes as a proxy for actual outcomes and our opportunity sampling methods which may induce systematic bias. One area of concern is the possibility of systematic biases¹³ such as response bias where users give answers that are socially acceptable or answers that they feel are pleasing to the organisers. Systematic biases are not alleviated by increasing the sample size but we will triangulate our results with the results from phase 3 of our impact evaluation (the cohort study) which is unlikely to be subject to response biases¹⁴.

2.11 EXPERIENCE MEASURES

A large majority of users reported that the First Steps website was easy to use, that the material was informative and that they felt using First Steps improved their clinical practice. Users predominantly reported that they chose to complete First Steps for their own personal and professional reasons and many users discovered and completed First Steps independently of their employers. However there were a minority of users who were directed to First Steps by their employers and who received protected work time to complete it. These results suggest that the use of First Steps has tended to be driven by the ambitions and motivations of individual HCAs rather than organised top-down pressure from institutions or policy makers.

First Steps also appeared to enhance the RCN's professional offer and the four out of five non-RCN member respondents indicated that they were more likely to join the RCN as a result of their experiences with First Steps. 100 per cent of all RCN members indicated that they were more likely to retain their memberships as a result of their experiences with First Steps. Continuing to invest in the resource may have benefits in terms of increasing the RCN's professional reputation and increasing membership in addition to helping the RCN meet its professional obligations as a Royal College.

We combined our findings of experience measures from this phase with information from phase 4 of the impact evaluation (our qualitative interviews) to gain a deeper understanding of the contextual factors associated with the use of the resource.

¹³Random biases tend to conceal true differences and are usually addressed by increasing the sample size.

¹⁴ Although the magnitude of our results suggests that our results are less likely to be due to bias or confounding.

SUMMARY OF PHASE 2

There were statistically significant differences in self-reported health care knowledge scores before and after using *First Steps* and this difference was independent of age or years of clinical experience.

Interestingly, respondents reported that their baseline knowledge of personal and people development issues was the lowest out of the six modules covered in *First Steps* and this aligned with the narrative we found our introduction where HCA training and role development was undervalued and underfunded. In addition, users tended to report that they found the *First Steps* website easy to use and informative and reported that they found the clinical skills module to be the most useful for their clinical practice. This module was also associated with the largest effect size for of learning outcomes.

It is important to bear in mind caveats relating to our results.

Caveats

- Design limitations of our uncontrolled observational study means that whilst we can make an association between the use of *First Steps* and improvements in HCA learning outcomes, we should be cautious against making causal inferences. However the validity of our findings is improved by triangulating results with phase 3 (the cohort study) which measured HCA learning outcomes using an objective assessment tool.
- A high proportion of our sample appeared to be well-motivated and self-directed learners and it is unclear if our stated HCA learning outcomes would generalise beyond this group.
- HCA learning outcomes may also be dependent on being able to access and use the resource; a learning resource that improves user learning outcomes will have limited impact if few people know about it or if people have problems accessing it.
- Our relatively small sample size should be considered when evaluating HCA learning outcomes and our results from experience measures.

Phase 3: cohort study

AIM

3.0 AIMS OF PHASE 3

The aims of the impact evaluation can be broken down into three broad categories:

- 1) Evaluate the effect of using the First Steps resource on HCA learning outcomes.**
- 2) Explore HCAs' experience in discovering, accessing and using the First Steps resource.
- 3) Explore HCPs' experience in discovering and supporting the use of the First Steps resource.

For phase 3, we attempted to achieve **1)** by conducting an uncontrolled cohort study where we followed a group of HCAs before and after they completed First Steps.

INTRODUCTION

3.1 COHORT STUDIES

The primary advantage of our cohort study was that we were able to follow HCAs before and after they used First Steps and measure their health care skills and knowledge at both stages using an objective measurement tool. The direct assessment of knowledge greatly reduced the risk of response bias where participants systematically underrated or overrated their learning outcomes when they are asked to self-report. Because of this, our cohort study was designed to complement phase 2 of the impact evaluation and we were able to compare HCA learning outcomes obtained from both direct and indirect assessments.

A primary disadvantage with cohort studies is that data collection can be laborious and is resource intensive. For our study, we were constrained by logistical factors, did not include a control group and relied on opportunity sampling methods. Whilst we will not make any causal inferences from the cohort study alone, we triangulated results with phases 2 of the impact evaluation to increase the confidence in our findings.

DATA COLLECTION AND SAMPLING

3.2 DEVELOPING THE MEASUREMENT TOOL

Measuring HCA learning outcomes

We were interested in quantifying the effects of using First Steps on HCA learning outcomes and sought to create an assessment tool which accurately captures health care knowledge and which covered a range of material found across each of the 6 key modules on First Steps: communication skills; health, safety and security issues; personal and people development; quality of care; equality, diversity and rights; and clinical skills. The material covered was at a foundational level standard meaning that HCAs should possess this core level of knowledge before they provide direct patient care. For example, topics covered in clinical skills include peak flow readings, taking blood pressure readings and oxygen levels – topics that are routinely taught in other foundational training schemes.

Creating our assessment tool

We modified the validated assessment¹⁵ quiz from the RCN's First Steps website¹⁶ by selecting questions which could be translated into a paper questionnaire and which covered the range of modules found on First Steps. We tested our assessment measure for clarity, sensitivity and reliability on feedback groups¹⁷ and kept and rejected questions based on our experiences from these groups. Our final assessment measure comprised 30 questions and each question carried one mark and possible total scores ranged from 0 – 30. We tested our final assessment measure on a pilot group of HCAs who shared similar characteristics to HCAs who we wished to recruit for our cohort study. Our extensive testing was driven by our aim to increase the accuracy of our measurement tool; an increase in accuracy decreases sampling error which can counteract the increase in sampling error from a small sample (Wlad, 2004).

3.3 DATA COLLECTION

Our target cohort group consisted of health care workers who were currently working as HCAs in a range of clinical settings where they provided direct patient care and had no prior experience with using First Steps. We made no limitations on age or years of clinical experience. Using an opportunity sampling method, we identified eight groups of HCAs working in health care teams across the NHS and the private health care sector who were scheduled to complete the First Steps resource as part

¹⁵ Validation by expert consensus.

¹⁶ <http://rcnhca.org.uk/assessment-quiz/>

¹⁷ Our feedback group included researchers, HCAs and educational trainers who work with HCAs.

of their clinical training and who were available and willing to take part in our cohort study. We administered the initial assessment measure to a total of 48 participants before they used First Steps and administered the same final assessment measure to 21 of these 48 participants afterwards¹⁸. The average time between participants taking the initial and final assessment measures was approximately three months. We were interested in HCA learning outcomes and our final sample therefore consisted of 21 respondents.

3.4 LIMITATIONS OF OUR DESIGN

- Our study did not have a control group and did not control for the confounding effects of other training or increased clinical experience through time as shown in figure 3.0.
- We have a small sample size which may lead to an underpowered study and may also limit our ability to generalise results.
- Participants who agree to use First Steps or to take part in our study may have unobserved characteristics that systematically influenced their learning outcomes.

Figure 3.0: Possible sources of bias in our cohort study

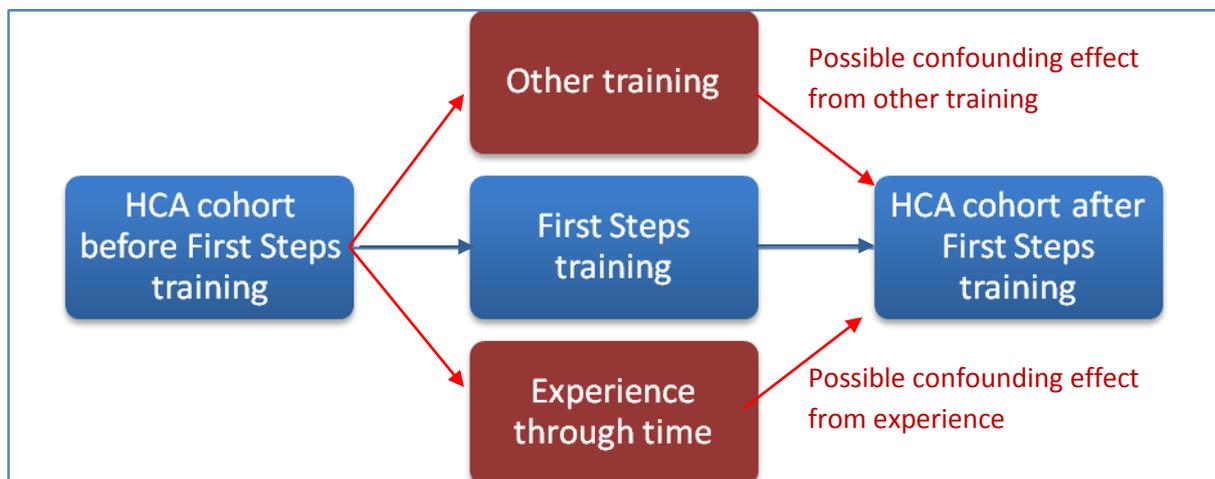


Figure 3.0 shows the possibility of confounding factors leading to a spurious association between HCA learning outcomes and the use of First Steps. It could be argued that a randomised clinical trial (RCT) where the experimenter randomly allocates the participants to the intervention or the control group is the only study design which would adequately control for these confounders. However not all interventions can be feasibly measured using a RCT and this includes First Steps¹⁹.

¹⁸ Respondents were not informed that the same assessment measure would be used.

¹⁹RCTs can be prohibitively expensive, running up to millions of pounds for one study (Sansom-Fisher et al, 2007).

3.5 DESCRIPTIVE STATISTICS

Figure 3.1: Average age and gender percentages of our sample

Demographics	Our sample average	NHS average	Social care average
Age	42	45	35
Gender	81per cent female	84per cent female	84per cent female

NHS and social care averages taken from the Cavendish Review (2013)

Figure 3.1 suggests that our sample is fairly representative of our population group of HCAs working across the NHS and the private sectors in terms of age and gender. Our cohort sample was also very similar in terms of age and gender to our sample from our analytical survey in phase 2 (mean age = 41.58, 77.4per cent female).

HYPOTHESES

3.6 PREDICTIONS

We expected the use of First Steps to have a positive effect on respondents' health care knowledge and our null hypothesis (which we expected to reject) was as follows:

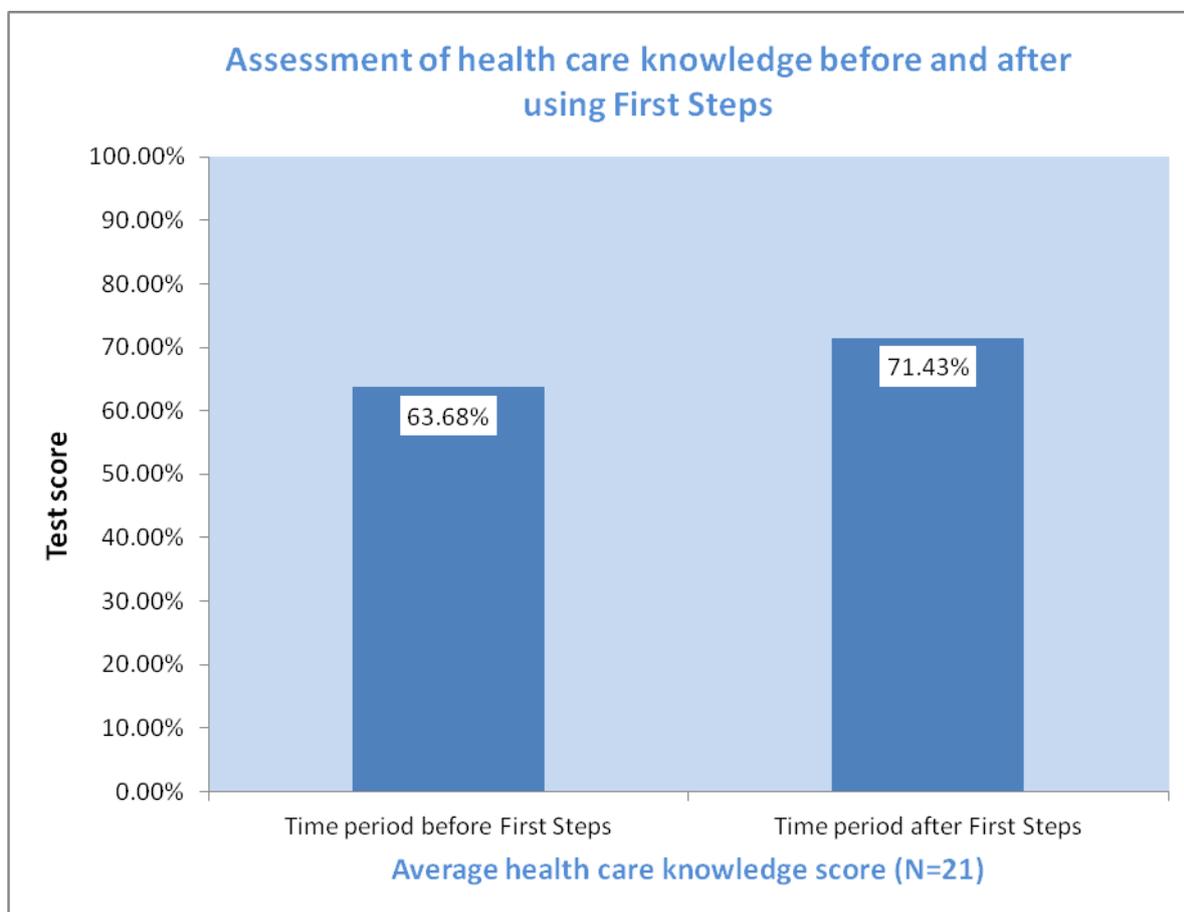
- 1. There will be no difference between respondents' knowledge assessment scores in the time period before using First Steps and in the period after completing First Steps.**

Although this phase of the impact evaluation may appear brief and consist only of one hypothesis, testing of this hypothesis is a vital component of the impact evaluation because it was the only part of the study which directly assessed HCA learning outcomes.

