Staff Summary Sheet

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Summary

1. Purpose: To provide security and policy review on the document at Tab 1 prior to release to the public.

2. Background:

- *Author(s)*: Dr. Steven K. Jones (USAFA/DFE), Dr. Robert K. Noyd (USAFA/DFB), & Dr. Kenneth S. Sagendorf (Regis University)

- *Title*: Building a Learning Pathway: An Interactive How-To Guide to Course Design

- *Book Description*: Over the past two decades, numerous books and articles have been published describing a seismic shift in the culture of higher education, from an "instruction-centered paradigm" to a newer "learning-centered paradigm." However, in many college classrooms, it is difficult to see evidence of this shift – what professors and students do on a day-to-day basis has not appreciably changed. The reason, we propose, is that many college faculty have not learned how to design their courses in a way that is truly focused on student learning. We have written this book to guide faculty members through an interactive process of designing their courses in a more thoughtful, intentional way, focused specifically on improving the quality of student learning.

- *Release information*: To be published by Stylus Publishing, LLC. Anticipated publication date: 2014.

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3. Discussion: This book is based on work completed at USAFA's Course Design Retreat during 2008-1011. Besides the names of the authors, no names of retreat participants are included in the manscript.

4. Recommendation: Sign coord block above indicating document is suitable for public release. Suitability is based solely on the document being unclassified, not jeopardizing DoD interests, and accurately portraying official policy.

Dr. Steven K. Jones
Director of Academic Assessment
Directorate of Education

Tabs
1. Copy of chapter
2. CRADA between USAFA/DFE and Stylus

Building a Learning Pathway:

An Interactive, How-To Guide to Course Design

Steven K. Jones, Robert K. Noyd & Kenneth S. Sagendorf

8/1/2013

Building a Learning Pathway: An Interactive How-To Guide to Course Design

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Part I – Introduction

Chapter 1

Creating Student Success: The Impact of Learning-Focused Course Design

Not all that long ago, one would have had great difficulty finding a book about how to design college courses. And, given the paradigm that seemingly dominated within higher education for much of the 20th century, it is no wonder. College-level teaching has historically lived within what has been called an "instruction-focused paradigm" (Barr & Tagg, 1995). Within this paradigm, a college professor's primary task in the classroom was to deliver instruction – literally to profess his or her knowledge of a particular discipline to students, who were expected to absorb the to-be-learned material[1]. In this instruction-focused paradigm, course design was relatively straightforward. All a professor needed to do was to divide her disciplinary knowledge into a series of discrete class sessions and perhaps sprinkle in an exam or two to fulfill the administrative requirement of assigning grades. That was about it when it came to designing courses.

It is worth noting that all of the authors of this book attended college within this instruction-focused paradigm. As students, we remember sitting in lecture halls as our professors provided instruction in their respective fields of expertise. We all furiously took notes on what our professors said; we all did our best to make sense of the material once we left class; and we all took exams over the material several weeks or months later. For us – as it may have been for many of you – this is what it meant to be a college student. Given that we all graduated, we all felt relatively successful as well.

Because of our (generally positive) experience as students, it shouldn't be a surprise that we enacted that same instruction-focused paradigm in our own courses when we were beginning faculty members. We all became adept at organizing our disciplinary knowledge into distinct

[1] At its best, this was a time-efficient method of transmitting knowledge from the teacher to the student. At its worst, such a model could become what has been humorously described as "a process in which the notes of the teacher go to the notes of the student without going through the brains of either." (Tapscott, 2009).

class-length segments; we all developed the platform teaching skills[2] needed to deliver the content in our classes; and we even learned how to write tests that would satisfy our institutions' requirements to assign a certain percentage of A's, B's, and C's. By most conventional measures (to include student ratings, Department Head reviews, and the like), we were again successful. Occasionally, however, we confronted the somewhat discomforting realization that students weren't actually learning what we were trying to teach them in class. So, while we became quite competent at delivering instruction in our respective fields, we weren't necessarily successful at promoting student learning.

Thankfully, both we and the higher education community at large (Barr & Tagg, 1995; Huba & Freed, 2000; Jones et al., 2009; Tagg, 2003) have learned a great deal in the last 20 years or so about what it really means to be an effective college-level instructor. And, while our platform skills are still necessary for our success as instructors, we've come to realize that they are not enough. That is because our success ultimately comes not from what we (as instructors) are able to do, but from what our students learn as a result of taking our courses. To adapt a phrase from Friere (1998), there is no meaningful teaching if there is no student learning.

The Cultural Shift from the Instruction-Focused Paradigm to a Learning-Focused One

There have been several factors that have led the higher education community to shift toward an explicit focus on student learning. First, the data is abundantly clear that many students are not succeeding within the system that has historically dominated higher education. According to the Chronicle of Higher Education (2010), the 6-year graduation rate at four-year public institutions nationwide is an appallingly-low 56%. The data is even more stark for students from historically underrepresented groups, as the 6-year graduation rate is 47.8% for Hispanics and only 38.3% for African-Americans. Granted, at least some of the low graduation rate can be attributed to economic causes rather than educational ones, as the cost of attending college continues to push the boundaries of what many students are able to pay. However, we suspect

[2] For those unfamiliar with this phrase, platform teaching skills refer to those related to public speaking and giving presentations. These can include clear articulation of words, varying one's tone of voice, incorporating appropriate visual aids, etc. We would argue that these skills are indeed necessary for effective teaching. However, as you will see, we would also argue that they are far from sufficient.

that at least some of the phenomenon is due to the fact that the way we have historically taught college classes simply do not provide students with a clear pathway to academic success.

