Chapter 1
Introduction to Nursing Informatics

Pamela Hussey

Abstract This chapter introduces the reader to the structure and content of this new edition. As with the fourth edition, this next edition is designed as an ebook. This fifth edition describes how the acronym CARE originally introduced in early editions by Hannah and Ball and used in the previous editions has evolved and presents content in four discrete sections. Educational tools devised to support the reader are also presented in this chapter, and 3 distinct learning approaches; assimilative, productive and interactive/adaptive styles are explained. Each chapter has an associated learning template that can be downloaded at the end of the resource. In this chapter the structure and presentation of the learning templates is also presented.

Keywords Introduction to 5th edition structure · Supporting educational resource tools · Learning approaches explained · The revised CARE acronym

Learning Objectives for the Chapter

1. Introduce the reader to the 5th Edition of An Introduction to Nursing Informatics
2. Explain the acronym of CARE
3. Describe the Educational approach devised by the editors to support the reader of this 5th edition

The 5th edition of An introduction to Nursing Informatics, is designed for use with practicing nurses and students in undergraduate and post graduate programmes of study. It presents the fundamental concepts of nursing informatics and considers

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P. Hussey (✉)
School of Nursing Psychotherapy and Community Health, Faculty of Science and Health, Dublin City University, Dublin, Ireland
e-mail: pamela.hussey@dcu.ie

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how the theory of health informatics informs service improvements for citizens in an evolving digital society.

The text includes a number of contributions from leading experts who have practiced in the field of informatics over a number of years. This fifth edition provides insights into current and future leader's visions, it demonstrates how nurses are using informatics competencies to play an influential role in health policy formulation in addition to contributing to the effectiveness of health and social care systems globally.

We revisit in this new edition the CARE acronym and the associated Fig. 1.1 considering key concepts, which underpin the material, reflect our understandings and insights based on the evidence reviewed and our experiences. We start with core questions such as what the role of a nurse is and how this role expands in a digital enabled society. We reflect and consider how as a profession we can empower individuals to use digital health to maintain good quality of life for optimal health and wellbeing. Democratisation of health care is increasingly evident, it brings with it challenges and opportunities of dealing with newly acquired data and information (Topol 2016). Nursing leadership is now more than ever a priority and informatics a core competency to optimise the nursing professions contribution. As you will read in Chap. 8, there is a need to deliver at least 6 million new nursing jobs by 2030, primarily in low- and middle-income countries. Nursing as a profession needs to accelerate its impact through the expansion of effective nurse-led models of care to meet population health needs and improve access to primary health care.

In Connecting Health Immersion of Digital into eHealth (Chap. 2), we will delve deeper in to the evidence and policy debate to see what nursing activity is shaping effective and efficient systems design and development. This chapter explores where the profession of nursing is situated, within the intersection of data, devices and AI. In Chap. 16 the authors will describe what nursing care practice will

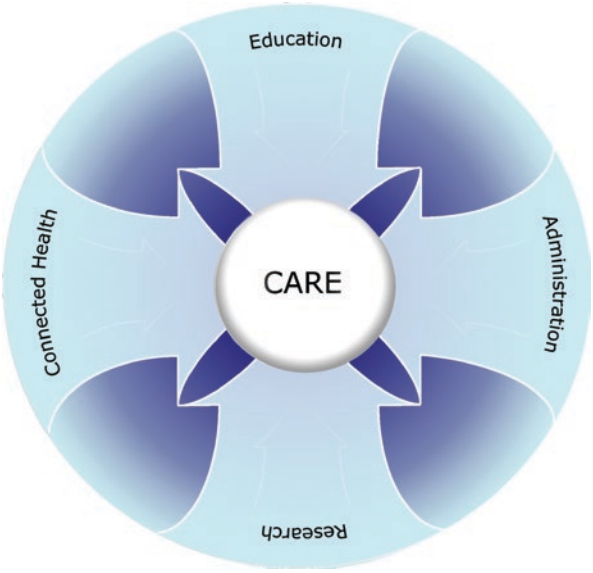


Fig. 1.1 CARE diagram

potentially look like in the future? We discuss the evolving role of the nurse as an under utilised resource in the design and deployment of new models of care. In Nursing Informatics: A Core Competency for the Profession Chap. 3, we provide examples of where nursing as a profession is drawing on traditional and contemporary nursing theory to inform and generate new knowledge. Specifically we include the focus on visualization of data and measurement of impact on patient outcome and experiences for new integrated care delivery. Health information is no longer delivered solely in a top down fashion from doctor to patient through a medical model. Nowadays we see an increasing bank of self-generated health data owned by individuals and which is challenging existing traditional power structures in medical models of care. Nurses will not disappear in the future, but their roles and responsibilities are evolving to meet the needs of the digital enabled patient.