RESULTS

3.7 LEARNING OUTCOMES

Figure 3.2: Health care knowledge measurement scores²⁰ before and after using First Steps



A Wilcoxon signed-rank test indicated respondents' assessment measure scores were statistically significantly higher ($Z = -2.661$, $p = 0.008$)²¹ in the time period after using First Steps (71.43per cent, $SD = 14.05$ per cent) than in the time period before using First Steps (63.68per cent, $SD = 13.68$ per cent) and we reject our null hypothesis that there is no difference in assessment scores before and after using First Steps.

²⁰ Possible scores ranged from 0-30 but we have converted them into percentages for our chart

²¹We used a non-parametric test due to the small sample size (problems associated with the distributions of data are usually addressed by the central limit theorem and the law of large numbers).

DISCUSSION

Our results shows an association between the use of First Steps and statistically significant improvements in objective HCA learning outcomes. This supports our results from phase 2 of the impact evaluation which found statistically significant improvements in self-reported knowledge scores amongst respondents after using First Steps. Although we cannot prove from this study that there is a causal relationship between the use of First Steps and HCA learning outcomes, the triangulation of positive evidence from phases 2 and 3 supports our predictions that the use of First Steps has a positive effect on health care knowledge.

The results section from this phase is brief but its length belies its importance to the impact evaluation as it provided an objective assessment of HCA learning outcomes that supplemented our self-reported measures from phase 2.

Our study could be improved by a larger sample size and in the absence of a larger sample, we compensated by striving to increase the accuracy of our measurement tool and by triangulating our results against the other phases of the impact evaluation.

SUMMARY OF PHASE 3

This phase supported the findings from phase 2 of the impact evaluation and found an association between the use of First Steps and improved HCA learning outcomes. However despite these findings, we should bear in mind our caveats within this phase.

Caveats

- Our uncontrolled cohort study design meant that whilst we can make an association between the use of First Steps and improvements in health care knowledge, we should be cautious against making causal inferences.
- Our cohort study may be underpowered because of our small sample size.
- Our cohort sample and/or their employers are likely to possess characteristics associated with motivated early adopters and this may limit the generalisability of our results to the wider population.

It is important to note that each phase of our impact evaluation has not been intended as a stand-alone study and we were reliant on the triangulation of evidence amongst phases in order to increase the validity of our results. Collating the results from phases 2 and 3, we found statistically significant improvements in HCA learning outcomes after the use of First Steps in two different studies that used different design methodology which increased the validity of our results.

Phase 4: qualitative interviews

AIM

4.0 AIMS OF PHASE 4

The aims of the Impact evaluation can be broken down into three broad categories:

- 1) Evaluate the effect of using the First Steps resource on HCA learning outcomes.
- 2) Explore HCAs' experience in discovering, accessing and using the First Steps resource.**
- 3) Explore HCPs' experience in discovering and supporting the use of the First Steps resource.**

For phase 4, we attempted to achieve **2)** and **3)** by conducting a series of semi-structured telephone interviews with HCAs who have used First Steps and HCPs who have supported HCAs to use it.

It is important to note that our findings from this interview phase of the impact evaluation are based on a self-selected sample of HCAs and HCPs and our analysis and conclusions from this phase are rooted in the experiences from this group.

4.1 SUMMARY FOR PHASE 4

This section describes the findings from the interview phase of the First Steps project. The first part will describe the methods used and considerations taken to ensure that the findings are robust and applicable. Interviews took place with 20 study participants consisting of 12 health care providers (HCPs) and eight health care assistants (HCAs). The methods, questions and analysis were all based on well-established research in implementation science (Cook et al, 2012), and helped us gather rich data.

The second part highlights the findings of the interviews. These findings are split into themes and sub-themes which are based on what we know about the implementation and impact of innovations. In linking what the interview participants said with evidence-based research, we are able to make strong conclusions that would help the dissemination and implementation of First Steps.

The third part discusses the implications of the findings, and is the section that provides the link between the interview results and the theory and models we used in this phase of the study.

The findings suggest that First Steps is in general a well-regarded product. As an innovation, interview participants felt that it was easy to use and well-pitched to the target audience. Part of the reason for this clarity and accessibility was First Steps use of dynamic and interactive features, which participants rated highly.

Compatibility was also a prominent sub-theme emerging from the interviews. For example, participants felt that the content of First Steps met the skills and core knowledge required of the HCA role. It was also felt that there were close synergies between First Steps and national targets and educational qualifications, and the compatibility with the Care Certificate and the Qualifications and Credit Framework (QCF) was mentioned in particular. This compatibility was in part a reason why First Steps was seen as a good educational support tool and used in cases such as in supplementing in-house training.

A number of the components of First Steps were viewed particularly positively. The accountability, communication and clinical skills were seen by interview participants as useful and relevant to their role. Indeed, some interview participants believed that junior HCAs were not the only ones who benefited from First Steps, and cited registered nurses, experienced HCAs and managers as roles which would benefit from using the tool.

Despite the above positive impressions, there were limitations within First Steps that emerged from the interviews. For example, whilst some interviewees believed that First Steps would be useful for other job roles, other interview participants felt that the material could be further developed to increase its complexity and breadth beyond a common sense level.

Another product limitation that emerged from the interviews is that whilst some participants felt that First Steps had a unique offering, others felt that it would only prove useful for organisations that did not have established in-house HCA educational programmes. Additionally, the lack of external accreditation and recognised educational currency meant that some interview participants

felt that the Care Certificate²² and QCF had stronger offerings. Others however, saw First Steps as a launch-pad for undertaking such qualifications.

Despite these limitations, First Steps was seen as a trustworthy resource, and most interviewees linked it with the perceived credibility of the RCN. There was an indication that this credibility influenced the implementation decision of some users. Linked to this, interview participants felt that the RCN offered high quality responsive support to their queries regarding First Steps, which augmented the product offering.

The findings also highlighted other areas of interest in addition to the attributes of First Steps or the credibility of the RCN and its product offer. Health care sector IT infrastructure was a general, if somewhat unsurprising, concern of interview participants. Interviewees commonly stated that the IT equipment (or lack of) in their organisation was a hindrance to the utilisation of First Steps. This led to users being forced to use the resource in their own home in their own time. Furthermore, if First Steps was used within their organisation, interview participants found that some of the very strengths of First Steps, such as its dynamic and interactive elements, were not supported by their organisation's IT equipment.

As well as not having enough high quality physical resources, interviewees also stated that limited time was a barrier for them to use First Steps during working hours. However, the participants who were interviewed were highly motivated, and were not particularly hindered by the lack of time and resources offered to them at work. These HCAs represent the 'early adopter' who take up innovations, and it is unclear how the larger general population of HCAs would react to the above barriers.

Finally, communication emerged as one of the strongest themes from the interviews. One of the most common ways that interviewees found out about First Steps was by stumbling across it on the RCN website. Another common way of discovery was hearing about it through an external change agent (someone who influences the decision of others towards the implementation of an innovation). Whilst interviewees tried to spread awareness regarding First Steps, they noted that they did not hear it discussed within their organisations. While the strengths of First Steps meant that champions existed for the product, the findings also suggest that there was a distinct lack of formal marketing and awareness-raising.

²² Introduced from April 2015 in England

The implementation caveats mentioned in the results – such as the perceived lack of relative advantage compared to professional qualifications, few organisational incentives given to HCAs to complete First Steps and the weakness of organisational IT systems – will need particularly close attention as such barriers may be a hindrance to strategic growth in an otherwise sound product with beneficial impact.

4.2 INTRODUCTION

To allow us to explore the findings from the previous phases of this study, we needed to use a framework that helped us to contextualise the impact of First Steps on HCA learning outcomes. The Greenhalgh et al model (2004) is a robust evidence-based model that covers a wide range of themes in implementation science (Cook et al, 2012) and was therefore appropriate for our objectives.

This report describes the findings from the interview phase of the First Steps project. The first part of this report will describe the methods used and considerations taken to ensure that the findings are robust and applicable. Interviews took place with 20 study participants consisting of 12 health care providers (HCPs) and eight health care assistants (HCAs). The methods, questions and analysis were all based on well-established research in implementation science (Cook et al. 2012), and helped us gather rich data.

The second part of the report highlights the findings of the interviews. These findings are split into themes and sub-themes which are based on what we know about the implementation and impact of innovations. In linking what the interview participants said with evidence-based research, we are able to make strong conclusions that would help the dissemination and implementation of First Steps.

The third part of this report discusses the implications of the findings, and is the section that provides the link between the interview results and the theory and models we used in this phase of the study.

4.3 METHODS

Qualitative interviews aim to explore certain actions and can expand on context and events (Yin, 2011; 2014). The planning of any interview requires logistical issues to be considered, for example whether resources are required to travel to an interview site, and the risk of recording more data than necessary. In addition, 'interviewer effects' and 'social desirability' responses may also occur in interviews. This means that interview participants answer in a way that they think is more socially desirable or answer in a more positive or negative manner than if they were not being interviewed (McColl et al, 2001; Doody and Noonan, 2013). This risk can be mitigated by emphasising to interview participants that the interview is confidential (McColl et al, 2001).

There are three main types of interviews: structured, unstructured and semi-structured. A structured interview is one where "each participant is asked the same questions using the same wording and in the same order as all other participants" (Doody and Noonan, 2013; p.28). Whilst the results of structured interviews are easier to compare, they cannot probe and elaborate on answers. This limitation means that researchers usually only use them to gather socio-demographic data. In comparison, unstructured interviews open with one question and following the direction of the answers of the interview. However, analysing unstructured interviews is very resource intensive as data will need to be brought together from often amorphous transcripts (Doody and Noonan, 2013).

Semi-structured interviews are the most common type of interviews. They use themes and questions but leave room for probes and elaborations (Doody and Noonan, 2013). This was the method used for this study because it gave thematic consistency across interviews whilst providing the flexibility needed to probe questions (Yin, 2011). This allowed us the flexibility to gather rich data needed to explore complex issues relating to the contextual factors associated with the impact of First Steps on HCA learning outcomes.

Alternative survey methods considered

We considered conducting group interviews, as they can help stimulate recall and are useful for elaborating on opinion (King and Horrocks, 2010). However, the logistics of assembling a number of health care staff together at the same time meant that conducting focus group interviews was unrealistic for this study. In addition, there is a risk of focus groups to conform and develop group norms (King and Horrocks, 2010).

Face-to-face interviews were also considered, but resource constraints would have limited the number of interview participants being interviewed, so we used telephone interviews.