Second, national conversations about assessment and accountability have encouraged (or, in some cases, forced) faculty and administrators to begin asking questions about what students are really learning in college, even if they do graduate. Within the last decade, for instance, the Secretary of Education's Commission on the Future of Higher Education (i.e., the "Spellings Commission") released a scathing review of higher education practices (U.S. Department of Education, 2006) noting a "remarkable absence of accountability mechanisms to ensure that colleges succeed in educating students." (p. vii). Since that time, Derek Bok's (2006) *Our Underachieving Colleges*, Arum & Roksa's (2011) *Academically Adrift*, and Keeling & Hersh's (2011) *We're Losing Our Minds: Rethinking American Higher Education* have achieved popular success by pointing out areas in which colleges and universities appear to be falling short. In short, the public is increasingly questioning the extent to which students are really learning what they should be learning in college. The wolves are at the door, so to speak, and telling them that they should simply "trust" those of us in higher education appears to no be longer sufficient (Carey, 2011). The public's concerns aren't likely to go away unless (and until) college faculty respond by adopting a more intentional approach to promoting and assessing student learning in their classes.

A related concern has involved national conversations about the very purpose of a college education in the first place (e.g., AAC&U, 2007; Summers, 2012). What do we, as a country, really want students to learn from their college experiences? What do we want to be true of those people who attend and graduate from our colleges and universities that is not true of those who don't?[3] Is mastering disparate pieces of disciplinary content (like what has traditionally been delivered in our classes) really what we are looking for? Or is college supposed to be about something more?

[3] Peter Thiel's "20 Under 20 Thiel Fellowship" (http://www.thielfellowship.org/) provides an interesting thought experiment in this regard. Venture capitalist Peter Thiel is offering $100,000 grants to a handful of young people for NOT going to college. Instead, they will spend time working on their own to make a positive impact on society. How would those young people be different if they went to college instead? How would we want them to be different?

The answers that are emerging in this national conversation are intriguing. Despite the fact that most college courses – including our own – have historically been organized around the content of a particular discipline, many of the things people ultimately want students to learn in college do not necessarily seem to be tied to specific disciplinary knowledge. For example, in their published set of "essential learning outcomes" for 21st century students, the Association of American Colleges and Universities (AAC&U, 2007) stresses the importance of general-purpose "intellectual and practical skills," such as critical thinking and written communication; "personal and social responsibilities," such as intercultural competence and ethical reasoning; and "integrative and applied learning" that allows students to build strong connections across disciplinary boundaries. Accomplishing these lofty goals isn't likely to happen by accident – and they almost certainly won't happen if college courses are designed solely to deliver disciplinary content. Instead, they will require intentional efforts on the part of college faculty and staff, as well as a heightened awareness about the nature and quality of student learning.

As these national conversations have been taking place, there has also been a growing body of literature about how students actually learn new information. Educational research has made it increasingly clear that students are not empty vessels, waiting to be "filled up" with knowledge provided by their instructors. Instead, they appear to be active constructors, discoverers, and transformers of knowledge. As a result, learning depends less on what is done to the learner and more on how the learner interprets and/or makes sense of what happens (e.g., Campbell and Smith, 1997; Hake, 1998a, 1998b; Wieman, 2007). Therefore, even if we are effective at delivering large quantities of information to students, it may not necessarily lead to enduring change in our students. A different approach is necessary.

Finally, we now find ourselves living in an information age, where the volume of readily available knowledge is growing at an incredible rate. As a result, information that is vitally important today may possibly be obsolete even a few years from now. And, if students do need information, they can obtain it within seconds by using their computers and smart phones. Therefore, while education must still be grounded in foundational knowledge, it probably doesn't need to be the singular focus of our educational efforts. This frees us up to focus on

helping students make sense of the information that now envelops them. What counts as useful information versus information they can ignore? What are the connections between the disparate pieces of information in their world? How can the information be used, and used responsibly? These are the kinds of questions that are becoming increasingly important. And, in fact, they are essentially the same questions that AAC&U's essential learning outcomes call us to help students answer.

Due to the confluence of these events, it should not be surprising that an increasing number of people have begun to question the way the higher education community has historically done business. If you haven't done so already, we encourage you to watch *A Vision of Students Today*, the viral video (with more than 4.8 million hits on YouTube as of this writing) created by Michael Wesch (2007) and his students at Kansas State University, which makes the compelling case that the traditional instruction-driven courses of yesteryear no longer meet the needs of today's students. While you are online, we also encourage you to check out a fascinating pair of videos by Sir Kenneth Robinson (2010a, 2010b) that point out the connection between the instruction-focused paradigm and the industrial model on which it is based. Must we think of a college education as just a collection of credits, where students can seemingly pass through the system without any evidence of meaningful growth? Or would we be better served by changing how we do things so as to ensure that our students learn the kinds of enduring knowledge, skills, and responsibilities that they need to be fully functional citizens in the 21st century? As you might expect, we consider the answer to be obvious.

The Personal Shift to Focusing on Student Learning

Just as there are good reasons for the higher education community to shift toward a more explicit focus on student learning, there are also good reasons why we, as individual faculty members, can make the shift as well. Educational research (Kember & Gow, 1994; Trigwell & Prosser, 1996; Akerlind, 2007) indicates that there are qualitative differences in faculty members' conceptions of teaching. Some faculty adopt an instruction-focused approach, with a conception of teaching principally as a matter of information transfer, while others adopt a more learning-focused approach in which teaching is viewed as a vehicle for student learning,

development, and conceptual change. Furthermore, Akerlind (2007) suggests that the path from instruction-focused to learning-focused is a developmental one. That is, while faculty member's initial teaching concerns are likely to be focused on themselves (e.g., mastering the material to teach and how best to explain it), they can develop toward a more sophisticated approach focused on the quality of student learning if the conditions are right.