We start with fundamental concepts in part one of the book, and then progress on to core concepts and practice applications in sections two through four. The content is linked with case based examples to contextualise the theory presented by authors. A content map, which demonstrates the overall structure of the book is presented in Fig. 1.1, and this map will be explained in greater detail through chapters and associated sections. Briefly, the word CARE is presented as an acronym for Connected Health, Administration, Research and Education and the book is organised sections into these sub themes. Part one is included as an introductory section. The main changes from earlier editions is the manner in which administration as a concept within nursing is considered. Adopting the Cambridge definition, we reshape the material on this administration section of this new edition. We define Administration not from an acute model of nursing care, in a tightly bound set of nursing information systems but rather consider the concept of administration in the widest context of care delivery. Briefly considering administration as a set of core arrangements and tasks needed to control the operations of a plan (Cambridge University Press Dictionary 2019). We believe this approach is important as we enter a period of professional reflection on redefining roles and responsibilities within the profession This plan for example can include administration of integrated care across service providers or administrator of action plans for self-management support underpinned by Smart and Internet of Things IoT using connected devices.

In the year of the Nurse 2020, our goal is to empower nursing, to build capacity within the profession to use Informatics as an enabler to cultivate digital leaders for health and social care transformation. The State of the Worlds Nursing Report published in April 2020 recommends the nurse education and training programmes must graduate nurses who drive progress in primary health care and universal health coverage. They contend that graduate nurses should emerge as a career choice grounded in science, technology, teamwork and health equity, and that curricula must be aligned with national health priorities as well as emerging global issues to prepare nurses to work effectively in interprofessional teams and maximize graduate competencies in health technology (State of the World's Nursing Report 2020).

We will support the evidence in this fifth edition with examples from international leaders in the field of informatics who are demonstrating initiatives which are

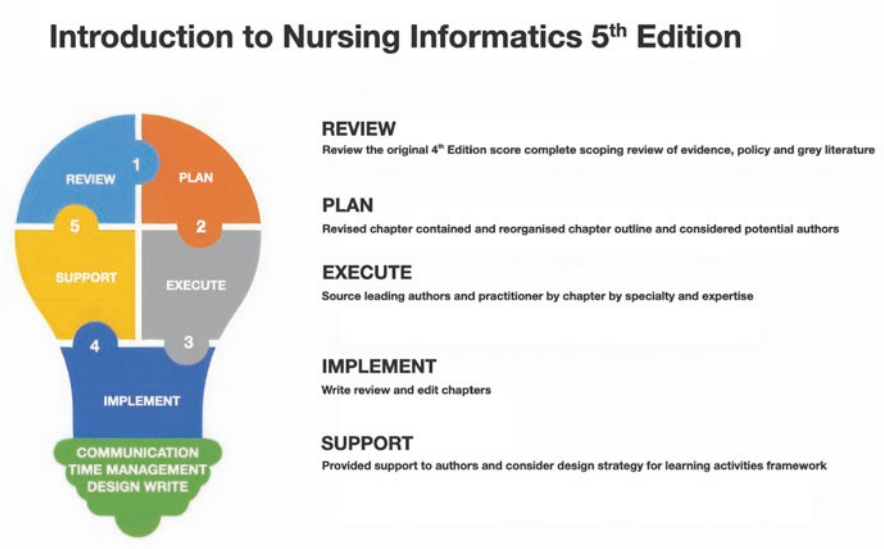


Fig. 1.2 Methods adopted

driving this change. Figure 1.2 provides an overview of the methods adopted to draft this latest edition of the text.

As an eBook, it is important that you have an opportunity to view a site map of the content in order to synthesize the material in a structured and systematic way. There is a number of associated learning activities presented at the end of each chapter in a template format. An example of the structure of the template is explained at the end of this introductory chapter (Fig. 1.3). In each chapter, a signpost will direct you to a set of learning activities designed to assist you to meet your personal learning objectives. Drawing on years of lecturing and teaching informatics in both face-to-face and online programmes, we advocate this as an effective way to maximise potential learning and gain a deeper understanding of the topic.