Sample size

The sample size we used was one of the most important considerations we had to make in the planning of interviews. We had to balance resources and logistical considerations with gathering the right amount of robust data. What the right amount actually amounts to has been highly debated in academic literature, and is based on the concept of thematic saturation (Guest, Bunce and Johnson, 2006). Saturation means that interviews will reach diminishing returns in terms of new thematic data, so that new interviews begin repeating themes already collected and little or no new thematic data is obtained for each new interview (Guest, Bunce and Johnson, 2006). This means that estimating the number of interviews required is interlinked with estimating when saturation will be reached. However, whilst thematic saturation is considered a gold standard for purposive samples, “there have been few guidelines on how to establish whether one has in fact achieved saturation” and few guidelines for determining the size for non-probabilistic purposive samples (Bryman, 2012; p.18). The best method of sampling interviews is to stop once saturation is reached, but because we needed to plan the project and resource practicalities, we required an estimate of the number of interviews to be conducted (Baker and Edwards, 2012; Adler and Adler, 2012; Guest, Bunce and Johnson, 2006).

Some authors have argued that the appropriate number of interviews would depend on the purpose of the research (Baker and Edwards, 2012). For example, one interview may be enough to give a good account of a unique event, or a few may be enough to highlight that an issue is more complex than previously thought. However, more may be required if the purpose of a project is to provide a rigorous conclusion (Becker, 2012). As such, Bryman (2012) argues that sample size matters less than the justification for the size, taking into account research objectives, resources and analytical framework. Equally, Brannen (2012) argues that it is not only the sample size that is important but case inclusion as well. There is no point in having a large sample size if the researcher does not interview the most relevant people for the project. For qualitative research it is the depth and complexity of analysis that ensure conclusions and explanations are strong and convincing rather than a large sample size (Mason, 2012).

4.3.1 Sample participants and inclusion criteria

Our project contained two study populations spanning the middle (representatives from health care providers such as educators and trainers) and junior (HCAs) levels of health care organisations.

Based on the previous research with regards to sampling size, we estimated that a minimum of 14 interviews was sufficient to reach thematic saturation and an appropriate number given the project resources. This meant a minimum of seven HCP interviews and seven HCA interviews. We conducted more interviews as a safety net if thematic saturation was reached after 14 interviews. In total, we interviewed 20 participants consisting of 12 HCPs and eight HCAs.

We used non-randomised purposive sampling to select participants for this study because our aim for this phase of the project was to achieve analytical rather than statistical generalisability (Yin, 2014; Guest, Bunce and Johnson, 2006). This meant that participants were chosen because they were information rich and specifically useful for meeting research aims and objectives (Devers and Frankel, 2000).

4.3.2 Development of the interview schedules

An interview schedule is a guide containing topics for the interviewer to follow and is characterised by themes rather than questions. Our interview guide was based on the conceptual framework of Greenhalgh et al, and used the constructs in their framework as starting points for the themes we considered including. We went through various iterations of the interview schedule. This included rephrasing themes and reformulating the order of themes to allow the interviewee a context or opportunity to 'warm up' during the interview (Doody and Noonan, 2013).

The goal of the interview schedule was to explore the use, dissemination, implementation and impact of First Steps. Early drafts of the interview schedule had a number of themes, which were later reduced by considering the direct applicability to the research aims and objectives – need to know rather than good to know (McColl et al, 2001)). Two interview schedules were prepared: one for HCPs and one for HCAs. This was in order to reflect the different roles and responsibilities of the two groups.

4.3.3. Interview logistics

Interviews were conducted over the telephone by experienced qualitative interviewers from the National Centre for Social Research. Interview participants were invited to take part in the interviews by a letter, staff information sheet and a consent form. The staff information sheet provided project

information to the participants and the consent form made clear that participation was voluntary and that participants could withdraw from the study at any time. Interviews were audio-recorded and transcribed. Whilst Mays and Pope (2000) suggest that respondent validation should be used in qualitative research, we chose not to send the interview transcripts to each participant as an accuracy check was not required for the transcripts as they had been transcribed verbatim.

Most interviews lasted around 20-30 minutes. The purpose of this length was to gather enough rich information without reducing the quality of responses by over-burdening the participants with a long interview. This was based on the theory of respondent motivation, where respondent motivation declines if interviews go beyond the optimal length of time (which would depend on a range of factors) (McColl et al, 2001).

4.3.4 Pilot interviews

There has been some debate as to the usefulness of pilot studies in qualitative research (Teijlingen and Hundley, 2001). Some authors have argued that where multiple interviews are conducted, pilot studies are not necessary as interviews have a progressive nature as the interviewer will continually refine and improve questions as more information is obtained. However, other authors contend that pilot studies allow a project scope to be refined and focus the analytical topics being explored (Teijlingen and Hundley, 2001). We conducted two pilot interviews to allow us to test the feasibility of conducting the number of interviews we had planned, assess whether the interview schedule was workable in the given time of the interviews and refine the interview themes.

4.3.5 Ethical considerations

The main ethical issue that was considered for this project was that of confidentiality. It was important that this project provided anonymity in order for participants to speak frankly about their opinions on First Steps. Anonymity was achieved in the following ways: firstly, prior written consent was sought for tape-recording of the interviews. Secondly, participation in the interviews was entirely voluntary and assurances were given to participants that the interviews were entirely confidential. Thirdly, interviews with staff members were given a unique identifier code and transcribed for anonymity. Fourthly, interviewers from an independent research agency (the National Centre for Social Research) were used, and together with the anonymised transcripts meant that we did not know which transcript belonged to which interview participant.

4.3.6 Coding and data analysis

The use of the Greenhalgh et al conceptual framework and the conducting of semi-structured interviews lend themselves to analysing the interview data using thematic analysis (King and Horrocks, 2010). King and Horrocks (2010) identify three main types of thematic analysis, although note that there are a number of alternatives and variations of these main types.

The 'classic' type of thematic analysis uses descriptive coding in the first stage, followed by interpretive coding and finishing with the development of overarching themes. It is predominantly bottom-up in the sense that themes are developed *a posteriori* – emerging from the analysis and interpretation of the interview data. This classic type is resource intensive as it typically requires line-by-line coding of transcripts. Another version of thematic analysis is matrix analysis. The central characteristic of this approach is the visual use of tables in coding data against concepts or issues relevant to the research project. This visual element facilitates the comparison of data across units and cases (King and Horrocks, 2010). The matrix approach tends to use a number of different matrices, depending on the issues or themes the researcher wants to explore. This approach tends to be used more for comparative thematic analysis.

The approach we took was the use of a modified 'template analysis'. This approach uses a coding structure (template) that is applied to the data. We were keen to construct the initial coding structure mainly on a priori themes. The themes we used were based on the Greenhalgh et al review. It is acknowledged that King and Horrocks (2010) argue against the use of a priori themes because they believe it leads to constrained approach to analysis. However, we felt there was a strong advantage to having a priori themes and basing these themes on Greenhalgh et al's review: the review highlights research evidence of factors important to the diffusion of innovations in health care organisations. We felt that basing the coding framework on evidence meets the requirements of policy makers, who through experience are more cautious about coding frameworks and results based solely on personal interpretation, and prefer linking recommendations to evidence.

4.4 RESULTS

4.4.1 The innovation

The innovation theme describes First Steps as a product. The qualities of an innovation tends to be one of the most important factors in whether that innovation is implemented and has an impact on an organisation (Greenhalgh et al, 2004).

This theme had five sub-themes, outlined in Table 4.0 below. Most of the definitions of the sub-themes were taken from Greenhalgh et al (2004), who either defined them directly, or discussed them as components of their model. Rather than assuming to be definitive, the purpose of defining the sub-themes was to clarify a scope to facilitate coding.

Complexity is defined as the perceived simplicity and ease of use of an intended innovation amongst its key target audience (Greenhalgh et al, 2004). Divisibility in the context of First Steps is defined as the ability to divide it into bite-sized chunks. Compatibility describes the congruency of an innovation “with the values, norms and perceived needs of intended adopters” (Greenhalgh et al, 2004) whilst task usefulness describes the relevance to the work of an organisation and additional value an innovation brings to a specified task, for example in facilitating function or augmenting output (Greenhalgh et al, 2004). Finally, relative advantage is defined here as the effectiveness or cost-effectiveness a user perceives an innovation as having, in comparison to other innovations or the status quo (Greenhalgh et al, 2004).

Table 4.0: Definitions of sub-themes emerging from the innovation theme

Theme	Sub-themes	Definitions
The innovation	Complexity	Clarity and ease of use of the innovation
	Divisibility	The ability to divide the innovation into manageable parts

	Compatibility	Compatibility of the innovation with the needs of adopters
	Task usefulness and relevance	The extent to which the innovation is perceived to be relevant and to contribute to tasks carried out in the organisation
	Relative advantage	Degree to which the innovation is perceived to be better than other similar innovations

(i) Complexity

There was consensus amongst interviewees, both HCAs and HCPs, that First Steps was simple and easy to use:

The RCN have really invested well in it. You know it's not done on the cheap so I think, I think if you can use a, if you can use a mobile phone you could probably use First Steps (HCP6)

However, this ease of use appears to be the overall impression interviewees had of First Steps, and when pressed, a minority of interviewees added caveats and nuances to the perceived simplicity of First Steps, signified by the following quote:

Some of the HCAs may not have great IT skills... until you get used to it, it's a bit tricky, not how you would sometimes expect something to be presented (HCP1)

That said, on the whole interviewees felt that First Steps can even cater to those with few IT skills, and HCAs did not have problems with navigation:

The way First Steps is designed... as long as you can click a mouse, it's not very technical (HCA5)

The ease of use was also linked to the content and presentation of First Steps. Interviewees felt that the content and presentation was well pitched to the target audience, making it accessible and facilitating learning:

It's really clear and simple. It's easy to read... I found it really easy to follow and to take in (HCA2)

In particular, interviewees were positive about the use of images and videos in First Steps, and suggested that the dynamic and interactive nature of the website aids both learning and dissemination of the tool:

There's quite a few short videos on how to do things which is very useful. Quite a few of the nurses fed back to me that they've found that very useful (HCP4)

(ii) Divisibility

A minor sub-theme to emerge regarding the attributes of First Steps as an innovation was that of divisibility. Interviewees used First Steps in bite-sized chunks, often “dipping in and dipping out” (HCP4). This divisibility and flexibility allowed them to fit First Steps around a routine that suited their workload:

If they get called away 'cause they're busy they can leave it and return to it. So it can be picked up (HCP7)

(iii) Compatibility

Compatibility was one of the most prominent sub-themes to come out of the innovation theme. Interviewees did not feel that First Steps diverged from the skills needed for the HCA role, nor provide unnecessary distractions from the core knowledge set required of HCAs:

If they were to take these competencies to another job, it would be recognised and they wouldn't have to repeat them. It is linked to all the key skills (HCP8)

Indeed, interviewees believed there were close synergies between First Steps and the national targets and educational qualifications that have, can or will govern HCAs. For example, one interviewee highlighted that First Steps helps them train HCAs because “it meets all [of] the national

competency framework" (HCP8). Another interviewee highlighted the compatibility with First Steps and the Care Certificate which will be implemented in England from 2015:

Communication is really well broken down as to why it's important, the methods and the barriers. And I'd say that it's those sorts of things that link into the Care Certificate (HCP1)

In many ways, compatibility was seen as a strength of First Steps, and suggests that the attributes of it were viewed positively not only in terms of ease of use and presentation, but also in terms of content. Again, such compatibility facilitated learning:

It was a good thing to actually do the First Steps, 'cause part of the First Steps framework that they've actually got, it's similar to that what the NVQ actually offers, the way that it's presented and all that lot (HCA4)

However, one finding from the interviews suggest that some staff did not see such compatibility as a way to supplement external or internal programmes, but rather saw the gamut of education and training opportunities available to HCAs as mutually exclusive, competing for a scarce resource (the time of HCAs).

