

Preface

Technological innovations are changing the way education is delivered. With instructional media evolving at an exponential pace, instructional designers and educators have a variety of options when deciding what tools are best for delivering their instruction. Many healthcare programs and professional fields are increasing their instructional programming efforts to enhance faculty development and meet rising accreditation standards. Medical educators are responsible for creating instruction for a variety of learning audiences, managing the logistics involved with interprofessional team training and ensuring performance improvement across the healthcare system. Technological innovations now require educators to deliver instruction across a variety of platforms beyond the traditional classroom and include distance, mobile, and simulated learning environments. Regardless of the platform, it is imperative that educators adhere to sound instructional design principles in order to yield optimal learning outcomes.

“Instructional design is the science and art of creating detailed specifications for the development, evaluation, and maintenance of situations which facilitate learning and performance” (Richey, Klein, & Tracey, 2011, p. 3). The premise of this book is to provide individuals who work in the area of medical education with an instructional book that can serve as a tool kit for developing instruction in healthcare environments. The book covers topics related to conducting a needs assessment, analyzing performance, instructional theory, developing instructional materials, and tips for managing instructional projects. To date, there are very few resources that have addressed the foundational knowledge associated with instructional design for the field of medical education.

Topics addressed within the chapters include the following:

- Instructional theory.
- Performance analysis.
- Instructional strategies and sequencing.
- Informal learning.
- Online learning strategies.
- Medical simulation.
- Virtual patients.
- Instructional management.
- Interprofessional education.
- Noninstructional interventions.
- Faculty development.

BOOK OBJECTIVE

The overall mission of this book is to provide medical educators, who are involved with designing and delivering instructional to health care professionals, with an instructional design book that can provide them with the foundational knowledge needed to design effective instruction for a variety of audiences and learning contexts. This book includes 14 chapters from instructional design experts and medical educators and professionals who are responsible for delivering instruction to a variety of learners in the health care field. Each chapter highlights learning theory, instructional strategies, and suggestions for ensuring a successful implementation.

To date, there is increasing attention placed on curricular programs in health care at the undergraduate, graduate, and continuing medical education levels. While medical institutions are beginning to hire instructional designers and medical educators to ensure adherence to instructional design principles, many medical educators have been appointed to lead instructional interventions based on their subject-matter expertise. Few have received formal instructional relative to designing instruction. In order to maintain accreditation, many medical institutions are required to provide documentation on a regular basis of the various types of curricular projects they are embarking on as well as any scholarly activity/research that is emerging out of their organizations. This book provides individuals with the necessary foundational knowledge to design and implement sound instructional programs in the medical field.

AUDIENCE

The target audience for this book consists of educators, physicians, nurses, and allied health professionals who are responsible for designing instructional activities. Many of these educators have not had any formal training in pedagogy or instructional design. This book is intended to serve as a toolkit to aid them with curriculum development and to align activities with their desired learning objectives. Chapters in this book have been written to provide contextual examples for a variety of health care disciplines. Emphasis is placed on learning theory, instructional design principles, instructional strategies, and evaluative methods. In addition, authors have carefully identified challenges and constraints faced while implementing various instructional practices due to the unique nuances of health care.

ORGANIZATION

This book contains 14 chapters that span across a variety of health care disciplines including medical education, nursing, and allied health. Topics range from pedagogical strategies employed to teach a variety of different tasks, both procedural and cognitive. Each chapter presents strategies for how instructional design principles can be applied to achieve learning outcomes and facilitate improved performance. In addition to the emphasis on instructional theory, the chapters provide information for, how to integrate multimedia tools and technology to leverage desired learning goals and outcomes. Examples of technological integrations include, but are not limited to medical simulation, in situ simulation, task trainers, virtual patients, social media, and online learning applications.

Chapter 1 provides a detailed account of how to conduct a learner analysis. With the multitude of technological tools and mediums to develop instructional design, health care educators can easily lose

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sight of the learner. Recognizing that learners vary considerably, a complete understanding of the target learning audience is a crucial step in developing and delivering quality instruction. Neglecting to understand or anticipate the educational needs of students can result in ineffective instruction and ultimately poor learning outcomes. This chapter will discuss the rationale for conducting a learner analysis, explore key learner characteristics, and examine the implications these characteristics may have on developing and teaching a course. Strategies for conducting a learner analysis are also provided.

