ISD

From the Ground Up

A No-Nonsense Approach to Instructional Design

4th Edition

CHUCK HODELL

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Preface

As a novice instructional designer I traveled many bumpy roads in an attempt to learn more about the science and art of designing effective courses. In the beginning, I didn't realize that the field of instructional systems development or instructional systems design (ISD) even existed, and I assumed that course design was a hit-or-miss proposition based on trial and error by teachers and facilitators. After I moved to Washington, D.C., and was asked to design courses and programs for national and international populations, I realized I was in over my head and needed to seek a graduate-level credential in the field of instructional design. My friend Jeff MacDonald told me about the graduate program in ISD at the University of Maryland, Baltimore County (UMBC), and imagine my surprise and relief to find out that there is a profesional, scientific approach to what most assume is just an instinct experienced teachers have.

As I worked my way through a master's degree in ISD and on to the faculty in the UMBC master's program in ISD, I quickly realized that there was no single book or text that taught the basics of ISD from the perspective of someone new to the field. It was this vacuum that created the idea for the first edition of *ISD From the Ground Up* (or *Up*, as we like to call it), published in 2000. My mentor, J. Marvin Cook, warned me not to write an academic text on the subject because most graduate students in ISD are working professionals in the field and they are not really interested in too much theory or information that they can't use immediately in their work. With that advice, the format and approach for *Up* was destined to always be grounded in content that was immediately useful based on a designer's experience or present need.

Why a Fourth Edition?

With each new edition of *Up*, I have rewritten content to keep it fresh and current, adding new chapters that reflect the changes in the field of instructional design and new content that is designed for more experienced designers. All of these updates and changes are meant to be both instructive and supportive of the day-to-day requirements of those working in the field of ISD.

Acknowledgments

If any author is honest, the first acknowledgment is to the fact that every word written is a reflection of the people and experiences that have influenced and supported one's own life and work.

First, I want to thank the ATD family that has supported my work for more than 20 years, including Tony Bingham, Cat Russo, Kathryn Stafford, Melissa Jones, and Amanda Smith. A special thanks to Kathryn for being such a talented editor and honest voice as we worked on this publication.

My students from my years of academic service, including all of my continuing education, undergraduate, graduate, and PhD students, who to a person taught me something about my profession.

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My West Virginia 3rd Hill Mountain friends, who have ignored my author's grumpiness and supported my efforts, including Greg and Fay Stump, Francis Asfour, Olav and Barbara Nysetter, Peter and Diane Van Kleeck, John and Patti Ross, Donna Dean, John Myer, Linda and Bill Ackerman, Ron Rosenberg, Jerry and Cindy Wilson, and Marilee Ostman.

My loving family, including Heather and Alex Herrig, David Hodell and Jess Stumpff, Joe Hodell, Savannah Ransom, Nick Ransom, the Cavs Charlie and Tobi, and especially my puzzle piece and partner, Karen Smith.

Dedication

This book is dedicated to the life and memory of Lon Barker, who set an example for all of us in his battle against cancer. And to all who are fighters and survivors of cancer, addiction, and all afflictions that challenge human strength and character: One day at a time we choose to continue to live, fight, and thrive regardless of the challenges.

Chuck Hodell
3rd Hill Mountain, West Virginia
December 2015

Introduction

The art and science of developing curriculum, more specifically the practice of instructional systems development (ISD), has never been more valued. Similarly the demand for credentialed instructional designers with degrees has never been more critical. In the post-Millennial world of instructional design, the knowledge and applicable skills necessary to work at the top of the field have created a cadre of professionals who are as important to an organization's success as any other support function of the business. An organization without instructional designers, either in house or on a consulting basis, is lacking a key component of success.

Not to be too obvious, but all professionals today owe some measure of their success to the instructional designers who developed the courses they took and mastered to learn their trade. From law, medicine, business, accounting, human resources, law enforcement, and emergency services to firefighters, pilots, train engineers, bus drivers, and paramedics, we are the end users of what instructional designers produce. In the modern world of credentialing, licensure, and academic degrees that serve as the entry point for almost every career, there are courses and evaluations of mastery that create a path that must be followed; these are all the province and deliverables of instructional designers.