I actually started to use [First Steps]... and when I showed [the ward sister] what I was actually doing she said, 'Oh well why don't you do your QCF, which is more nationally recognised.' And then I stopped, I stopped actually using the First Step pack and now I've actually started to use my QCF pack (HCA4)

Whilst the above view appears to be in the minority, it suggests that whilst compatibility can be a strength and opportunity, it can also be a threat to the utilisation of First Steps if it is perceived to be a substitute rather than a supplement. This threat is increased when taking the issue of relative advantage into account (discussed in a sub-theme below). Nevertheless, interviewees suggested that the synergy of First Steps with the QCF allowed HCAs to gauge whether they wanted to and whether they could do a formal qualification, and allowed employers to reduce the risk in funding training by using First Steps as a test bed:

I don't think I would've done [the QCF] this earlier on...I think it's because I used First Steps as a starting benchmark. Like saying, 'Yes, I've got the brains to do it.' And that's actually, you know, made my employers say, 'Yes, he has got the brains to do it because he's done something similar.' So yes, they've put me forward earlier I think (HCA4)

(iv) Task relevance and usefulness

Most HCPs interviewed felt that the compatibility of First Steps with the skills and knowledge required of HCAs, as well as the compatibility with the national competency frameworks of each UK country, made it a good educational support tool:

When they're doing their SVQ (Scottish Vocational Qualification) it can be a great help to them when they're trying to formulate ideas for the evidence, producing their evidence, so like for communication etc (HCP7)

Such compatibility worked in tandem with the interactive and visual nature of First Steps to add value to in-house training provided to HCAs:

So for instance, you know, there was a, a good thing; when I looked at it before, there was a good thing that supports taking observations. So we do deliver all of that in class in their first two weeks and they have practical sessions. But on First Steps, you know, there's the very visual, you know, watching someone breathe and their lungs inflating and defeating. And I think it's just a good way of supporting what we've already delivered (HCP1)

In some cases, the compatibility with the national competency frameworks meant that trusts were using First Steps not as it was traditionally intended, but rather as a lesson learned tool:

I've found [First Steps] really useful if you've got nursing assistants who perhaps have got themselves into a bit of a problem with something like confidentiality, accountability...using the First Steps with them as a teaching tool for me to help explain to them where the problem is (HCP2)

This is in part due to the perceived clarity with which First Steps discussed issues such as accountability and delegation:

I think it provides very comprehensive and clear guidelines about delegation and accountability (HCP4)

Apart from the perception that First Steps is a strong educational support tool, interviewees described other components they found useful. For example, the quiz received the following comment:

The most useful things I think are looking at – you've got an assessment quiz at the end of it of which you can get a print out. So it's not a case of just doing it and nobody has recorded that you've done anything... This gives you a certificate at the end of it and I think that's good. I think the vital signs recordings are very good, because that's more and more (HCP7)

Interviewees also found the clinical skills section useful:

Taking people through the actual skill of taking a blood pressure, or recording a temperature... I found really useful, because they're in a safe environment where they could go through it at their own pace, not practicing on a patient which is what happens in reality, before doing it (HCP6)

The communication section in First Steps was also strongly valued, and interviewees reiterated the importance of its compatibility with the skills, knowledge and external factors they value:

Communication is really well broken down as to why it's important, the methods and the barriers. And I'd say that it's those sorts of things that link into the Care Certificate. So if they needed any more learning there's good sections within that for them to find out. (HCP1)

Interestingly, First Steps was seen as useful not only for its originally intended purpose – new HCAs at the beginning of their induction – but also for a much wider target audience. This suggests that *First Steps* was not only compatible and useful in the context of HCAs, but that users see additional potential and possibilities to increase the usefulness of it to the wider organisation. This is exemplified by the following:

I mean there wasn't anything and there still isn't very much for health care assistants, so this has been a real gift for health care assistants and for nurses who are supervising health care assistants and also managers and employers because there's a wealth of information on the website for all those people, not just health care assistants (HCP4)

Whilst overall interviewees indicated that they found that First Steps “was a very comprehensive and useful tool” (HCP3), they did also highlight caveats. For example, some interviewees felt that there was nothing new or surprising in First Steps, and that it was “very simplistic...obviously starter level” (HCA2):

Other than the clinical skills, everything else I think would be common sense, other than the health and safety which you have to follow certain procedures. But everything else, dealing with people, diversity, that sort of thing, I think it's more or less common sense. (HCA3)

(v) Relative advantage

Relative advantage is an important attribute to explore because it highlights the comparisons potential users of an innovation make in their decision to adopt an innovation. It also puts the other attributes of the innovation (such as compatibility, task usefulness, and complexity), into context. Initially, the impression given by interviewees is that First Steps provides a unique offering:

There isn't anything else that I know that is out there that's supported by a reputed and credible organisation like the RCN, that's this robust that is really, you know, a good training resource (HCP1)

However, some interviewees believed that whilst First Steps would be useful for organisations that did not have established in-house HCA educational programmes, it has less of a relative advantage in trusts where such programmes exist:

For a trust that didn't have an already-established programme, I would say that they could be using First Steps as something to base training on. But because we already had an established training programme, I wouldn't think that we would use the whole thing (HCP1)

Whilst interviewees suggested that First Steps is compatible with the skills and knowledge required of HCAs, the sub-theme of relative advantage highlighted that it may not be aligned with the goals or priorities of an organisation. One interviewee suggested that funding is involved in taking up accredited courses, which is partly why “it’s the lack of accreditation that’s a problem for organisations” (HPC6). Lack of accreditation also meant that compared to what interviewees felt was the competition of First Steps – i.e. the QCF (previously NVQ award) – interviewees felt that time was better spent taking up a course that was accredited and nationally recognised:

I managed to get a certificate printed off for that [First Steps]. But, like I said, it was a case of my manager said it was a good thing, however I might as well do something that's nationally recognised. Hence the QCF (HCA4)

4.4.2 Linkage

This theme has two sub-themes outlined in figure 4.1 below. In Greenhalgh et al's (2004) conceptual model (Appendix A), 'linkage' occurs twice, once at the stage where the innovation is designed and once at the stage where the innovation is implemented (though Greenhalgh et al note the constant iterative interplay between these stages and other components in their model). Whilst there are a number of components in the linkage theme, the theme that came out particularly strongly in the interviews was the credibility of the change agency. A change agency is "an organisation or other unit that promotes and supports adoption and implementation of innovations" (Greenhalgh et al, p.332), and so this theme looks at the credibility which is held by RCN as an organisation that promotes and supports First Steps. However, it should be noted that sometimes interviewees discussed credibility in the context of the RCN's reputation as a trade union and sometimes as a professional body.

The second sub-theme in this section occurs when an innovation is in the process of being implemented. Product augmentation describes the technical help (rather than the project management support) external agencies give to organisations that implement an innovation.

Whilst linkage occurs as two separate components of the Greenhalgh et al model, they have been put into one theme here as they link closely together.

Figure 4.1: Definitions of the sub-themes emerging from the 'linkage' theme

Theme	Sub-themes	Definitions
Linkage	Credibility of the change agency	The perception of RCN amongst interviewees
	Product augmentation	The support and technical help available to implement First Steps

(i) Credibility of change agent

There was a perception amongst interviewees that the RCN “has credibility when it comes to supporting any training on the ward” (HCP1) and that it is a powerful national body:

It's [First Steps] also backed by the RCN. 'Cause I think quite highly of the RCN because it's a recognised professional body who, you know, they have a substantial amount of power (HCA4)

The credibility that the RCN had amongst interviewees linked closely with First Steps being seen as a trustable resource, and suggests that this was one of the reasons it was diffused:

Health care assistants themselves are unsure about what they can do and what they can't do. So, you can direct them to a resource like this because it's underpinned by the RCN, which is very credible (HCP4)

Some interviewees also felt that completing a course developed by a reputable organisation like the RCN had career benefits:

The recognition is good and you can get jobs faster if you're recognised with the RCN (HCA3)

However, one interviewee, who previously noted the power of the RCN, felt that the credibility held by RCN did not translate to First Steps. This was largely because of the lack of recognised qualification or external accreditation. This links in with the above sub-theme ‘relative advantage’, and suggests that if credibility is built through one particular offering, such as RCN’s union and professional activities, it may not necessarily translate to wide-spread credibility in other offerings:

It's [First Steps] only endorsed by the RCN and that's it. But if the RCN could get a local education authority or somebody that's got a bit of clout to say, 'Yeah, this is a recognised qualification... probably it'd be used more and it would be an invaluable tool to have (HCA4)

(ii) Product augmentation (support by the RCN)

The technical support given to users of First Steps was discussed by interviewees. Whilst technical support was not predominant because interviewees felt that First Steps was easy to use, minor issues experienced by users were nonetheless picked up rapidly by the RCN, which resulted in positive perception by interviewees of the support given to the innovation:

The RCN have always been really responsive, you know at the beginning when we first started using it, I would just email them straight away and they'd come straight back... So that the support from the RCN was very good, they were very quickly responsive (HCP6)

4.4.3 Inner context

This theme describes the perception interviewees had with regards to how implementation and use of *First Steps* was influenced by the inner context. The inner context is the organisational context through which an innovation must pass if it is going to be implemented and sustained. These channels can include organisational structures (such as hierarchy) as well as ‘softer’ mediums such as organisational culture and ways of working (Greenhalgh et al, 2004).

System readiness is the favourable contextual factors of an organisation in relation to its readiness and willingness to implement a specific innovation (rather than innovation in general) (Greenhalgh et al, 2004). ‘Dedicated resources’, which includes time as well as personnel and money, is a sub-theme of system readiness that describes the resources that an organisation attaches to the implementation or dissemination of that particular innovation. IT systems are not explicitly mentioned in the Greenhalgh et al model, but are described here because it is a theme that developed through the interviews.

Figure 4.2: Definitions of sub-themes emerging from the ‘the inner context’ theme

Theme	Sub-themes	Definitions
The inner context (system readiness)	IT systems	The facilitative or obstructive elements of organisational IT systems when implementing the innovation
	Dedicated resources	The hypothecation of resources towards the implementation of a specific innovation

(i) IT systems

The IT infrastructure in the health care organisations where the interviewees were based appears to be one of the biggest barriers HCAs experienced when using First Steps during work time. IT equipment was often lacking or limited, and where there was IT equipment, use of it was restricted by cautious security settings or systems which crashed. The quote below is indicative of responses:

*Only one of our six health carers has managed to do it, and she's had to do it at home. She can't actually get on it at work, and I have highlighted issues to somebody called [*****] some time ago, but it doesn't still seem to have been resolved. I don't know if it's to do with cookies, or what it's to do with...if they don't do it at home, they can't do it (HCP8)*

Such a situation with the IT infrastructure meant that some of the most popular and highly rated aspects of First Steps are unable to be fully utilised in health care organisations:

There are some problems sometimes with our trust computers, it seems to block sometimes some of the interactive parts of it which is a bit of a pain really, because then they can't see the interactive parts of the resource (HCP3)

This makes the use of First Steps difficult when some people do not have computers or the internet at home and rely on work computers or support to use it:

We've got to get over that issue of staff sometimes not having that skill or even having the actual device at home to be able to do that [use First Steps] (HCP1)

(ii) System readiness - Dedicated time and resources

Some HCPs stated that an advantage of First Steps is that it is a free resource:

The additional benefit for me is that it's a free resource. It's a good resource and it's current...and they're [the trust] always looking for value for money (HCP7)

However, despite the fact that First Steps itself is a free resource, interviewees stated that there were not enough dedicated resources in their organisation to allow staff to use it:

In the hospital and the community setting or care at home setting, the number of computers available are very few, so in theory it would be good if they could do it [First Steps] at work and time was set aside, but in reality that's not going to happen because... they haven't got enough computers (HCP7)

As well as not having enough physical resources, interviewees commonly stated that limited time was a barrier for interviewees using First Steps during working hours:

That you could say to a health care assistant, 'Oh, you've got 15 minutes free now; why don't you look at the website?' But nobody ever has 15 minutes free so it would be something that I could see that they would do in their own time (HCP5)

As such, despite one HCA stating that their organisation provides protected time for things such as admin duties, on the whole the results suggest that HCAs spend most of their time on First Steps when they are at home.

4.4.4 Adoption

Adoption refers to continuous processes (rather than discrete events) that take place in an organisation to make full use of an innovation. Greenhalgh et al (2004) argue that rather than adoption being a sequential process following a set path, it should be thought of as organic and iterative changes with complex actions that are not always rational.

Though there are a number of components under the 'adoption' construct of the Greenhalgh et al model, the main findings related to the motivation of the adopter and knowledge of the innovation. This suggests that adoption of First Steps as an organisational process is still yet to occur.