Akerlind's notion that faculty members can progress through distinct developmental stages resonates a great deal with our own personal experiences, and it has also helped us to understand the thinking of faculty members with whom we work. As such, we've created Figure 1.1 to represent our understanding of the developmental stages Akerlind (2007) describes. There are two parts of this image worth noting. First, note that the lower stages of Akerlind's model tend to be characteristic of the instruction-centered paradigm, focusing on the instructor's knowledge and how best to convey it. Meanwhile, the higher stages are more indicative of the learning-focused paradigm, where the focus of the teacher switches to the character of student learning. This suggests that, while faculty may start their careers in an instruction-focused mindset, they will change their thinking toward a learning-focused paradigm as they move through the developmental stages. Second, this image also captures Akerlind's idea that the higher stages not only build on previous ones, but they also encompass them. That is, having adequate subject matter knowledge and knowing how to explain it is still necessary, even at the highest levels of Akerlind's model. However, that knowledge and skill,

by itself, will not be sufficient to becoming effective at facilitating student learning.

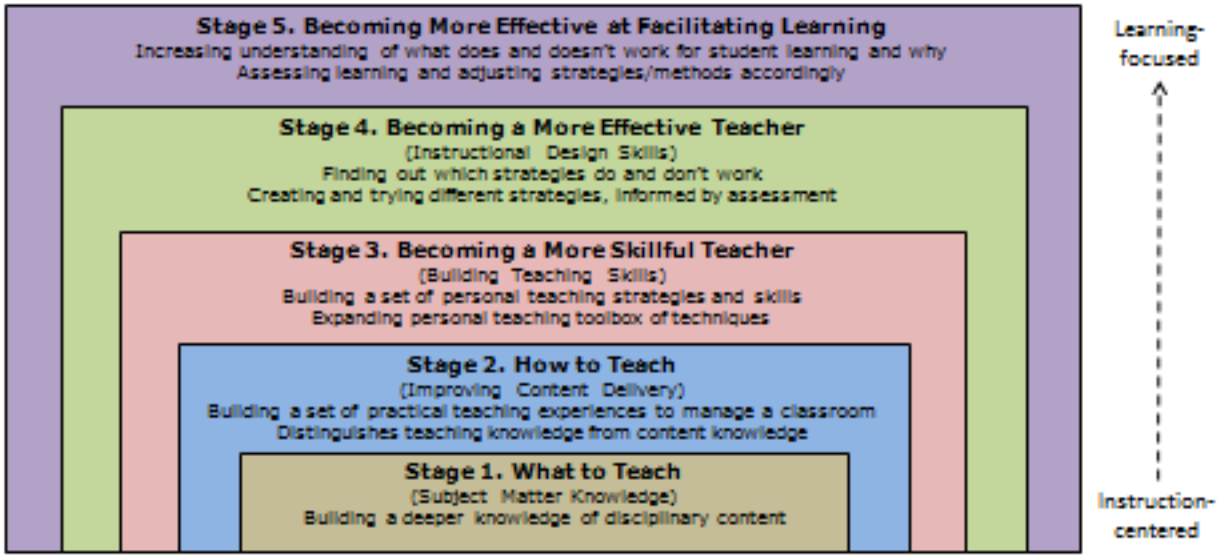


Figure 1.1. A Visual Interpretation of Akerlind's (2007) Developmental Stages

Of course, reviewing Akerlind's model begs the question of what kinds of experiences will help guide faculty toward a more learning-focused approach. As with other examples of conceptual change, we would argue that the answer lies in a combination of challenge and support (Sanford, 1966). That is, faculty need to be both challenged to see that their instruction-focused approach is insufficient, but they also need to have adequate support from colleagues and mentors.

From a personal standpoint, we have all been fortunate enough to enjoy the combination of challenge and support needed to help us shift our focus more explicitly to student learning.

While we grew up and started our respective careers within an instruction-focused paradigm, we've also had the pleasure to interact with wonderful colleagues (to include each other) who have helped our own developmental journeys. Those interactions have challenged our preconceptions, encouraged us to see our jobs as faculty members in a fundamentally different way, and provided us with the support we've needed to thrive. For that, we are immensely thankful.

And that is why we've chosen to write this book. It is our attempt to "pay it forward" to our colleagues who wish to join us on the path to becoming a learning-focused college teacher. We hope to challenge you, by encouraging you to think about the design of your courses in a way that may be different from how you may have thought about course design in the past. Along the way, we are also determined to provide you with sufficient assistance (both in the book and in our accompanying online community) that you feel adequately supported in your work. Our hope is that this will not only lead to you designing better courses, but also that it will help you accelerate your own progression up Akerlind's developmental stages.

<u>But Why Read A Book Specifically About Course Design?</u>

Of course, if your goal is to become a more effective teacher, you could read books on any number of topics (e.g., see Millis (2010), to learn about cooperative learning; Grunert O'Brien, Millis, & Cohen (2008) to learn about writing syllabi). However, like Fink (2003, 2005) we would argue that your greatest (and most immediate) gains can be made by learning more about effective course design. At our home institutions, we've found that even novice faculty members can thrive when they are working within a well-designed course. On the other hand, we've also seen very talented, hard-working instructors who struggle if their courses are designed poorly. It leads us to believe that one of the most effective routes to improved student learning is to have faculty focus on how to design their courses in ways to better facilitate student learning.

Unfortunately, college faculty don't typically receive any training in how to design effective courses. As graduate students, most aspiring faculty members spend their time developing a rich body of knowledge in their disciplines and honing the skills needed to develop a successful

research program. Once at their first job, new faculty members may become familiar with the Teaching and Learning Center (if there is one) at their institution, and they may even attend some of the faculty development brown bags or workshops that are available. In many cases, however, those developmental opportunities don't focus on the issue of course design. This potentially leaves an important void in faculty members' professional development.