Getting Started in ISD

Learning the basics of instructional design is often a hit-or-miss proposition with instinct and trial and error being the common point of entry for most designers. It certainly was true for my first attempts at course design. At even earlier stages in the evolution of instructional design as a profession, there wasn't even a name assigned to the work of ISD, and it was usually the responsibility of subject matter experts or classroom teachers to design their own courses. In

those early days, lesson plans were just as likely to be on the back of a napkin or on a sheet of graph paper as to not exist at all.

While you can certainly work as an instructional designer without any formal training, it is more difficult than ever for an instructional designer to work at the top of the field without a certification or a master's level or higher academic credential. Just like law, medicine, accounting, and other professional fields, instructional design has moved to a formal recognition of skills to ensure both quality and the promise of an expected minimum of design skills in the field from all instructional designers.

If you are just starting out in the field, or you have some experience but don't yet really know the ropes, there are a number of basic skills and tools that will build a very strong foundation for your work. Even knowing some of the vocabulary and jargon in the field of ISD will be useful to you. After you feel more comfortable with the basics, you can increase the complexity to advanced instructional design practices and principles.

Instructional Design Handbook

Think of this fourth edition of *ISD From the Ground Up* as a handbook covering all the basics and many of the advanced tenets of ISD. While this book doesn't promise to be everything to everybody, it does provide you with a step-by-step, in-depth tutorial on all the basic elements of ISD and continues with some very advanced skills and practices that do not appear in any other publications.

For starters you will learn the following:

- ISD basics
- ISD history
- differing roles of instructional designers
- ADDIE and the world of ISD models
  - analysis
  - design
  - development
  - implementation
  - evaluation.

You will then move up to:

- writing behavioral objectives
- preparing a design plan
- preparing a lesson plan.

Now it's time for the advanced skills:

- ISD project work flow
- working with the adult learner
- informal learning
- designing courses and programs for academic credit

- technology, distance learning, learning management systems (LMSs), and social media
- the content mastery continuum and the content tipping point
- quality control in ISD
- criticality in content decisions
- competency-based evaluation programs
- focus groups
- working with subject matter experts
- teaching ISD
- improving your skills as an instructional designer.

There is also a glossary of ISD terms that will assist you in working through the jargon and some of the misconceptions that exist for the novice designer.

While this text is used in for-credit undergraduate- and graduate-level courses and academic certificates, it has also found a home on the desks of many very experienced ISD professionals as a handbook to turn to when a specific issue arises or there is a need for a refresher on objectives, design plans, lesson plans, and even how to facilitate a focus group. It is written to be dynamic, with each chapter created to stand on its own and ready for your use.

How This Book Is Arranged

ISD From the Ground Up is presented with a practitioner's eye toward instructional design, not as an academic look at the subject. Although there are many excellent publications that cover theoretical issues associated with ISD, rank-and-file instructional designers generally appreciate a just-in-time approach to ISD that includes readily implementable tools and processes.

Chapters are sequenced with the basics of ISD in the beginning, followed by the working tools of instructional design, including objectives, design plans, and lesson plans, and then on to the more advanced discussions and skills.

There are discussion questions at the end of each chapter that are useful for credit and noncredit course environments, and I personally use these in my graduate courses in ISD. I have also used these in seminars and other professional development courses as a way to engage participants in a discussion concerning their thoughts on instructional design topics.

No matter your experience in the field of ISD, there is something in this book for everyone—from complete novices just looking for some background information to seasoned professionals seeking a new skill in their practice of instructional design.

Now let's get started!

1

ISD Practices and Principles

Training is in the news every day. More often than not, it is an absence of training or ineffective training—training that fails to teach content at the level of mastery required—that is the culprit. When a train, plane, bus, or truck is involved in a serious accident, a lack of training is often the reason. This is the same for law enforcement, military, civil, and emergency services. Without training, and more specifically the correct training, there is eventually going to be a problem. In some situations, the results of this lack of training are minor and may either cause inefficiency or loss of revenue. In other cases, lives are lost and reputations and credibility are severely and sometimes permanently damaged.