Figure 4.3: Definitions of sub-themes emerging from the adoption theme

Theme	Sub-themes	Definitions
Adoption	Awareness of the innovation	The knowledge organisations or individual adopters have with regards to the existence or attributes of the innovation
	Motivation of the adopter	The motivations an individual has that influence the decision to adopt an innovation

(i) Awareness of the innovation

Awareness of the innovation is seen as the first stage of adoption, when individuals or organisations first have knowledge of the innovation (Ryan and Goes, 1950 cited in Greenhalgh et al, 2004). Knowledge of the innovation can be achieved through multiple means, such as interpersonal communication or marketing, but the interviews centred less on how the interviewees became aware of First Steps, but rather the extent to which they are aware. As the method for sampling interview participants meant that all interviewees were aware of First Steps, the interesting finding centred on the lack of awareness of where to initially access it:

I think they [HCAs] just don't know where to find it. Obviously if you're not an RCN member you're not going to go on the RCN website and find it...But you need to know about it in the first place (HCP3)

Additionally, some interviewees also stated suggested that some key attributes of First Steps were not well known:

*And then it said, do you want to print your certificate? And then I was like, oh okay, you get a certificate for this. And then that's when I called [*****] to find out [about] it (HCA3)*

The above quote produces a caveat for interpreting the findings with caution, as HCAs may not have necessarily undertaken First Steps with full knowledge of all its attributes beforehand, and only discovering such attributes after using it.

(ii) The adopter (motivation)

The results of this sub-theme were relatively straightforward, with no contradictions. The findings suggest that *First Steps* was completed by HCAs who were motivated and did it in their own time, rather than being told that *First Steps* had to be completed. This links with the 'dedicated time and resources' sub-theme above, as motivated users of *First Steps* were not particularly hindered by the lack of time and resources offered to them at work

Interviewer: your employers haven't asked you to do it then?

HCA2: No, I don't think they're very familiar with it. I don't, I think even the nurse practitioner who suggested I joined the RCN, it was more for the point of having the insurance and the backing and support that you get through them...It's not really so relevant to her, so I've sort of done it on my own initiative (HCA2)

4.4.5 Outer context

The 'outer context' describes the determinants of innovativeness that are outside the 'organisation'. The outer context forms a major part of the Greenhalgh et al (2004) conceptual framework, and encompasses the socio-political climate, inter-organisational norms and values, inter-organisational collaboration and environmental stability. The sub-themes 'incentives and mandates' and 'socio-political climate' (see table 4.4 below) came out particularly strongly in the interviews. Incentives and mandates are not clearly defined in Greenhalgh et al (2004). Incentives can be described as a stimulus that encourages or motivates an actor (for example, an individual or organisation) to do or not do a certain action. Mandate can be described as an order or policy that emerges from an official or authoritative power that requires an actor to do or not do something. Socio-political is also not clearly defined in Greenhalgh et al, but can be described here as the regional and national social and political factors that influence or constrain the implementation decisions of organisations and individuals.

Figure 4.4 Definitions of sub-themes emerging from the ‘outer context’ theme

Theme	Sub-themes	Definitions
Outer context	Incentives and mandates	Something that encourages a particular action (incentives) or an order or policy that requires a particular action (mandates)
	Socio-political climate	The regional and national social and political factors that influence or constrain the implementation decisions or organisations and individuals

(i) Incentives and mandates

Interviewees did not mention any incentives given by their trust for HCAs to undertake First Steps. The findings also suggest that there were no organisational mandates for HCAs to complete First Steps. This links in with the perception that “there's nothing in law really that says they've got to have anything” (HCP4):

It's not been made a requirement of this trust that every health care assistant, you know clinical support worker uses the First Steps resource. It's out there as an extra and a lot of people don't know (HCP3)

(ii) Socio-political climate

Despite the lack of current mandate and incentives, interviewees commonly referred to the Care Certificate. In particular, some interviewees believed that the Care Certificate would be a catalyst for increased demand and perceived utility of *First Steps*:

Come next year, it's going to be a national roll-out so all trusts are meant to have their HCAs trained in the Care Certificate. So I would be saying that when we're rolling it out in the trust, for existing staff this [First Steps] would be a good way to support their learning because it's unlikely that

they're going to be able to be taken off the ward for the two weeks' training (HCP1)

4.4.6 Communication and influence

Communication was one of the biggest themes to emerge from the interviews. This section contains the sub-themes 'knowledge transfer', 'marketing', 'champions', 'change agents' and 'informal dissemination'. These findings therefore cover the broad spectrum in Greenhalgh et al's 'communication and influence' construct, though it should be noted that the sub-theme 'information dissemination' is not explicitly mentioned in the Greenhalgh et al (2004) framework, but is discussed in their review.

Whilst the sub-themes (see table 4.5 below) came out particularly strongly in the interviews, only 'change agent' was explicitly defined in Greenhalgh et al (2004). The other sub-themes have been defined here using other sources or from summation of discussions in Greenhalgh et al. 'Marketing' is defined here as the "set of institutions, and processes for creating, communicating, delivering, and exchanging offerings" (American Marketing Association, 2014²³), although it is acknowledged that marketing can be thought of more broadly as the "process responsible for identifying, anticipating and satisfying customer requirements profitably" (Chartered Institute of Marketing, 2009)²⁴ The sub-theme 'information dissemination' is defined as the informal and unplanned methods of communicating an innovation. Champion is defined as a person (in the context of this report, someone internal to the organisation) who attempts to spread and drive forward the dissemination and implementation of an innovation. A change agent is defined as a person who influences the decisions of others (usually in a positive way) with regards to the dissemination and implementation of an innovation. A change agent is similar to a champion, though is external to the organisation. Finally, information dissemination is the communication of an innovation through unplanned or informal methods, such as word-of-mouth or informal referrals.

²³ <https://www.ama.org/AboutAMA/Pages/Definition-of-Marketing.aspx>

²⁴ <http://www.cim.co.uk/files/7ps.pdf>

Figure 4.5: Definitions of sub-themes emerging from the ‘communications and influence’ theme

Theme	Sub-themes	Definitions
Communication and influence	Marketing	Communication methods that persuade the target audience to purchase or use a product
	Champion (internal to organisation)	A person who tries to spread the dissemination and implementation of a product
	Change agent (external to organisation)	An individual that influences the decision of others towards the implementation of an innovation
	Informal dissemination	Informal and unplanned methods of communicating an innovation

(iv) Marketing

The interviews suggest that the RCN website is the main way people discover First Steps. In particular, interviewees noted that rather than purposefully going to the First Steps site through the RCN website, they went on the RCN site for another reason, and ‘stumbled’ upon the First Steps site through browsing the RCN site.

I went on there for a particular reason, to find out if they would, I could join them by being a phlebotomist and I happen to stumble upon it [First Steps]. But it wasn't something that was advertised, so not many people know about it and that's where you won't really get any recognition (HCA3)

Related to this, one interviewee suggested that a concerted marketing campaign is needed to raise awareness of First Steps:

If they [RCN] get it out there and they get it in to hospitals, care homes, that sort of thing, make sure that the staff in different care homes and stuff do that test like, at work kind of training then a lot of people will know it. But for me, I didn't know anything about this (HCA3)

(v) Champions (internal)

Despite a number of interviewees suggesting that they became aware of First Steps by browsing the RCN website, there was also evidence that champions attempt to raise awareness of First Steps within their organisation:

No-one can argue with continued learning and certainly the chief nurse agrees and supports me doing this [recommending First Steps to staff], but again HR don't particularly and it's HR who employ me. But no-one has actually stopped me yet, so I'm forging ahead because I actually enjoy doing it as well (HCP3)

Interestingly, the interviews suggest that in raising awareness of First Steps, champions have been experiencing organisational reluctance and barriers:

But they [the trust] won't actually recommend it [First Steps], I'm doing it as part of me learning rep role. So I'm try, I'm trying to get it organised. But I'm like hitting a dead wall. But I keep going at it (HCA1)

The interviews also suggest that champions disseminate First Steps not only to new and inexperienced HCAs, but also to a range of other staff groups, such as registered nurses, teaching and learning teams, new student nurses, practice development managers and others. The below quote indicates that champions take the innovation [First Steps], and identify other areas or groups which may benefit from First Steps yet were not the original target audience:

The RCN advertise it as something for new health care assistants. But any health care assistants that I've sort of signposted to the [First Steps] site that are very experienced, they've found it very useful as well (HCP5)

(vi) Change agents

Interviewees highlighted that awareness of First Steps has been raised by one (or more) external factors, and indicated that the role of the change agent is strong. However, it should be acknowledged that the interview sample was chosen with the help of the external agents, so the results for this sub-theme may be biased. Nevertheless, the following is indicative of the responses:

Interviewer: so let's talk about the First Steps, so when did you first find out about First Steps?

*(HCP1) It was when it was first being developed I think and we ran a conference which **** came and spoke at and she talked to me about it then and so it's always been in the background (HCP1)*

(vii) Informal dissemination

Outside of champions and HCA interviewees that had strong motivation to complete First Steps, the interviews suggest that there is lack of dissemination and awareness of it. Whilst the results indicate that champions, motivated HCAs and change agents promoted *First Steps*, interviewees were generally not aware if First Steps was promoted within their organisation or from the RCN itself. As one interviewee stated of First Steps, they 'probably never heard anybody mention it'.

However, existence of champions for First Steps suggests that the innovation is strong and makes a good impression on users. Having an innovation where the attributes are well regarded is useful for informal dissemination because there may be a greater likelihood that it is disseminated organically by word of mouth (although this assumption will need to be tested). The following is an indicative response:

One clinical support worker in the last [learning] session we did was really enthused with it and did about four, and so she whizzed through it, and then went back to her workplace and told everybody else about it, and so they want us to do another one there for them (HCP3)

4.4.7 Impact

'Impact' is not a component in the Greenhalgh et al model, but was used as an a priori theme here in order to meet the project objectives. It should be acknowledged, as one interviewee highlights, that

it is difficult to measure the impact of First Steps on certain outcomes due to existence of confounders:

What I do think is difficult is actually to be able to say that doing First Steps makes a difference to patient care, because there's so many other factors involved (HCP8)

In addition, the methods employed in this study mean that the extent to which First Steps influences change or leads to impact is not clear because there are no robust comparisons with similar resources. This issue was raised by another interviewee:

We get positive feedback about it from individuals when they're learning about the skills such as the clinical skills in that they'll say, 'Oh I didn't know that before, that makes sense now', that sort of thing. But then, you know we get feedback from their line managers to say that their behaviours do alter when they go back into practice, but that's because of any course as opposed to it just being the First Steps course (HCP6)

Despite the above caveat and acknowledging that end-points such as improvements in patient outcomes are not possible to measure, the findings suggest that independent of any comparators, First Steps influenced behavioural change:

Someone was saying, 'Oh gosh, yes, when I worked in a hospital you could – there was never anywhere to take a patient to where you could talk privately. But I now see how important it is' and I think that was through working through the First Steps programme (HCP5)

In addition, the findings suggest that First Steps gives users confidence in areas such as communicating with patients or carrying out clinical tasks:

It's [First Steps] give me that, just a broader knowledge, it's given me the confidence to actually carry out my tasks better (HCA4)

4.4.8 DISCUSSION

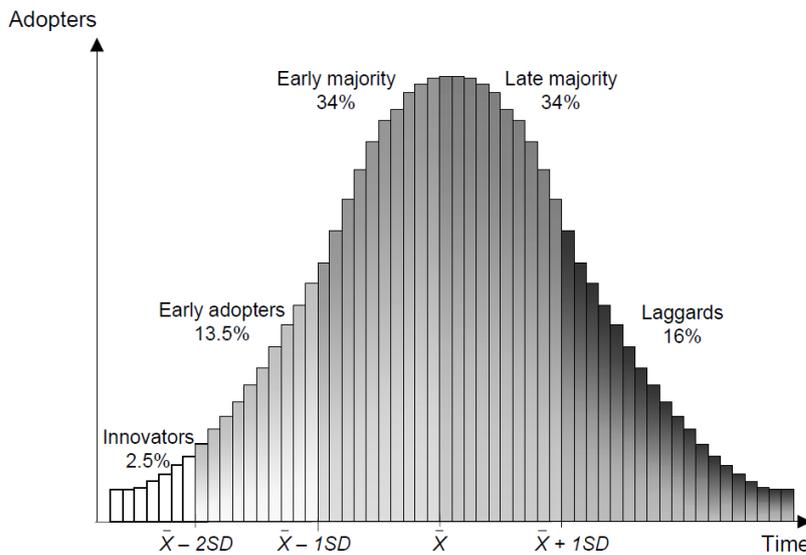
The findings paint an overall positive picture of First Steps, but with a number of caveats. It is only when we link the findings to what we know about the diffusion and impact of innovations can we begin to make sense of the results.