The good news is that this void is one that can be filled. One way that this void can be filled is to register and travel to a workshop on course design. There are many available nationwide. In addition to a potentially hefty registration fee, travel and lodging are usually needed to attend. In a world of continuously diminishing resources, this model is often prohibitive given the financial or time constraints of many faculty. An alternative is needed – one that we provide here. This book is written as a 'how-to' book, full of workboxes intentionally designed to promote the kinds of thinking that you would do in a workshop setting. In addition, the accompanying online community we will ask you to interact with is designed to provide the collegial aspect of such experiences.

In our own faculty development work, we've been fortunate enough to work with dozens of faculty members who have asked for help with their course designs. They have ranged from those who were brand new to teaching to those who had many years of teaching experience under their belt. And, regardless of their specific background, we've found that faculty can benefit a great deal by walking through the steps outlined in this book. If you stick with us, we think you will be able to enjoy the same level of success that our campus colleagues have.

Building a Learning Pathway: An Overview

The course design process we will lead you through in this book can be thought of as building a pathway for your students – a pathway for their learning. Think of this "learning pathway" as a trail that will lead your students from where they are now to where they need to be. In designing your course, your role is to blaze this trail. To be successful, you will necessarily need to determine where your students are currently, where you would like them to be at the end of the course, and the best ways are to guide them from start to finish. Admittedly, building an effective learning pathway for your students involves some fairly intensive work. However, we

are confident that the payoffs you will see in the form of student learning and success will be well worth your investment in time and energy.

To get started, allow us to introduce you to some overarching "Principles of Building a Learning Pathway." We've listed those principles in Table 1 below, and the remainder of this chapter is dedicated to introducing each one in a bit more detail. We believe that presenting these principles upfront is important because they help highlight the foundational ideas behind our approach. In addition, these principles are ones that you'll see highlighted – generally one per chapter – throughout the remainder of the book.

Table 1.1 Principles of Building a Learning Pathway

Principle	Highlighted in …
1. Building a learning pathway is ultimately about promoting student learning.	Chapter 1
2. Building a learning pathway will be most effective if the process is interactive and iterative.	Chapter 2
3. An effective learning pathway must start with a focus on your students, rather than with a focus on your disciplinary content.	Chapter 3
4. Effective learning goals serve as the final destination for your learning pathway.	Chapter 4
5. An aligned summative assessment will tell you how successfully your students have reached your destination.	Chapter 5
6. Learning proficiencies lay out the capabilities your students will need to have or acquire in order to successfully progress along the learning pathway.	Chapter 6
7. Learning doesn't depend on what is done to your students, but instead on how they interpret their experiences.	Chapter 7
8. Effective learning experiences will help your students develop necessary proficiencies.	Chapter 7
9. Formative assessment allows both you and your students to monitor progress along the pathway and make necessary adjustments to improve student learning.	Chapter 8
10. An effective learning pathway is clear to all.	Chapter 9

Principle 1. Building a learning pathway is ultimately about promoting student learning.

As simple as it sounds, building a learning pathway is ultimately about promoting student learning. Consequently, all of our discussions of the various course design elements, as well as our discussions of pulling those elements together, are framed in terms of improving the quality of students' learning. You will be successful in applying this approach to the extent that you share this commitment.

The explicit focus on student learning will also require that you place your students at the forefront of your course design. (After all, they will be the ones who will be travelling down the learning pathway you create!) What knowledge and skills do the *students* bring to the classroom setting? What do *they* need to learn in order to advance to the next level of their development? What is the best way to structure the class to help t*hem* achieve that next level of development? And how will I, as their instructor, know when they get there?

Principle 2. Building a learning pathway will be most effective if the process is interactive and iterative.

Over the last 15 years, several exceptional resources have become available to assist faculty members in designing their courses. These include terrific books by Diamond (2008), Fink (2003), and Wiggins & McTighe (2005), as well as Fink's (2005) self-directed guide to course design that is available on-line. All of these resources contain valuable information, and we recommend them to course designers interested in improving their practice.

Having said that, we've found that faculty are most successful in designing their courses when they have the chance to try out their ideas, get feedback from their peers, and then refine their thinking. Peer interaction is an immensely important part of this process. Nothing clarifies faculty members' thinking about their courses quite like trying to explain it to someone else, particularly if that other person is not as entrenched in existing disciplinary structures.

A second component of this guiding principle is that course design is an iterative process. Our work has been strongly influenced by Bain (2004), who argues that students learn best when