The world of professional training and education is an enigma to the uninitiated public. For example, as consumers of a product for most of their lives, they are blissfully disengaged from the process of product design and instruction delivery. The minutiae of how all this happens rarely invoke any thoughtful reflection by end users except in the extremes of excellent and awful. The rest is simply consumption.

This is no different from thousands of other elements of daily life that have come to be accepted without any thought about how it happens or why. Consumers of educational products focus on their roles as students and are less likely to think about instructional design than they are to think about what to have for lunch.

Every year, more than $55 billion is spent on training expenditures (*Training* 2014), and many organizations spend more than $1,000 per employee on training (ATD 2014). In professional occupations like law enforcement, the military, firefighting, and emergency services, per trainee expenditures can be exponentially higher. It is not unusual for these costs to exceed a quarter of a million dollars. The U.S. Navy spends more than $500,000 to train one Navy Seal;

the U.S. Air Force says it costs about $6 million to train one fighter pilot. These costs don't even include additional annual training expenditures per trainee.

With investments like that, organizations want to make sure they are getting the best training available; that doesn't happen by accident. It is the direct result of highly qualified instructional designers working with teams of subject matter experts and other professionals to design, develop, and implement all of this training.

In the aftermath of any major accident, the first thing an expert on a news channel is likely to bring up is the influence of the training of those involved. Federal investigators from the National Transportation Safety Board always review training when they search for the cause of an accident. Did the pilot have training on the emergency procedures when an engine failed? Did the engineer know the speed limit in a specific section of track? Did the bus driver have training in driving over snow-covered roads? These and thousands of other similar inquiries all go back to one basic and inescapable question: "Was there sufficient training and evaluation on this situation for the pilot/engineer/driver to avoid or prevent this accident?" If the answer is no, a more in-depth investigation will usually lead to a "root cause" discovery related to training.

In most civil lawsuits filed against an organization relating to an accident or other liability, one of the prime areas of litigation directly relates to the quantity and quality of training required by an organization and if involved employees received and passed training courses. Questions also concern course content and its connection to employee requirements and work practices; how often and how long ago employees took a specific series of courses; and how well they did in evaluations of mastery.

In the world of K-12 and higher education, the issues of course design and evaluation of learning always make their way into the discussion of competency of both school-age children and competitiveness in the world relating to higher education accomplishments. If test scores in the United States are lower than those of other comparable countries around the world, essentially that's an instructional design problem.

In the professional fields of medicine, law, accounting, and countless other occupations that require specified levels of education and then some form of evaluation and licensure, and even yearly refresher courses, ISD is the energy behind all of this. None of it exists without professionally designed courses, programs, evaluations, and the other peripheral elements to see that standards are established and met that ensure mastery of those we trust with our lives, our money, and our livelihoods.

Every formal course used in training and academia, and every form of credentialing or certification, is designed by someone. The differences in learner effectiveness and engagement are obvious between those courses and programs that are designed by professional instructional designers and those that are created by nondesigners. Once you know what professional instructional design work looks like, anything less is unacceptable.

Two Classifications of Course Designs in ISD

There are seemingly endless numbers of training approaches and implementation choices available to instructional designers as they work through how to best deliver a specific course or program. From graduate-level college courses to a lunch-and-learn on the job site, the options are staggering. From the perspective of instructional design, however, there are really two general categories of course designs; these are evaluated and nonevaluated (Figure 1-1 and Table 1-1).

An evaluated course has evaluation of mastery as an immovable element of course design. There are formal objectives and formal evaluation tasks, and no learner or facilitator leaves the course not knowing if a learner has reached mastery.

A nonevaluated course is practically everything else. If a learner participates in any content delivery that does not involve objectives and evaluation of mastery, it has to be considered a nonevaluated course.