One of the most important factors to influence the diffusion and impact of an innovation is the quality of the innovation itself. The findings show that the interactive and dynamic elements of First Steps were highly regarded, and a number of interviewees felt it was useful and relevant to their role. However, there was a mixed view as to whether it provided any significant new knowledge for our sample of highly motivated users.

This finding clouds a hitherto clear picture of First Steps being a tool that is useful for a number of staff groups at different career stages. If the impression from certain groups is that, whilst visually attractive, it does not provide any new knowledge, so questions are raised as to the extent of its perceived added value. If First Steps is perceived to be restricted to common sense reinforcement of existing knowledge, the risk may be that it is a reference tool to rather than a learning tool to maintain skills and knowledge. We know from the findings that people do indeed use it as a learning tool and have found a number of its sections (such as the clinical skills and communication skills) informative. We also know from phases 2 and 3 that the use of First Steps was associated with improvements in HCA learning outcomes. Capturing a wider population by demonstrating knowledge value will be important if First Steps is to grow its user base.

Indeed, if the RCN wants First Steps to grow expand, it needs to move past its reliance on motivated individuals. The findings suggested that whilst there was general encouragement for HCAs to use the resource, they were limited by the resources available to them during working time. Interviewees using First Steps had strong motivation and used it at home, but it remains unclear whether the lack of dedicated time and resource during working time would be a restrictive barrier to less motivated users.

Figure 4.6: Distribution of new adopters of an innovation over time (Greenhalgh et al, 2004)



Greenhalgh et al (2004) cite classical diffusion literature to highlight ideal-type distribution of new adopters of an innovation. Whilst they stress that such a distribution should be viewed with caution, as it will not follow the exact shape for every innovation in every context. Figure 4.6 above serves to highlight the notion that at the beginning stages of the diffusion of an innovation, there are innovators and early adopters. Early adopters are characterised by high motivation and responsiveness to information. So while the interview results suggest that motivated individuals overcame barriers of lack of system readiness, it is unclear whether such barriers can be overcome when more widespread use of First Steps will go past the curve of motivated individuals towards more general users. Such a situation will need to be considered before a surge in investment in marketing communications. This is because while further formal dissemination may increase awareness of First Steps, it may not lead to greater use or higher user satisfaction ratings if the concerns raised by these interviews are not answered in some way. Indeed, investment in widespread dissemination is a risk, as concerns raised by these interviews may be amplified in non-motivated users. The caveats in the results above – such as the perceived lack of relative advantage compared to professional qualifications, few organisational incentives given to HCAs to complete First Steps and the weakness of organisational IT systems – will need particularly close attention as such barriers may be a hindrance to strategic growth in an otherwise sound product with beneficial impact.

4.4.9 CONCLUSION

The findings suggest that First Steps is a strong and well regarded product amongst its users. The users are characterised by being highly motivated and a number interviewed could be described as champions. The concerns that emerged about First Steps from the interviews may need to be addressed by marketing and further iterations of the product if it is to prove successful amongst less motivated users. Nevertheless, given that the characteristics of an innovation are some of the most important factors in whether an innovation is implemented in an organisation, the perceived ease of use of *First Steps*, its compatibility with the knowledge and skills required of HCAs and the perceived relevance and usefulness of it indicate a strong product that may require only a little extra to do a lot more.

Our findings from this phase complements results from phase 2 of the impact evaluation where HCAs reported they found First Steps to be easy to use and the material to be helpful. User experience feedback from this phase was largely positive and complemented our findings from phases 2 and 3 which found that the use of First Steps was associated with improvements in health care knowledge.

Impact evaluation: our conclusions and recommendations

It is of fundamental importance that a learning resource is effective at improving learning outcomes for those who use it and our impact evaluation was therefore structured around the effect of using First Steps on HCA learning outcomes. We found that the use of First Steps was associated with quantifiable improvements in HCA learning outcomes for both our sample of users from our online analytical survey in phase 2 and our sample of users from our cohort study in phase 3. Our findings are strengthened by the triangulation of evidence from our indirect (phase 2) and direct assessment measures (phase 3), our two different sample groups and our two different study designs.

However, whilst the existence of a quantifiable association between First Steps and HCA learning outcomes was a necessary factor in assessing its impact, it alone was not sufficient and the contextual factors associated with its success or limitations must also be explored in order for us to understand the impact of First Steps. We developed our overarching themes from phase 1 of our impact evaluation in order to explore these important contextual factors and we will address each theme in turn using our findings from phases 2, 3 and 4.

1) How do users discover the First Steps resource?

- A large majority (77.42per cent) of our users from our analytical survey reported that they chose to use First Steps for their own personal and professional reasons regardless of whether they were self-directed (43.55per cent) or directed by their employers (32.26per cent).
- Many of our users from our analytical survey completed First Steps independently without any assistance from employers (48.39per cent). Users who received some level of support reported that they: received support from their employers in the form of protected time during shift hours (20.97per cent), permission to use spare time during shifts to complete First Steps (4.84per cent) or directions and encouragement to complete First Steps in their spare time off work (11.29per cent).
- The nature of support from HCPs does not appear to affect the learning experience of users but this may be due to our sample of motivated and self-selected HCAs.

- Findings from our qualitative interviews suggests that dissemination of First Steps is often reliant on self-directed champions who spread awareness by peer-to-peer recommendations.
- Our sampling experiences from our online survey indicates that the First Steps resource is not particularly well known to HCAs and belies relying on internet visitor metrics as a proxy for popularity.
- HCPs from our qualitative interviews described a variety of contextual factors that influenced their decisions to support their staff to use First Steps but reasons often come down to its ability to meet needs and demand; there is currently a pressing nationwide need to support HCAs in their training and education. First Steps was trusted for the RCN's brand value and, when combined with the quality and innovative characteristics of the resource, HCPs were happy to use it to complement their training for their HCAs.

2) What are the users' experiences of using First Steps?

- Users from our analytical survey overwhelmingly reported that they found the First Steps website easy to use (74 per cent) and informative (87 per cent). Respondents from our qualitative interviews generally said that they trusted the content on First Steps due to the RCN's brand value.
- Respondents from our qualitative interviews cited the interactive features on First Steps and its multimedia mode of learning as being one of its main strengths.
- HCAs and HCPs from our qualitative interviews believed that First Steps could be improved if it was externally accredited. Without this, they felt that First Steps would not be respected as much as externally accredited resources.
- Users from our analytical survey found the module on clinical skills to be the most useful and found the module on equality, diversity and rights to be the least useful.
- The high proportion of short duration visitors to the First Steps website as highlighted from our analysis of visitor metrics may be linked to our findings from the qualitative interviews where respondents described using First Steps as a quick reference tool. The sizable proportion of long duration visitors may represent users who systematically use the resources and our findings may suggest that users commonly use First Steps either as a quick reference tool or as a systematic learning resource.
- There are a variety of potential barriers that have the ability to hinder or prevent the use of First Steps including weak health sector IT infrastructure, workforce cultural norms where using a computer is seen as 'not working', lack of buy-in from senior managers, a lack of IT

skills and an inability to access the resource. A lack of awareness of First Steps is perhaps the most substantial barrier and there are large groups of HCAs who could benefit from the resource but are unaware of it.

3) Does completion of the First Steps resource make a difference to clinical practice?

- The use of First Steps was associated with improvements in health care knowledge for our users from our analytical survey and our cohort survey before and after using First Steps. Our theory of change predicts that improvements in health care knowledge should lead to improvements in the provision of patient care. Whilst our study was not able to measure changes in patient care as a result of using the First Steps resource, a large majority of users (82 per cent) from our analytical survey reported that completing First Steps led to an improvement in their clinical practice.

4) How does the First Steps resource align with the RCN's professional offer to HCAs?

- Members from our analytical survey reported that they were more likely to retain their membership as a result of contact with the First Steps resource (100 per cent)
- Non-members from our analytical survey reported that they were more likely to consider joining the RCN as a result of contact with the First Steps resource (80 per cent)
- HCA respondents from our qualitative interviews reported that they felt pleased that the RCN has invested in producing a resource for HCAs as training for this group has traditionally been underfunded and undervalued.
- HCAs and HCPs trusted the RCN's brand value and this enhances First Steps. At the same time, by developing First Steps whilst making it publicly accessible, the RCN increases its professional reputation.

RECOMMENDATIONS

Visitor metrics alone from the First Steps website should not be used as a proxy for its success and should instead be combined with a systematic assessment of the resource based on learning outcomes and user experiences.

The primary aim of a learning resource is to improve user learning outcomes, visitor metrics alone from the First Steps website should therefore not be used as a proxy for its success²⁵. Visitor metrics should instead be combined with a systematic assessment of the learning resource based on user learning outcomes and user experiences. Reliance on visitor metrics alone may lead to a misleading impression of the outreach or impact of an online learning resource.

The RCN is trusted by HCAs for its brand name and the RCN should utilise this advantage by further developing new material and new features to support First Steps become the go to online educational and reference resource for HCAs.

The RCN is viewed as a recognised, credible resource which enhances First Steps. At the same time, awareness of First Steps improves the RCN's professional reputation. By investing in the development of First Steps whilst making the resource freely accessible, the RCN increases its professional reputation to members and non-members. The First Steps resource also benefits from the perceptions of RCN brand as producing trustworthy and quality material which increases its credibility. It is therefore important to maintain and increase the quality of First Steps because this increases the coverage of the resource whilst simultaneously increasing the RCN's professional reputation. Producing quality resources which are known and are used helps the RCN to meet its professional obligations as a Royal College and may increase membership amongst HCAs. The opposite is also true and the production of a poor quality resource is likely to have a detrimental impact on the RCN's professional reputation. Investments in the First Steps resource therefore have a multiplier effect. However, further investments in First Steps should also include investments in technical support services because user experience of high quality and responsive support to First Steps queries from the RCN contributed to the described value of the resource, and there is a risk that over expanding the resource without adequately increasing technical support would reduce the quality of user experience.

The structure of First Steps can also be optimised to improve its functionality as an online reference tool.

It is likely that the use of new technologies and innovations such as the First Steps resource will be increasingly used to overcome traditional barriers and costs to learning. First Steps enjoys unique

²⁵ An analogy to using visitor metrics as a proxy for the success of a learning intervention is using number of patients admitted as a proxy for the clinical success of a hospital.

advantages as a learning resource and the RCN should maximise this potential and the RCN is trusted for its brand name and the RCN should utilise this advantage by further developing new material and new features to support First Steps become the go to online educational and reference resource for HCAs. The material on First Steps can be increased in breadth and complexity so that it supports tiered learning post- the Shape of Caring Review. The structure of First Steps can also be optimised to improve its functionality as an online reference tool. The need for educational resources for HCAs is expected to continue to increase and there is real potential for the RCN to lead this way by further developing First Steps to meet current and future demands.

Another advantage which may help the dissemination of First Steps is that it is now one of the few foundational training resources for HCAs which has been systematically assessed for effectiveness and found to be associated with improvements in learning outcomes for motivated users.

Lastly as an online learning resource which can be utilised by many users with only minimal increases in costs, First Steps enjoys considerable economies of scale and is likely to be highly cost effective as a learning resource when compared to traditional face to face methods of learning.

A strategy needs to be developed to identify and reach out to other groups who may face challenges and barriers that deter or prevent them from using the resource.

While First Steps has been found to be successful in improving learning outcomes for our group of predominantly well-motivated and self-directed early adopters, a strategy needs to be developed to identify and reach out to other groups who may face challenges and barriers that deter or prevent them from using the resource. This includes HCAs who lack the IT skills, the language skills or the motivation to access and use First Steps and these groups will likely be the hardest to reach.

APPENDIX A

Rapid evidence review: foundational training programmes for HCAs and their effectiveness on user learning outcomes

The value of education and training is fundamental in enabling the health sector workforce to possess the skills and knowledge to provide high quality care and this continues to remain highly topical with the publications of the Francis Report (2013) and the Cavendish Review (2013) which reiterated the importance of consistent education and training for all nursing staff.