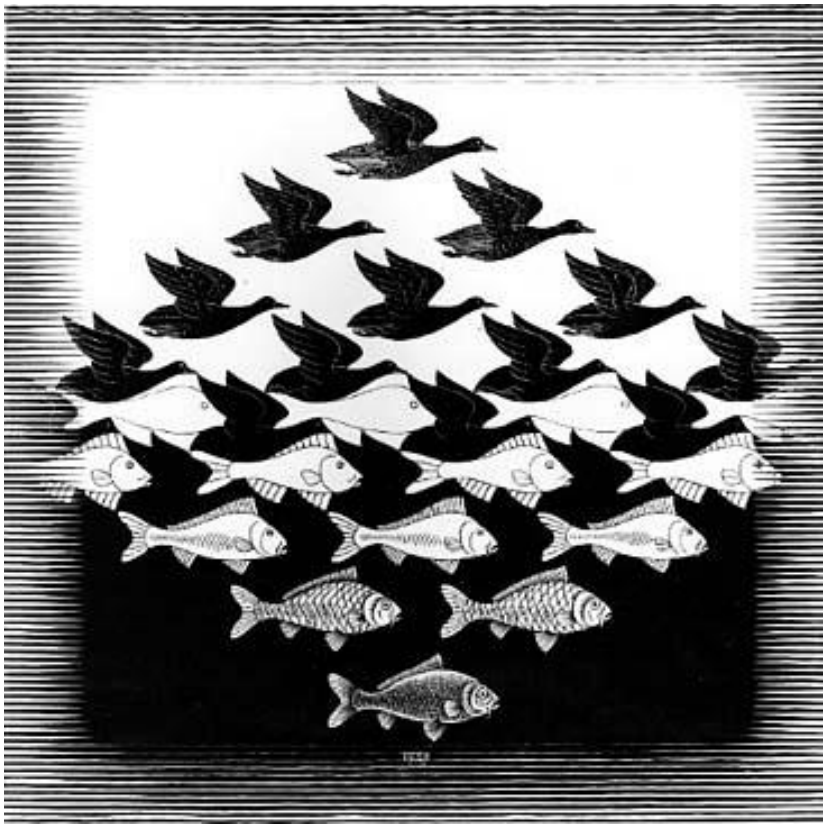
they have an opportunity to try something for themselves, receive critical (but supportive) feedback on their performance, and then have a chance to try again. We've found the same to be true in working with faculty members on their course designs. The best products emerge when faculty have a chance to present their ideas, receive feedback about the strengths and weaknesses of their work, and then have a chance to try again.

On our own campus, we've created this interactive, iterative process in the context of a Course Design Retreat. We'll say much more about the details of that retreat in Chapter 2; for now, we'd like you to consider this book to be your own asynchronous version of that retreat. You might not be reading it in the shadows of the Rocky Mountains (where we happen to go), and you may not be working through it with a group of your campus colleagues (although that would be a great idea!). However, we've created a variety of web resources that are designed to replicate the interactive, iterative nature of the work our faculty members do at the retreat. Each of the chapters within Part II include workboxes for you to complete, and we encourage you to upload your responses to our supplemental website. That way, we (and other members of our on-line community, which we urge you to join) can provide you with feedback about your work. By sharing your ideas, giving and receiving feedback, and having the chance to see the changes in your course design, everyone's work can be improved.

As you can probably tell already, the interactive, iterative process we've tried to capture in this book represents a substantial departure from other books you might read about course design. Indeed, we haven't written this book just to tell you <u>about</u> the process of course design; we've intentionally created an interactive guide with the idea that you will work on your own course as you make your way through the book. In that sense, this is truly a <u>work</u>book … we want you to work on your course as you go. As you receive feedback from us and from the on-line community, we encourage you to revise your work so that the learning pathway you ultimately build gives you and your students the very best chance to be successful.

Principle 3. An effective learning pathway must start with a focus on your students, rather than with a focus on your disciplinary content.

Any fan of visual illusions is almost certainly familiar with the work of M.C. Escher, the 20th century artist famous for creating images that would challenge our perceptual systems. One of Escher's best known works was *Sky & Water I* (1938; shown below), an image that showed the importance of figure / ground relationships to our visual perception. In the top of the image, the black birds clearly represent the figures to be seen against a solid white background. In the bottom of the image, the light-colored fish are obviously the figures, seen against a black background. This image becomes most interesting in the middle, where the figure / ground relationships are less clear. As viewers pay attention to the birds, they become more salient while the fish seem to fade into the background. The opposite is obviously true when viewers pay attention to the fish.



We share this discussion of Escher's *Sky & Water I* because it shows us that, when we switch what we consider figure and what we consider ground, we can see the world in entirely new ways. This is very applicable to our discussion of improving student learning. Under the instruction-focused paradigm, courses are organized around the material to be taught in the courses. As a result, it is understandable that faculty members would pay the most attention to their disciplinary content, while the students in the class would tend to fade into the background. However, if we change our focus to student learning, it makes sense that our attention would shift to the students; after all, they are the ones doing the learning. And, while disciplinary content is still in the picture, it will likely fade into the background of our awareness.

If we're really focusing on students, then effective course design will need to begin by thinking a bit about what we call "student learning factors." These refer to the distinctive characteristics of your students that will impact what and how they will learn. What you'll see is that it is important for you to get to know who your students are and what backgrounds / experiences they bring to the classroom experience. Those student learning factors will be important in shaping the trajectory of your course. We will ask you to consider your own student learning factors in Chapter 3.

> Student Learning Factors – Distinctive characteristics of your students that will impact what and how they will learn.

Principle 4. Effective learning goals serve as the final destination for your learning pathway.

The course design process we'll be advocating in this book is an example of "backward design" (Fink, 2003; Wiggins & McTighe, 2005). As a result, one of the very first steps of the process will be to clarify your final destination -- what you want your students to know, feel, and be able to do at the *end* of your course. Only after articulating these learning goals will you be in a position to work backwards, thinking about the course elements that will help you and your students achieve them.

> Learning Goal – What you want your students to know, feel, or be able to do as a result of taking your course.

Starting with the end in mind is relatively simple idea, but it may force you to think differently than you have in the past. Indeed, our work with our own faculty colleagues reveals that articulating learning goals is one of the most challenging parts of the entire course design process. All too often, faculty members will tell us that their course is "about Topic X" or "will cover Topic Y" – but they haven't necessarily thought about what is truly important for students to know or be able to do with respect to those topics. Thankfully, we've come up with some strategies that make articulating your learning goals a bit easier. We'll walk you through those ideas, and ask you to begin writing the learning goals for your own course(s), in Chapter 4.