Figure 1-1. Evaluated and Nonevaluated Courses

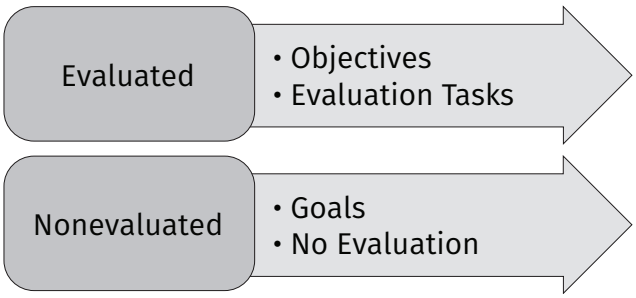

Table 1-1. Types of Evaluated and Nonevaluated Courses

Evaluated	**Nonevaluated**
For-credit courses	Seminars
Apprenticeships	Webinars
Licensure courses	Convention presentations
Certificate courses	Poster sessions
College courses	Panels
Technical courses	Noncredit courses
	Demonstrations

To the uninitiated, this difference is at best semantic because you can reasonably argue that any intake of information or skills results in mastery at some level. There are many problems with this philosophy, but the most important is the fact that mastery of a content area is required for almost all formal learning experiences. For example, what if future doctors in medical school were not evaluated for any level of mastery on any content area? And, would you want your accountant to have only been required to sit through seminars and webinars

without taking any tests or licensure like the CPA exam to determine mastery? As nonsensical as it seems, there are those who think that merely attending a seminar is sufficient for mastery.

In some learning environments there persists a feeling that half-baked training is somehow worth the time and money to implement; that webinars, seminars, emails, texts, YouTube videos, and other nonevaluated efforts implemented with no structure or mastery checks are just as effective as formal evaluated courses. This simply is not true.

There are certainly thousands of excellent alternative sources of information and skills based outside the formal evaluative environment. Some, but not all, webinars and other similar efforts have some value in the training arena, but the missing element of evaluation is too important to render most of these anything more than broadcasting. A question-and-answer session at the end of a seminar is not evaluative of all learners. A chat-based webinar with constant interaction and lively discussion is not evaluative of all learners. Sitting at a convention and listening to a world-renowned subject matter expert give a riveting presentation is not evaluative of all learners. Is there a value to these types of presentations? Of course. Is there any validity in terms of mastery? No. The simple truth is that if there are a thousand learners in that presentation at a convention, there are a thousand interpretations of what was said. Without any application and feedback of the content linked with evaluation of mastery relating to what was actually meant, everyone leaves with a slightly different understanding of the content.

With the recent surge in social media–based learning as well as informal learning garnering a lot of attention, a designer has to be vigilant concerning what is really taking place in any learning intervention, especially in nonevaluated sessions. This is not to say there is no value in these, but a designer must be judicious about what can be shown to be the benefits beyond the pep-rally effect.

If there is to be any validity in the outcomes, mastery and evaluation of mastery must be the reigning principles in instructional design. Just imagine that the pilot of your next airline journey has only attended some seminars and was never evaluated in his ability to fly a plane. There are times when nonevaluated is fine, and there are times when there can be no substitute of evaluated learning.

ISD Practice and Principles

There are several guiding principles and points of practice that help explain the professional foundation of instructional design. While certainly not all-inclusive, this is a good overview of the basics of ISD from a practitioner's point of view.

ISD Is Timeless

One of the most valuable assets that ISD brings to the process of instructional design is the fact that the process of instructional design doesn't change based on decisions made on any individual design issue. Whether a designer chooses online, in class, asynchronous, or distributed implementation methodology doesn't in any way affect ISD as a process. These

decisions are based on a number of design elements that are explored in the analysis phase of the ISD process.

This timelessness feature of ISD means several important things to a designer and organizations. First, no matter when a designer learns and practices the ISD process, the process doesn't change. It also means that whatever new technologies make their way into the instructional landscape can be easily incorporated into an instructional program. The term *keeping current* as used in ISD simply means keeping up with the trends in various aspects of analysis, development, implementation, and evaluation, not the ISD process used to make these necessary design decisions.