Adopting Conole's (2013) work, three specific activity profiles are presented to assist you to learn. The first and largest activity profile is to review the material presented in this ebook by reading, watching, accessing and thinking about the informatics material presented. This process is known as assimilative activity. The second activity is to produce, list create, construct, compose, draw or write what you read and are assimilating, this process is called a productive activity. Finally, we would ask you to consider completion of the assimilative and production activities by engaging with interactive or adaptive activities. Such activities involve you exploring newly acquired information by experimenting, and simulating the information using design patterns with a view to you enhancing your practice. The blending of these three activities, with your practice experience in association with reading this text offer you as a practicing nurse or informatics student, a fundamental understanding of what nursing informatics is. In this way informatics and it role can be located and understood

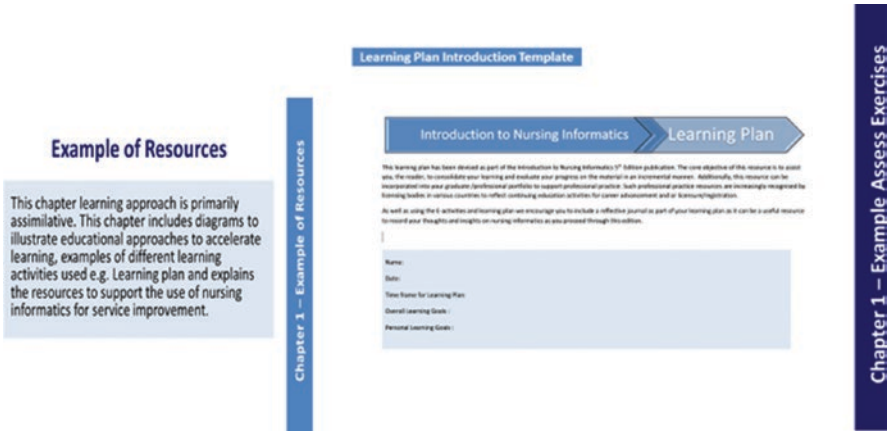


Fig. 1.3 Example of learning template

Fig. 1.4 Learning activities

within the profession of nursing. Figure 1.4 offers a summary diagram of this process.

Each of the learning approaches identified in Fig. 1.4 can be used as scaffolding by educators and trainers with different design tools to assist the student or practitioner to contextualise the material within the individual chapters as part of a module or set of learning outcomes. Drawing on early work of Conole in 2008 and 2013 (Conole 2008, 2013), specific learning activities can be used to abstract and transfer key learning material which can be cognitively processed by you and then applied to differing contexts. The following summary provides some examples of the tools that we have included within this ebook.

1.1 Summary of Learning Tools and Supporting Resources Included In This Book

Case studies are useful for developing and testing problem-solving skills. They are used in this text to demonstrate a particular challenge relating to informatics within the nursing context that the student must overcome in order to achieve the desired outcome.

Rationale We have included case studies in this book to assist you to reflect on pertinent issues facing nursing today which informatics may have a direct impact on.

Design Patterns capture a recurring problem, the context in which it occurs and a possible method of solution derived from experience and backed up by theory. Design patterns often include an interactive learning pattern which is described by Conole in 2013 (Conole 2013) as creating an interactive space for team work as well as interpersonal reflection. The pattern usually includes: lectures, keeping a diary, elaboration of a team project, self and or peer evaluation and summative assessment (Conole 2013). Design patterns are also used in design science for development of information systems (Vaishnavi et al. 2004/2019).

Rationale Nursing as skill-based profession has a core role to play in problem solving and design science of new models of care. Considered context and domain experts, nurses can provide key insights in mapping process models of existing and proposed care delivery mechanisms. Design patterns will assist you to achieve key attributes for self-development on informatics tools and their overall impact upon service improvement activity and patient outcomes.

Scenarios which can offer more current and future challenges facing practitioners can be used as test cases to demonstrate the validity and utility of patterns within the informatics domain (Conole 2008).

Rationale healthcare operates within a dynamic environment and the pace of progression with topical issues such as the eHealth and Digital agendas requires that the nursing profession can adopt and adapt to this changing environment. Using scenarios will assist nurses to recognise future nursing informatics requirements in their practice domain.

Visual representations such as mind maps or formalised diagrams to summarise or outline key points noted in the material reviewed.

Rationale Using mind maps will assist you to generate and link core concepts assimilated in the text. The process of mind mapping may include an associated hierarchy using images lines and links as well as random associations.

Role play often linked with visual representations such as mind maps or web searches to design discuss or report on material reviewed within a chapter (Vaishnavi et al. 2004/2019; Mor et al. 2012).