*Principle 5. An aligned summative assessment will tell you how successfully your students have reached your destination.*After establishing your learning goals, the next step in the backward design process is to create your summative assessment – this is the tool (or set of tools) you will use to determine the extent to which your students have achieved your learning goals by the end of the course. Note that we'll ask you to think about the characteristics of your final assessment before you think about the more specific activities (or even content) that will make up your day-to-day class sessions.

> Summative Assessment – The tool (or set of tools) you will use to determine the extent to which your students have achieved your learning goals by the end of the course. This will often take the form of a final exam, a final project, or a final presentation.

For many classes, the summative assessment will take the form of a final exam. However, as you'll see in Chapter 5, there are a variety of other ways to determine the extent to which your students have successfully met the learning goals for your course. The primary idea we will introduce is what Cohen (1987) calls "alignment." Essentially, what this means is that the

actions required to achieve the course learning goal should be the same as those required to succeed on the summative assessment. For instance, the goal in an psychology class may be:

> *Given a pattern of human behavior, students will compare and contrast biological, psychological, and social explanations for that behavior.*

In order for the summative assessment to be aligned with this learning goal, students would need to be given a pattern of human behavior, and then they would need to compare and contrast biological, psychological, and social explanations for that behavior.

That sounds easy enough, we know. However, we invite you to think of all of the classrooms you've experienced (perhaps even some of your own) in which the final assessment tapped into something different than the stated goal (or goals) of the course. We've experienced plenty of them, and they are inevitably associated with frustration, from both the students (who may feel unprepared and surprised that they're being asked to do something different than what they thought) and from the faculty members (who may not understand why students don't perform better on the final assessment). In Chapter 5, we'll help you create a summative assessment in a way that gives both you and your students a clearer path to success.

Principle 6. Learning proficiencies lay out the capabilities your students will need to have or acquire in order to successfully progress along the learning pathway.

Once you've articulated your learning goals and you've outlined your final assessment, it will be time to begin thinking more specifically about the knowledge, skills, and attitudes that your students will need to have in order to accomplish your learning goals. We call these "learning proficiencies" or more simply "proficiencies," and they will determine the specific things you'll need to make sure your students learn (if they don't already have them or cannot already demonstrate them appropriately) during your course. If your students lack a particular proficiency needed to accomplish your learning goal, then you will need to be willing to include one or more elements of your course to help develop it.

Proficiencies – The specific knowledge, skills, and attitudes that your students will need to have in order to accomplish your learning goals. Students may already possess these proficiencies prior to arriving in your class. If not, then it may be necessary that you help students acquire them during your class.

Consider the example from the introductory psychology class. When given a pattern of behavior, students must have the following proficiencies in order to compare and contrast biological, psychological, and social explanations of that behavior. Students must:

- Be willing to acknowledge the multiple possible causes of people's behavior
- Be able to accurately explain the behavior in question by appealing to biological causes.
- Be able to accurately explain the behavior in question by appealing to psychological causes.
- Be able to accurately explain the behavior in question by appealing to social causes.
- Be able to identify similarities and differences between alternative explanations of people's behavior.

Once these proficiencies are outlined, it becomes much easier to envision what you, as the instructor, will need to facilitate in your lessons and homework assignments in this introductory psychology course.

In Chapter 6, we will provide more information about proficiencies, and we will help you develop the proficiencies that support your course learning goals.

Principle 7. Learning doesn't depend on what is done to your students, but instead on how they interpret their experiences.

In Chapter 7, we turn our attention to learning experiences, those things your students will do (both inside and outside of class) to acquire the proficiencies needed for them to succeed. Importantly, note that we have framed these experiences in terms of what your *students* will

be doing, rather than what *you* (the instructor) will be doing. This reflects our adherence to a constructivist approach to learning (National Research Council, 2000; Bain, 2004). The influential volume *How People Learn* (National Research Council, 2000) provides a particularly compelling description of this approach, which argues that students do not enter our classrooms as empty vessels, waiting to be filled up with the instructor's knowledge. Instead, students actively construct their knowledge and understandings, building upon what they already know and can do. As a result, what is said in a classroom may not exactly match what students learn. Any faculty member who has encountered a student who misunderstood a seemingly straightforward idea introduced in a class lecture is surely familiar with this phenomenon.

The idea that students are active constructors of their own knowledge has several important implications for effective classroom practice. For instance, instructors need to be very attentive to what students bring with them to the class, as they may hold preconceptions that are either incomplete or incorrect (National Research Council, 2000). Furthermore, it suggests that, in general, students are likely to learn best when they are actively engaged with course material, rather than when they are placed in a more passive role (Astin, 1993; Biggs, 1999; Carlson & Winquist, 2011; Deslauriers, Schelew, & Wieman, 2011; Freeman, Haak, & Wenderoth, 2011; Gardiner, 1998; Hake, 1998a, 1998b,; Pascarella & Terenzini, 1991; Prince, 2004; Svinicki & McKeachie, 2013; Wieman, 2007). We'll discuss both of these ideas in more detail in Chapter 7, when you will be selecting and crafting learning experiences that are well-suited to develop the proficiencies you've identified.

Principle 8. Effective learning experiences will help your students develop necessary proficiencies.

There are many, many different learning experiences that students can have, both inside and outside of class. These can include being recipients of traditional lectures or multimedia presentations, but they can also include more active experiences, such as lab exercises, discussions, debates, and role plays. The key will be to match each of your proficiencies with one or more learning experience that is well-suited to develop it. For example, if the purpose

of a particular class session is to help students to accurately explain behavior in social terms, listening to a lecture on the topic may not be the most effective learning experience for students, at least not by itself. This proficiency may be best developed through direct observation, demonstrations, and/or small group discussions. Further, students will benefit from having the opportunity to form explanations themselves, receiving feedback about the quality of their efforts, and then have an opportunity to try again (Bain, 2004).