ISD Has No Opinions

The neutrality of the ISD process is vital to its effectiveness as a system. It must not contain any inherent bias or preconceived notions about any aspect of a particular design process. This is vital when an instructional designer is making important decisions about various aspects of a course design, including implementation choices and other noncontent-related areas. For example, analysis may show that a population can only read at a fifth-grade level, but a designer decides that the materials for the course will be written at a high-school level because the participants are adults and should be able to read at that level. This is a major mistake and, frankly, unprofessional.

Sometimes bias enters instructional design when a popular new technology is promoted to be the best way to reach a specific population. This was the case in the beginning of each new approach, such as online learning and social media. Some designers will attempt to make any new approach work, and in many cases the technology is not yet mature enough to be used effectively and reliably for course design. A good example is the early adaptations of e-learning, in which courses were designed with large graphics and other audio and video features that couldn't be used by anyone with anything less than very high-speed Internet access and most potential learners were using dial-up access. It was not successful in most cases and brought home the point that a technology must mature to be considered for most design work.

ISD has no preordained way to solve a specific design issue. Every decision evolves from gathering data in analysis and choosing the best options available. The system guides the process, and the variables inform decisions. If the best choice is a classroom-based course, then a designer should not attempt to make it work using social media.

ISD Does Not Have a Bias Toward a Specific Delivery System

It seems that every new technology or learning model spawns a new approach to implementing instruction, and these are almost always systemically no different from the last "big thing" in education and training. Multimedia, distance learning, social networking, and tablet computing all have a place in effective instructional programs. However, the process of designing curriculum is not affected by any of these technologies. ISD guides a design decision; it never makes one, although the choices should be pretty obvious after analysis is completed.

ISD Identifies Design Problems

A basic axiom of the ISD process is "if you are having a problem with a specific ISD design task, it is likely that there is something wrong with the design." More simply put, design problems are usually at fault when the design process stalls. A designer may struggle with writing a lesson plan and making the content work with the population. This is not because of a lack of design skill, it is because the population is probably not well defined or is too diverse for the design approach.

For example, including five-year-olds in the same class as adults in content areas like art or music appreciation is almost impossible due to the obvious differences in learning styles, attention spans, and motivation. If the objectives are not related to building a bond between the populations, then separate them into two courses and design for each population separately.

Another example is when a designer can't write objectives for a very simple content area. Closer examination reveals that the course is actually a conference seminar where participants simply attend and do not in any practical way participate. A designer can never write behavioral objectives for this type of event because there is seldom real learning taking place and students can't be evaluated. The choice then becomes either to admit that this session is not training and stop trying to design a course around it, or to upgrade the course to something real that offers lasting instructional value.

ISD Works Best in Its Purest Form

There are numerous ISD models and approaches available for study and adoption in the world of instructional design. But almost all of these are based on the ADDIE model of ISD, consisting of analysis, design, development, implementation, and evaluation. Some like to tinker with these basics, but they are generally doing so at the risk of eroding or confusing the foundations of the profession.

Training Versus Education Semantics in ISD

In the world of training and education, there sometimes appear questions about the difference between training and education. Some say that training is for skills and education is for cognitive studies like science and the arts. In the world of professional instructional design, the content—either skills or traditional education courses—is treated exactly the same. The differences relate to the other variables in the eventual program being designed. For example, skills courses like apprenticeships contain much cognitive-based content, and surgeons need to have certain psychomotor skills to perform surgery. As far as the practice of ISD is concerned, there is no difference except the semantics of how the terms are applied. Instructional designers design courses, and for the purposes of this book the design environment is referred to as training. Feel free to substitute the term *education* at any point. It will fit perfectly.

In Conclusion

The professional practice of ISD is built upon a foundation of very simple, yet fundamental operational truths that faithfully balance the design of instructional products. As a system, it has no point of view or bias toward any specific design solutions. It merely provides a reasoned and tested approach to developing training and *education* solutions regardless of the individual variables within a specific design scenario.

Discussion Questions

1. How important do you think ISD is in preparing training programs for key occupations like airline pilots, medical doctors, or lawyers?
2. Do you think that bias and opinions are an inevitable element of the practice of ISD?
3. In your opinion, is the difference between evaluated and nonevaluated courses an important distinction?

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