Rationale Presents to you a learning opportunity to develop a greater awareness of the issues raised in a particular setting and can develop a more focused approach on the specific knowledge presented in a chapter. Role play demonstrates how well the learner understands the topic e.g. motivational interviewing (Health Services Executive Making Every Contact Count 2019) and provides dedicated time to apply what is learned to practice in a safe environment removed from the practice setting.

A Reflective practitioner exercise which encourages you to answer a question, make a judgement, or react to the material presented in the chapter. Whilst this exercise can be completed as a stand-alone activity it is useful to complete this activity as part of a peer review exercise.

Rationale The advantages of reflection in practice and on reflective practice within the profession of nursing are well documented and are recognised as a credible educational tool (Bradbury-Jones et al. 2009).

In addition to the learning tools in this text we have also included some support resources to accompany the text. These include website links, video links, a glossary, and PowerPoint presentations. A brief description for these supporting resources is included in the following section in addition to an example of a learning plan which can be used listed as an appendix to this introductory chapter.

1.2 Glossary

The glossary of key terms frequently used within the domain of nursing informatics has been included.

1.3 Powerpoint Presentations

The purpose of including PowerPoint presentations with some of the chapters is to offer you the key points identified in the chapter in a short summarised format.

1.4 Online Resources

In some of the chapters we have included website links and links to video which are available to download from the related websites.

Glossary

Administration The process of running a business or organisation

Assessment An evidence based approach used to generate data which will inform interpretations about the level of knowledge, skills or capabilities of a person or group for a specific purpose

Assimilative Activity An intervention that includes reading watching assessing and thinking about resources provided to enhance learning about a specific topic

Case Study An activity which involves a thorough analysis of an individual or group or other social unit

Concept An abstraction based on observations of behaviours or characteristics

Conceptual model A representation of a specific idea or product, illustrated through inter-related concepts or abstractions and presented in a rational scheme by virtue of their relevance to a common theme; also referred to as a conceptual framework

Connected Health Connected Health is a term used to describe a model for healthcare delivery that uses technology to provide healthcare remotely, and to allow patients more freedom to lead their own lives.

Design Patterns An approach to identify and document a recurring problem, the context in which it occurs and a possible method of solution derived from experience and backed up by theory

Digital Digital Health is used as an umbrella term for areas including eHealth, telehealth, mHealth and more. Digital Health is the integration of all information and knowledge sources involved in the delivery of healthcare via information technology (IT)-based systems. This includes information created by caregivers, often within electronic health record systems at a hospital or GP practice, and information created by patients using apps, monitoring devices and wearable sensors. Digital health information also includes management and administrative information needed to co-ordinate and manage activities within the healthcare system

Education The process of giving or receiving systematic instruction

Glossary Key terms frequently used within the subject domain

Interactive Activity A process which involves exploring newly acquired information by experimenting, and simulating the material reviewed using design patterns with a view to you enhancing your practice

Podcast A digital audio or video file or recording that can be downloaded from a Web site to a media player or computer

Productive Activity A learning strategy which aim is to improve the quality of learner achievement against the learners time. Productive activities usually involve an output from task related activities such as an assignment or critical review exercise that can be posted to a journal

Productive Activity An action orientated process which can include composing drawing writing or constructing reflections on a particular topic usually completed following an assimilative activity

Quicktime A multimedia platform and media player that allows you to view internet video

Reflective Practitioner Exercise which encourages you to answer a question, make a judgement, or react to the material presented often in tandem with your personal experiences, practice and pre conceptions

Research Systematic inquiry that uses a variety of methods to answer questions or solve problems

Role Play Exercises often linked with visual representations such as mind maps or web searches to design discuss or report on material reviewed within a chapter

Scenario Exercise which present challenges facing practitioners which can be used as test cases to demonstrate the validity and utility of patterns within a specific domain or context