Chapter 2 provides a rich account of how to sequence instruction with appropriate instructional strategies. Emphasis is placed on taking a systematic and systemic approach to instructional design. The authors provide an overview of learning and instructional theory and demonstrate alignment among various instructional strategies. Heuristics are provided to assist educators with delivering instruction using a variety of different methods. In addition to overview of several different types of instructional strategies, the authors explain the necessity of appropriate sequencing of instruction. An overview is provided in terms how elaboration theory can be applied to any learning environment to provide learners with the necessary scaffolded support to improve their clinical performance.

Chapter 3 provides a rich account of how backward design can be applied to develop competency-based medical education. Health care professionals and trainees across many disciplines are tasked with mastering a large number of professional competencies in a relatively short amount of time. Due to the nature of health education, many of these competencies require learners to synthesize a lot of information to solve complex patient problems. Backward Design is an instructional design model that proposes instructors start with outcomes and work backward to design appropriate assessment tools and curricular content. Adapted from K-12 learning environments, this model tasks educators to sequence instruction in a particular way that begins with the end in mind. This allows students to gain a better understanding of the content and the desired learning outcomes so that they can strategize ways to arrive at the particular learning goal. Backward design can be applied to medical education by beginning with the national standards or competencies for medical education, defining outcomes and assessment methods, and then defining curricular content.

This chapter will cover the history of competency-based medical education in the United States. Examples of how the backward design model can be applied in clinical settings will also be discussed. The chapter will culminate with a discussion of creating action plans for individual programs to align assessment and outcome measures more directly to curriculum.

Chapter 4 moves us into the use of various instructional media and technology that can be used to enhance learning outcomes. During this past decade, there has been continuous emphasis placed on integrating medical simulation into health education curricula. Medical simulation presents many advantages to the traditional methods of clinical teaching in that it provides learners with an opportunity to learn and practice new skills in a safe environment, whilst protecting the patient. Medical simulation environments can be designed to reach a variety of fidelity levels to meet desired learning outcomes. The authors provide us with an overview of the various types of medical simulation tools available for health education, advantages and disadvantages with various simulated learning environments, and instructional strategies for delivering and facilitating simulated learning activities. Strategies are also provided to assist educators with identifying opportunities to leverage the learning experience by aligning simulated learning activities with sound instructional design principles.

Chapter 5 continues the discussion of how medical simulation can be used to enhance learning in the health professions. The authors provide a detailed account of how worked examples can be woven into the instructional design of clinical learning exercises to provide a scaffolded approach to instruc-

tion. The chapter provides a variety of examples to demonstrate how health educators can use worked examples to teach a variety of clinical competencies. Emphasis is placed on using a scaffolded approach to sequence and deliver instruction. Specific attention is placed on communicating the need for educators to anticipate challenges that their learners often face when tasked with learning new clinical procedures. The worked example approach allows educators to gradually increase the level of complexity when teaching new concepts.

Chapter 6 shifts the focus to instructional design considerations for the nurse educator. While many nurse educator programs include course work in curriculum development, it is important to note that curriculum development is not synonymous with instructional design. The design of instruction is a systematic approach to the development of instruction and instructional materials focused on solving educational problems where a reasoned assessment of the need for the instruction is determined up front and the evaluation of the instruction is precisely aligned with the assessment of learning outcomes. To support nurse educators in their design efforts, this chapter aligns a concise guide for an integration of principles from the field of instructional design to scaffold the core competencies for nurse educators in the realm of curriculum development.

Chapter 7 continues the discussion of nursing education as it relates to designing applied online learning experiences. While the context discussed in the chapter is on nursing, the instructional strategies discussed for designing and facilitating interactive online learning experiences can be applied to any health care discipline. Emphasis is placed on designing learning activities that promote interaction between the learner and the content, the learner and instructor, and the learner with their fellow peers. The authors provide insights as to how students can apply what they are learning when faculty are not physically present to assess their application of skills. Using a case study approach, the chapter includes a description of a theory-based pedagogical approach and the instructional design process that integrated applied learning experiences into an accelerated online asynchronous course in an RN-BSN program.