In Chapter 7, we will show you a process we use to help faculty match their proficiencies with appropriate pedagogies. Our emphasis will be on having you generate a list of the pedagogies you are able to use in your own course, as well as the advantages and disadvantages of each technique. We'll also ask you to share your list of pedagogies with our online forum. As the online catalog of pedagogies grows, our entire community will be better able to incorporate meaningful learning experiences into our courses.

> Learning Experiences – Any experience that students have that helps them learn the desired proficiencies. These can include experiences inside the classroom (e.g., lectures, discussions, demonstrations, etc.) but can also include out-of-class experiences (e.g., reading, exercises, community service, etc.).

Principle 9. Formative assessment allows both you and your students to monitor progress along the pathway and make necessary adjustments to improve student learning.

We view assessment as much more than an administrative requirement; it is an essential part of the teaching and learning process, and the power of assessment comes when we are able to reveal information about what our students are learning. We will argue that an effective course design is one in which students' learning is made "visible," both to themselves and to you, the instructor charged with helping them learn. If students can demonstrate that they are keeping up in achieving your proficiencies, you can celebrate! If they cannot, or if their demonstration is lacking in some way, then changes to your original learning pathway may be necessary. For instance, students may need additional learning experiences to bolster their performance.

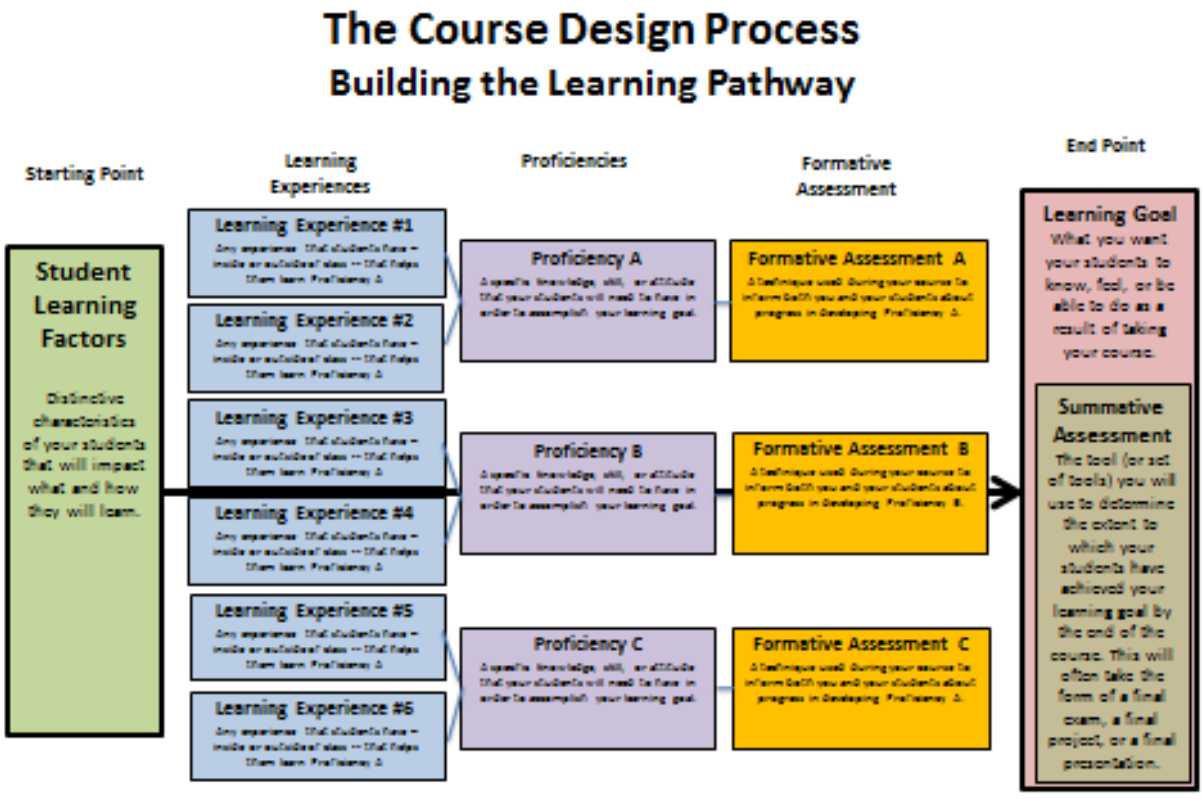
We'll talk more about building appropriate assessment of your proficiencies in Chapter 8. For now, rest assured that this type of assessment (which we call "formative assessment" because it is designed to provide information that is then used to improve the quality of student learning) does not necessarily mean a graded event, such as an exam or graded paper. Indeed, there are numerous less formal formative assessment techniques (e.g, Angelo & Cross, 1993) that can be built into a course design to provide information about how students are progressing toward the desired proficiencies. Only by monitoring students' progression in this way will you be confident that students will be able to achieve your learning goal at the end of the course.

> Formative Assessment – Gathering information about student learning in a way that it can be used to improve the quality of that learning. This is the assessment that is performed during the course, rather than at the end. It can take the form of graded events (e.g., quizzes, homework assignments, etc.), but often takes the form of tasks that do not contribute to a student's grade.

In Chapter 8, we will also discuss the importance of assessing student learning frequently. Within reasonable limits, we will argue that more frequent updates on the quality of student learning are generally more valuable than less frequent updates. There are two reasons for this, both of which are in service to improved student learning. First, more frequent assessment provides more frequent opportunities to provide students with much-needed feedback about what they are doing well and where they need to improve. Second, more frequent feedback keeps you – the instructor – better informed about the status of your students learning. This allows you to make more refined adjustments to your course, ensuring that you are able to meet your students' needs.