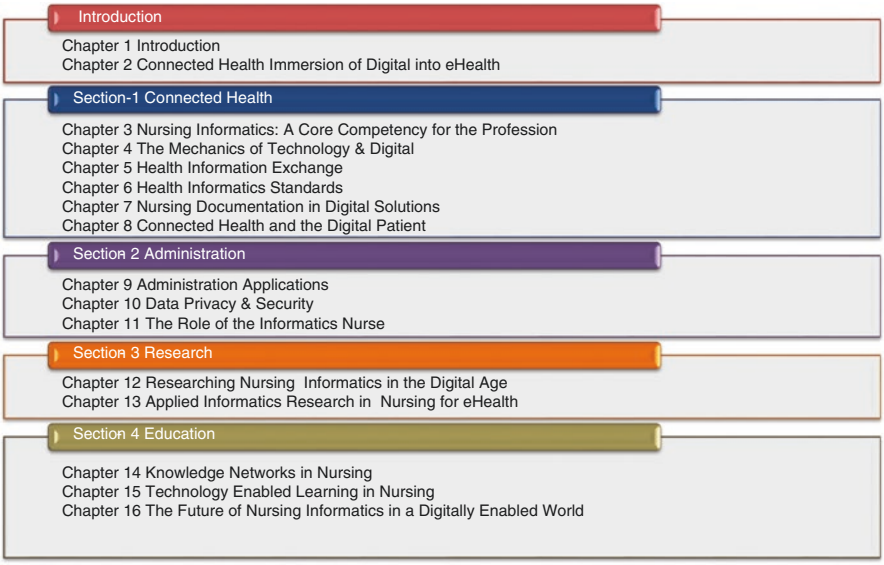
Appendix

Example of Learning Plan

This learning plan has been devised as part of the Introduction to Nursing Informatics 5th Edition publication. The core objective of this resource is to assist you, the reader, to consolidate your learning and evaluate your progress on the material in an incremental manner. Additionally, this resource can be incorporated into your graduate/professional portfolio to support professional practice. Such professional practice resources are increasingly recognised by licensing bodies in various countries to reflect continuing education activities for career advancement and or licensure/registration.

Name:
Date:
Time frame for Learning Plan:
Overall Learning Goals:
Personal Learning Goals:

As well as using the E-activities and learning plan we encourage you to include a reflective journal as part of your learning plan as it can be a useful resource to record your thoughts and insights on nursing informatics as you proceed through this edition.



Introduction				
Learning Goals What do I need to accomplish to achieve my learning goals? (Must be a SMART objective, i.e. specific, measurable, achievable, realistic, time-oriented)	**Learning Strategies** What exercises can I use to reach this learning goal	**Required Resources** What resources do I need to achieve this learning goal?	**Learning Outcomes** How can I demonstrate to myself and others that I have achieved this learning	**Target Date for Completion** When do I want to achieve this by?

Section 1 - Connected Health

Section 1 Connected Health				
Learning Goals What do I need to accomplish to achieve my learning goal? (Must be a SMART objective, i.e. specific, measurable, achievable, realistic, time -oriented)	Learning Strategies What exercises can I use to reach this learning goal	Required Resources What resources do I need to achieve this learning goal?	Key Performance Indicators How can I demonstrate to myself and others that I have achieved this learning	Target Date for Completion When do I want to achieve this by?

Section 2 - Administration

Section 2 – Administration				
Learning Goals What do I need to accomplish to achieve my learning goals? (Must be a SMART objective, i.e. specific, measurable, achievable, realistic, time-oriented)	Learning Strategies What exercises can I use to reach this learning goal	Required Resources What resources do heed to achieve this learning goal?	Key Performance Indicators How can I demonstrate to myself and others that I have achieved this learning	Target Date for Completion When do I want to achieve this by?

Section 3 - Research

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Learning Goals What do I need to accomplish to achieve my learning goals? (Must be a SMART objective, i.e. specific, measurable, achievable, realistic, time-oriented)	Learning Strategies What exercises can I use to reach this learning goal	Required Resources What resources do I need to achieve this learning goal?	Key Performance Indicators How can I demonstrate to myself and others that I have achieved this learning	Target Date for Completion When do I want to achieve this by?

Section 4 - Education

Section 5. – Education				
Learning Goals What do I need to accomplish to achieve my learning goals? (Must be a SMART objective, i.e. specific, measurable, achievable, realistic, time-oriented)	Learning Strategies What exercises can luse to reach this learning goal	Required Resources What resources do I need to achieve this learning goal?	Key Performance Indicators How can I demonstrate to myself and others that I have achieved this learning	Target Date for Completion When do I want to achieve this by?

Learning Plan → Reflective Journal

When writing your reflective journal you may find the following key points useful.

In the learning exercises devised in this 5th edition we have included three sets of activities:

1. Assimilative
2. Productive
3. Interactive or adaptive

In your journal it may be useful to write some reflections about each of these activities using the following questions to assist you in the process.

- What have I learned from completing this particular activity?
- How well have I completed this particular activity?
- If I were to complete this activity again what if anything would I do differently?

Evaluating your performance can assist you in enhancing your knowledge and build a deeper insight into focusing your learning objectives.

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