Chapter 8 shifts focus to training resident physicians how to teach. Medical education has embraced the use of peer coaching and mentoring throughout the post-graduate training experience. A core task of residency is to teach medical students as well as patients, families, students, and other health professionals. To this end, foundational concepts, instructional models, and instructional strategies for use in a residency teaching setting are presented. The authors provide medical educators, such as program directors, faculty, and chief residents, with basic instructional frameworks and tools to develop the teaching competencies of residents. Strategies are also provided to assist with reviewing the contextual setting of medical education, recognizing effective instructional strategies, and developing or assisting in the development of a plan that prepares resident physicians to teach.

Chapter 9 explores the instructional implications associated with interprofessional education. Continued emphasis has been placed on providing learning opportunities for different health care professionals to train together. A highly recognized performance challenge faced by many healthcare institutions involves team training. Most health care professionals are trained within their discipline with very little interaction with trainees outside of their field. Upon graduation, they are then expected to be able to perform their clinical tasks in a team-based setting. When designing interprofessional instructional activities, instructors must consider several factors: the various disciplines involved, the unique nuances associated with each discipline, medical topics, and how to integrate with established curricula. This chapter provides an overview of different teaching frameworks that promote interprofessional education as well as suggestions for how these can be applied to different health scenarios and contexts.

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Chapter 10 continues the discussion of interprofessional education and the impact that it can have on the quality of patient care. The authors present a case study highlighting how an online course was developed to promote interprofessional education and collaborative practice to a large number of learners from across multiple professions. Contextual factors are identified and discussed in terms of the influence they have on the design of interprofessional education. Challenges to consider when training learners across multiple disciplines are also discussed in addition to instructional strategies that can be used to design a meaningful learning experience for all involved. Emphasis is placed on planning and project management as it relates to facilitating interprofessional education and coordinating project logistics when working with multiple disciplines.

Chapter 11 shifts the focus to take into consideration various instructional strategies and opportunities that can be presented to learners within informal learning environments. While a lot of health education is formalized in terms of delivery and assessment, a lot of learning takes place ongoing. This chapter identifies various instructional frameworks as they relate to informal learning in medical education as well as strategies to identify and assess these learning experiences. Recognizing informal learning and creating a culture for the organizational learning that embraces informal learning will likely develop an enabling condition for developing master or expert lifelong learners who engage in continuing professional development and professional socialization. Specific examples of informal learning experiences as they relate to teaching evidence-based medicine are provided. In addition, contextual factors are also discussed to assist educators with providing the necessary support to learners during these learning opportunities.

Chapter 12 explores the use of virtual patients and the impact they can have on the learning experience. The purpose of this chapter is to document the emergence of virtual patient simulation in health professions education, and to define the range of technologies within this category of clinical simulation. Varying levels of fidelity are discussed and aligned with instructional design principles. Emphasis is placed on assisting educators with the ability to determine the needs and justification related to incorporating virtual patients into a health discipline curriculum. Examples of how virtual patients have been incorporated in various clinical disciplines are also discussed.

Chapter 13 expands on the discussion pertaining to self-paced instruction in an online learning environmental. The author provides an overview of how a curriculum can be developed to provide individualized, self-paced content information accompanied by images and self-testing questions with feedback, along with problem-solving cases to facilitate application of clinical concepts. Emphasis is placed on the design and development aspects of instructional design with careful consideration given to produce instruction, conducting usability tests to determine student perceptions of technical and instructional effectiveness, and revisions based on student input. Additional discussion is provided to align scaffolding techniques for instructional sequencing with multimedia and message design principles.

Chapter 14 provides an overview of competency models that can assist with facilitating faculty development programs within healthcare institutions. The authors explore various instructional strategies that can be used to prepare clinical faculty with the ability to use innovative pedagogical tools in their daily practice. Specific attention is given to contextual factors that support or hinder faculty acceptance and performance as it relates to integrating instructional design practices.

CLOSING REMARKS

Healthcare institutions and medical professionals are in a never-ending search to improve performance and improve the delivery of patient care. With the unique contextual factors associated with many health professions, it is important that educators are equipped with the necessary pedagogical tools to facilitate learning. This book focuses on the design of instructional solutions, grounded in learning theory, to deliver instruction to a variety of learners using different learning platforms such as face-to-face, blended, synchronous and asynchronous online instruction. Additional insights are also provided to address the noninstructional strategies needed to support the delivery and sustainability of instructional interventions.

Jill E. Stefaniak
Old Dominion University, USA

REFERENCES

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