In 2013 the NHS employed 147,087 doctors and 371,777 nurses (NHS Confederation, 2014). Figures for unregistered health care assistants (HCA) are more difficult to establish although Francis (2013) estimated that there were around 270,000 to 332,000 HCAs who provide direct care in hospitals, care homes and private residences across the entire health care sector and Cavendish (2013) estimated a number of 1,225,000 for the social care sector. HCAs therefore make up a very significant proportion of the workforce across the health and social care sectors. However, whilst training for doctors and nurses has long been established and regulated, training and education for HCAs in the UK varies widely in terms of structure and quality and this is a problem in terms of delivering high quality patient care, quality assurance and role identity (McKenna et al, 2005; Spilsbury et al, 2010; Cavendish 2013). To address this shortcoming, Cavendish (2013) recommended that all HCAs should undergo a standardised fundamental training programme that is based on best practice and – relating to this – HCAs must get a standard ‘certificate of fundamental care’ before they undertake unsupervised care. This recommendation has been taken up by the Government and Health Education England (HEE) has been tasked with developing the Care Certificate which will be implemented from April 2015 in England. The other UK countries have also established codes and standards for health care support workers in different formats²⁶.

²⁶See http://www.rcn.org.uk/development/health_care_support_workers/professional_issues/regulation for further information)

EXISTING HCA TRAINING PROGRAMMES

There are a variety of educational and training schemes that are available for HCAs and these can be broadly categorised into 3 groups.

1. Foundational training programmes that are usually created or supported by local health care providers (HCP) and which may or may not be part of induction training. However the structure and quality of these foundational training programmes varies widely (Cavendish, 2013).
2. Post-foundational HCA specialised training programmes such as programmes developed to enable HCAs to deliver effective palliative care (Marie Curie Cancer Care, 2012), programmes developed to improve dementia care (Board, 2012), educational programmes to develop HCAs who work in children's palliative care (Crighton, 2012) and programmes to train HCAs to become assistant practitioners in a chemotherapy day unit (McGowan, 2010).
3. Academic learning programmes such as Health Care Practice foundation degrees or certificates created by accredited institutes such as St George's University of London and the Open University.

The scope of this review concentrates on foundational training programmes rather than specialised or formal academic programmes which are both higher level supplements to a foundational training programme.

SEARCH STRATEGY FOR OUR RAPID EVIDENCE REVIEW

A non-systematic search of published and grey literature on CINAHL, BNI and Google was made to identify foundational HCA training programmes which have been evaluated for effectiveness on defined HCA learning outcomes.

FINDINGS

Whilst there appeared to be many foundational or educational training programmes for HCAs, our review found very few studies which evaluate the effectiveness of these programmes on defined HCA learning outcomes and – to compound this limitation – these studies tended to be low quality and descriptive in nature. From this limited evidence, it seemed that training programmes for HCAs are generally beneficial: Griffin et al (2012) evaluated a six-month assignment and mentor-guided HCA development programme introduced by the Belfast Health and Social Care Trust and found that it was associated with improved confidence and team working skills. In one brief review, Griffin and Blunt (2011) also suggested that training HCAs to NVQ Level 3 led to HCAs taking more responsibility. This in turn freed up nursing time and gave registered nurses confidence in delegating tasks to HCAs. However, the limited quality of evidence and the heterogeneous nature of most training courses meant that it is difficult to generalise findings from the research literature.

CONCLUSIONS

There appears to be a lack of training or educational interventions that has been systematically evaluated for effectiveness which is contrary to the axioms of evidence based practice. As such, there is a pressing need for more research on the impact and effectiveness of foundational HCA training on user learning outcomes.

APPENDIX B

First Steps website visitor metrics

AIM

Visitor data to the First Steps website can be captured by Google Analytics. The use of visitor metrics for a website is sometimes used as a proxy for success but this approach is highly flawed for an online educational resource because the primary aim of a learning resource is to improve learning outcomes for those who use it and its impact should therefore be centred on learning outcomes rather than number of online hits; after all no one should measure the effectiveness of a surgical team solely by the number of patients which it treats. Rather than use visitor metrics as a proxy for success, our aim instead was to utilise this information to guide and provide contextual support for subsequent phases of our impact evaluation as well as to highlight limitations from relying on visitor metrics as a measure of success.

METHOD

Visitor metrics to the First Steps website (www.rcn.org.uk/firststeps) between 1 March 2013 and 31 March 2014 were collected using Google Analytics. Definitions of metrics as defined by Google Analytics can be found at the following site: www.analyticsmarket.com/blog/google-analytics-definitions. We provided descriptive analysis of visitor metrics that were collected.

RESULTS

Figure A1: First Steps in comparison with other RCN online educational resources

RCN ONLINE PROGRAM	VIEWS FROM 2014 (Q3)	% OF TOTAL VIEWS
FIRST STEPS	66706	53.63%
DIGNITY	14106	11.34%
VENOUS THROMBOEMBOLISM	8080	6.50%
DIABETES	15265	12.27%
NUTRITION	6370	5.12%
PATIENT SAFETY	6043	4.86%
SEXUAL HEALTH	2632	2.12%
HIV	2623	2.11%
INFORMATION LITERACY	1494	1.20%
GENETICS	1070	0.86%

Figure A1 shows that First Steps received far more user views in Q3 of 2014 than all other publicly accessible RCN online programmes which could indicate that resources that support HCA training are in greater demand or it could indicate that the First Steps resource as had a more successful dissemination strategy and is better known. These are both valid hypotheses and cannot be explored by analysing online metrics alone but we hope to investigate this issue in the data gathering phases of our impact evaluation.

Figure A2: Number of sessions on First Steps by month

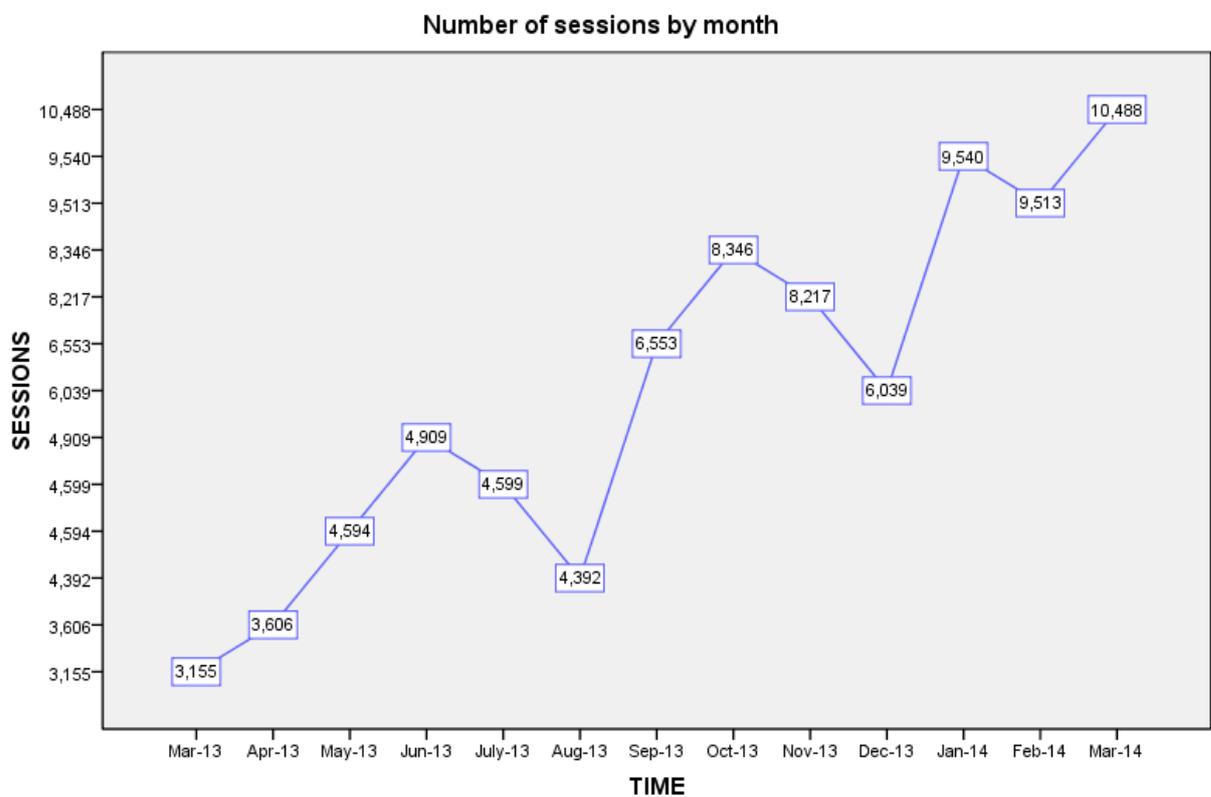
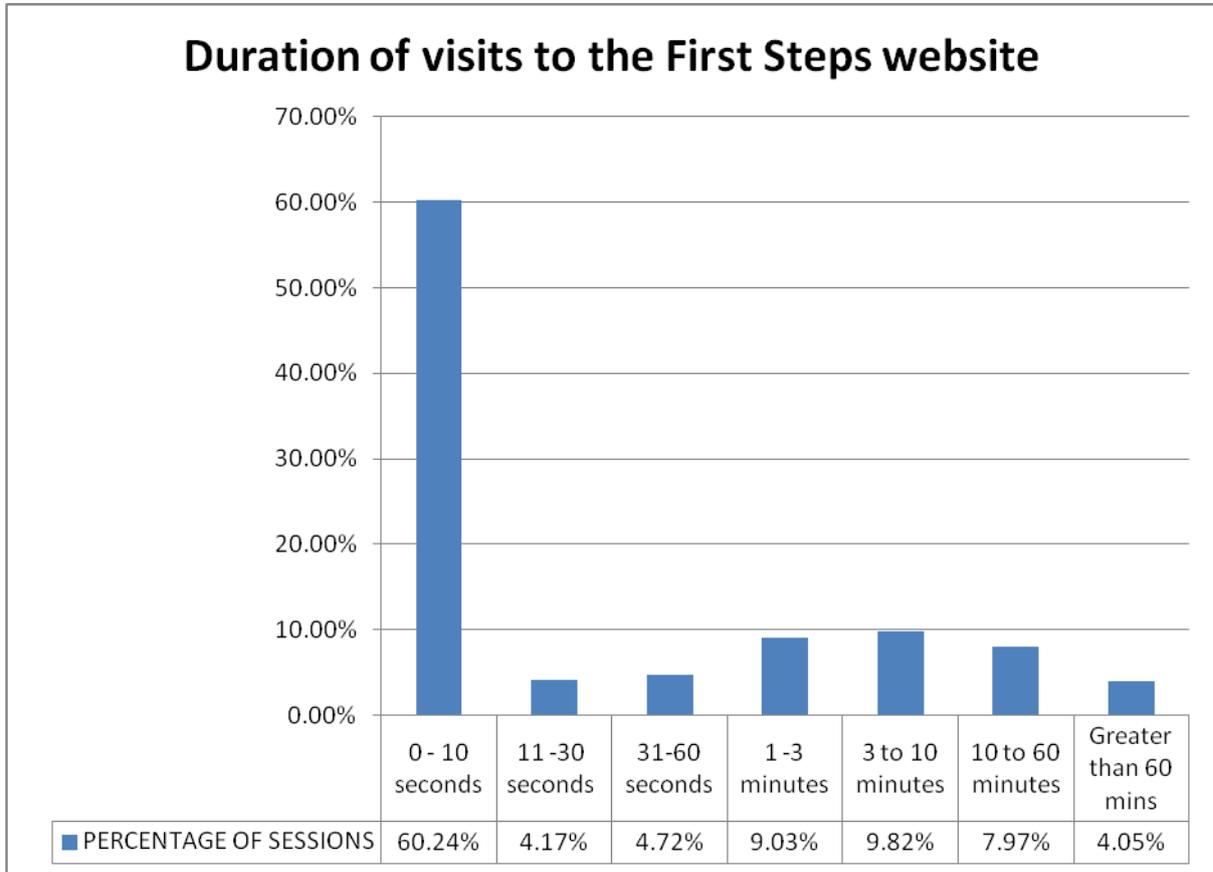


Figure A2 shows the number of monthly sessions to the First Steps website for each month from March 2013 to March 2014. Despite fluctuations the number of sessions per month is positively trending and the number of sessions has risen from 3,155 to 10,488 in 13 months which is an increase of 232 per cent. Again we do not know what is driving this increase in users or even whether the increase in users are of any clinical significance. More importantly, First Steps is designed as an educational resource and its success should therefore be assessed on its effectiveness on learning outcomes rather than number of online visitors.

DURATION

Figure A3: Visitors to the First Steps website by duration.



The mean duration of one session was 4 minutes and 36 seconds and the trimmed median²⁷ was between 1 and 3 minutes. Our short average durations further strengthens our view that visitor metrics are an inaccurate proxy for the success of First Steps as a learning resource.

Figure A4: Visitors to the First Steps website by duration and page views

DURATION	SESSIONS	% Sessions	PAGE VIEWS	AVERAGE PAGE VIEW
0-10 seconds	50615	60.29%	51927	1.03
11-30 seconds	3497	4.17%	8762	2.51
31-60 seconds	3975	4.73%	12557	3.16
1 to 3 minutes	7518	8.96%	34892	4.64
3-10 minutes	8181	9.74%	62369	7.62
10 to 30 minutes	6745	8.03%	77303	11.46
Over 30 minutes	3420	4.07%	98270	28.73

²⁷ Excluding sessions which last 0-10 seconds and sessions which last greater than 60 minutes

Figure A4 shows that while 60 per cent of visitors spend less than 10 seconds on the site, there are a sizable minority of users who spend a long amount of time on the First Steps website going through a large number of page views; for example users who spend 10 minutes or more make up only 12 per cent of the total number of sessions but make up over 50 per cent of the total page views, and the 4 per cent of users with the longest duration (greater than one hour) make up 28.4 per cent of the total page views. Visitors to the First Steps website appear highly heterogeneous which again suggests that a solitary metric based on visitor data is insufficient to measure the impact of First Steps.

FURTHER LIMITATIONS OF USING DATA FROM GOOGLE ANALYTICS

There are also potential statistical and technical issues relating to the use of Google Analytics:

- Google analytics cannot collect data when users delete or block Google Analytics cookies. Google Analytics can also be blocked by ad filtering programmes. This means that the data shown the metrics gathered by Google Analytics may be incomplete or inaccurate especially if the excluded data differs systematically from the collectable data.
- Data collected using Google Analytics is subject to a variety of technical assumptions and limitations (Google, 2014a; Google, 2014b) which may affect its accuracy and this should be considered when evaluating data gathered from Google Analytics.
- Data from observational studies including Google Analytics needs to be considered in relation to contextual factors.

AREAS NOT ADDRESSED BY THIS REPORT WHICH NEED TO BE ADDRESSED IN OUR IMPACT EVALUATION

- The effectiveness of First Steps as an educational resource on HCA learning outcomes.
- Whether learning outcomes and learning experiences vary with differences in demographic information such as age and years of clinical experience.
- Qualitative information such as user experience from HCAs and HCPs. This information can identify contextual factors that is associated with the success or failure of First Steps as an educational resource.
- Does demand or recognition (or both) drive the high volume of online visitor to First Steps?

CONCLUSIONS

Our findings from this report support our initial argument that online user metrics alone should not be used as a proxy for success; an online learning resource which receives a high volume of online visitors has little educational significance if it has no discernible effect on user learning outcomes. However our analysis of user metrics has helped us to identify knowledge gaps associated with First Steps and aided in developing the contextual questions that we would like to address in our impact evaluation.

APPENDIX C

Cohort assessment tool

QUIZ QUESTIONS



Thank you for agreeing to take part in our research. We would like to reassure you that your personal information and results will be kept confidential and used solely by the RCN for research and will not be used for management purposes.

Name:

Email address:

Age:

True or false questions

Please answer all questions by writing True or False next to each item where appropriate.

1) Touch is a very powerful means of communication. Indicate whether the following statements on touch are true or false (please write a T for true or an F for false next to each of the statements).

1. Lightly touching a person's hand can convey your concern and affection for them.
2. Everybody likes to be touched.
3. Touching somebody's hand is fine – you don't need permission from the person to do it.
4. Cultural issues around touching are important.

2) When we're speaking to patients/clients, we should always (please write a T for true or an F for false next to each of the statements):

1. find out how they want to be addressed
2. call them by their first name – it's friendlier
3. use a common term like 'dear' or 'love' – just in case you can't remember their name
4. always use formal means of address – 'sir', 'madam', 'Mr' or 'Mrs'.

3) Indicate whether the following statements on the principles of written communication are true or false (please write a T for true or an F for false next to each of the statements).

1. you should write as near as possible to the time you've delivered the care
2. you should ensure that anything you write remains confidential and cannot be accessed by any unauthorised person
3. you should state your opinion
4. you should not contradict anything that has been written previously.

4) Indicate which of the following statements are true and which are false.

As a HCA, you are accountable for (please indicate true or false for each statement):

1. effectively and safely carrying out tasks that you are trained and competent to undertake
2. speaking up when you feel the task you have been delegated is beyond your competence only the things you do, not the things you don't do
3. Performing unquestioningly any task that is delegated to you by a senior member of staff.

5) Performance appraisal is about (please indicate true for false for each statement):

1. your manager trying to find weaknesses in your performance and punishing you for them
2. your manager telling you what he or she thinks of you
3. supporting you to make the best possible contribution to your team's work and to develop your own knowledge and skills
4. adopting a partnership approach, with your manager and you working together to map a way forward for you within the team.

6) Which of the following principles for blood glucose monitoring are true or false?

When performing blood glucose monitoring: (Please indicate true or false for each statement)

1. the patient should wash their hands before the procedure
2. the index finger is the best for drawing a drop of blood
3. use the patient's handkerchief to stop the bleeding from the puncture site
4. the monitor should be calibrated according to the manufacturer's instructions.

7) Indicate which of the following statements are true and which are false.

A urine testing reagent strip allows you to test for: (Please indicate true or false for each statement)

1. Blood
2. Protein
3. Antibodies
4. Microorganisms

Multiple choice questions

Please answer all questions by circling one answer which you believe is correct

8) Complex conversations with patients/clients who do not speak or understand English require

1. an experienced member of staff
2. a good dictionary
3. a trusted family member who speaks English or a translator
4. a knowledge of sign language.

9) What is the single-most important thing you can do to protect yourself and others from infection?

1. Perform regular and effective hand hygiene.
2. Keep up to date with infection control research.
3. Copy what experienced colleagues do in relation to infection control.
4. Always do what you are told by senior staff.

10) Select the correct words to complete the following sentence:

You can only contribute to an accident or incident form if...

1. you actually witnessed the event or were present when it was discovered
2. you are filling in the form on behalf of someone else
3. you heard about the incident from a colleague
4. you need to get some experience in filling in accident or incident forms .

11) What does 'informed' consent mean?

1. The patient/client has signed a consent form.
2. The patient/client understands exactly what is going to happen because you or a senior colleague has explained it in a way that he or she can easily understand.
3. The patient/client has not actively refused the care or treatment.
4. The patient/client has been given a leaflet to read about the care or treatment.

12) How should you respond if a patient refuses consent for you to take his blood pressure?

1. Accept his decision and withdraw.
2. Tell him he's harming himself unless he consents to the procedure.
3. Tell him you are going to report him to the nurse in charge.
4. Explore with him if there is something worrying, upsetting or discomforting him.

13) What should be your **first** course of action you take if you suspect a patient/client is either at risk of harm or is posing a risk of causing harm to someone else?

1. Seek advice from your supervisor or a senior colleague.
2. Withdraw and observe what happens.
3. Tell the patient/client about your concerns.
4. Go to the police.

14) Select the correct option to complete the following sentence:

Having a 'lifelong learning' focus means that you:

1. sign up for lots of study days and workshops
2. see every aspect of your daily work throughout your career in health care as an opportunity to learn, develop and improve
3. attain a lot of educational and professional qualifications
4. spend a lot of your own time studying.

15) What is the purpose of the Principles of Nursing Practice (PNP)?

1. The PNP tell us how to do our jobs.
2. The PNP are used to regulate nursing practice.
3. The PNP tell us what all people can expect from nursing practice.
4. The PNP is a legal document.

16) Nurses and nursing staff take responsibility for the care they provide and answer for their own judgments and actions – they carry out these actions in a way that is agreed with their patients, and the families and carers of their patients, and in a way that meets the requirements of their professional bodies and the law.

Which of the following statements is correct?

1. Only registered nurses are accountable for the care they provide.
2. Registered nurses are accountable for the actions that an HCA takes when they have delegated care to the HCA.
3. HCAs that have been assessed as competent are accountable for their actions.
4. As HCAs are not regulated they cannot be held accountable for the care they provide.

17) Nurses and nursing staff work closely with their own team and with other professionals, making sure patients' care and treatment is co-ordinated, is of a high standard and has the best possible outcome.

Which of the following statements is correct?

1. You should never pass information on to a member of another health care team.
2. Good communication between team members is essential in order for the standard of patient care to be as high as possible.
3. The team members should always do what their team leader tells them even if they do not think it is in the best interest of the patient.
4. Family members are not considered part of the health care team.

18) A protocol is a document that is developed to:

1. assess the effectiveness of care
2. work out how many staff are needed to provide a service
3. guide decision-making around specific issues
4. record individual patients'/clients' progress.

19) Continence problems are very distressing for individuals and their families. You can make the situation better by:

1. never speaking about it with the patient/client or his family
2. adopting a positive, professional attitude that maintains the person's dignity and raises his or her self-esteem
3. dealing with episodes of incontinence by getting the job done quickly without any fuss
4. lightening the situation by making a joke.

20) What is considered to be a 'normal' body temperature (in °C)?

1. 38.6 °C
2. 36.8 °C
3. 63.8 °C
4. 86.3 °C

21) Which of the following statements is NOT correct?

1. A raised body temperature may indicate that the person has an infection.
2. Another name for a high temperature is pyrexia.
3. When the temperature drops below 35 degrees C this is known as hyperthermia.
4. Sometimes the temperature is monitored when a new drug has been started.

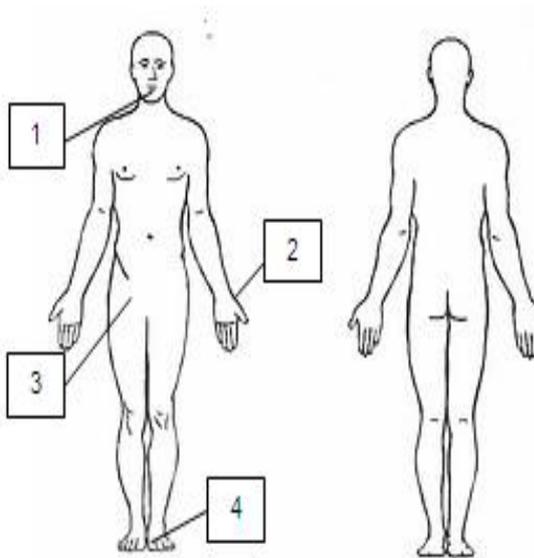
22) Typically, an adult using a peak flow meter should achieve readings of:

1. 400 to 700 litres per minute
2. 100 to 300 litres per minute
3. 800-1000 litres per minute
4. 0-100 litres per minute.

23) In which of the following situations should you summon immediate medical assistance?

1. If a patient's peak flow meter reading drops by 10 per cent from the last reading.
2. If a patient refuses to use the peak flow meter.
3. If a patient's peak flow meter reading drops by 50 per cent from the last reading.
4. If the peak flow meter breaks during the test.

24) In the diagram, identify where you would check a patient's CAROTID pulse.



25) Complete the following sentence.

Apart from the breathing pattern, an indication of how well the patient's respirations are working can be gained from observing...

1. their eye movements
2. their skin colour
3. their appetite
4. their thirst.

26) An adult's blood pressure is generally considered 'high' if it is consistently raised above:

1. 160/80
2. 140/90
3. 130/60
4. 140/70

27) The specific gravity of urine indicates:

1. the concentration of the urine
2. the presence of infection
3. the amount of glucose in the urine
4. the presence of blood.

28) The process by which we measure patients'/clients' oxygen levels is called:

1. pulse symmetry
2. pulse oxidation
3. pulse oximetry
4. pulse oxygenation.

29) Complete the following sentence.

Oxygen saturation levels are:

1. the level of oxygen that has been absorbed by the blood and is therefore free to be moved to the body tissues to nourish them
2. the level of oxygen that exists in the patient's lungs
3. the level of oxygen the patient receives through treatment
4. the level of oxygen in the air surrounding the patient.

30) 'Normal' oxygen saturation levels are:

1. 60-70 per cent
2. 70-80 per cent
3. 80-90 per cent
4. 90-100 percent.

The end, thank you!

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