Principle 10. An effective learning pathway is clear to all.

Once you've worked your way through all of the elements of your course design – student learning factors, learning goals, summative assessment, learning proficiencies, learning experiences, and formative assessment, it is time to put all of the pieces together. This is the subject of Chapter 9, and your final product will be a visual display (in the form of an electronic poster; see Figure 1.2) depicting the various elements of your course and how they work together. We'll ask you to share this final poster on the accompanying website, and we'll also urge you to share it with your students and colleagues as well. It can be a powerful tool for showing your learning pathway to people who haven't worked through the process like you will have.



Your final course poster will include highlights from each of the elements of your course design, to include the student learning factors, learning goals, summative assessment, proficiencies, learning experiences, and formative assessments. As you create this final visual representation of your course design, we will ask you to consider three characteristics that we've found tend to describe the very best course designs created by our own faculty.

A. Transparency – Your final course poster reflects the clarity of your thought about your course design. As such, our aim is for you to create a display that you, your colleagues, and your students can easily understand. In fact, we believe the most successful course displays will not need you in the vicinity to explain what you mean. We're firm believers that you and your students will be much more successful in your course if everyone understands what the course is designed to have students accomplish and how the course is designed that way.

> Transparency – The first of our desirable characteristics of course design. A course design is transparent when it is clear to all participants, to include faculty and students.

B. Alignment – We already introduced the idea of alignment when we discussed the importance of having a summative assessment mechanism that is aligned with your learning goal. In reality, all of the pieces of your course need to be aligned with your learning goal – that is why the clear articulation of your learning goals is so important. Once your learning goals are clearly articulated, they will drive everything else that happens in your course. Much like your car runs more smoothly if all of the wheels are carefully aligned, your course will run much more smoothly if all of the individual course elements point students in the same direction.[4]

> Alignment – The second of our desirable characteristics of course design. A course design is aligned when all of the course elements (summative assessment, proficiencies, learning experiences, and formative assessments) point students in the same direction … toward the desired learning goal.

[4] We encourage interested readers to also see pp. 64-66 in Fink (2003), which include an excellent description of what happens when one or more course components falls out of alignment. For those looking for a bit more levity, we'd encourage you to view *Professor Dancealot and the Perils of a Misaligned Course* at http://www.youtube.com/watch?v=oWi5vy6TSso&feature=plcp.

C. Integration[5] – Our experience suggests that, initially, faculty members are most successful in working through the course design process if they focus on only one learning goal at a time. That is, after articulating a single learning goal, they can work to create assessments, identify proficiencies, and outline learning experiences that are well-aligned with that goal. However, most people's courses have more than just one learning goal. As a result, once we've led people through the course design process the first time, we then ask them to go back and reapply the same process for their other course learning goals. This serves as yet another reminder that the course design process is iterative.

An important element of successfully incorporating more than one learning goal into your course is ensuring that the different learning goals work together. That is, they are not completely independent of each other. As an illustration of this characteristic, let's return once more to the example of our introductory psychology class. You'll recall that one of the learning goals of that course was as follows:

> *Given a pattern of human behavior, students will compare and contrast biological, psychological, and social explanations for that behavior.*

A second goal of the psychology class may very well pertain to the students' ability to communicate in written form, perhaps as follows:

> *Students will write clearly and in accordance with the conventions of the American Psychological Association (APA).*

Notice that this second goal is distinct from the first one, and the articulation of this goal will lead to another set of proficiencies, assessments, and learning experiences. However, this goal is not completely independent of the first. For example, one could easily imagine a single summative assessment in which students would need to compare

[5] Note that we are using the word "integration" in a way that differs from how Fink (2003) uses it. Fink uses integration to suggest that the learning goals, learning experiences, and assessment opportunities all support each other. As such, his use of the term is more similar to how we are using the term "alignment."

and contrast different explanations for human behavior (to satisfy Goal #1) and then clearly write their ideas in accordance with the conventions of the APA (to satisfy Goal #2).

There are obvious advantages of building an integrated course, one in which the course goals work together. For example, the various pieces of an integrated course fit together, rather than being parts of disparate wholes – this allows students to have a clearer understanding of their overall course experience. Just as important, integrated courses push students to complete more authentic tasks – once which professionals in a given field are likely to perform. For instance, a professional psychologist isn't likely to just compare and contrast differing explanations, nor is she likely to just write about the ideas of others. Instead, she is likely to do both. Designing a course that emphasizes accomplishing both goals will be more motivating for students and will also serve as better preparation for the professional world they will enter upon graduation.

Conclusion

In this chapter, we have tried to set the stage for the work of course design you'll do in the coming chapters. As you've seen, our emphasis throughout will be on helping you design a course to focus very explicitly on student learning, and we will use a backwards design process to do so. As a result, we will ask you to begin by thinking about your students and what you would like them to know, feel, and be able to do by the end of your course. In subsequent chapters, we will lead you through a series of exercises to help you identify the assessments, proficiencies, and learning experiences that will help you accomplish those goals.

Now, you're about ready to get started. However, before taking the first step toward a learning-focused course design, we'd like to share a bit more information about the Course Design Retreat which serves as the basis for the approach we will take. Having some background about what our faculty actually do at this retreat will help you to better understand the process we'll lead you through in the remainder of the book. A detailed description of the retreat is provided in Chapter 2.

Chapter 2

Preparing for Your Journey: How the Course Design Process Works

Designing courses to promote student learning can be hard work. Unfortunately, that work is made even tougher by several significant obstacles. First, as we mentioned in Chapter 1, many faculty members receive no formal training in how to design courses, either as part of their graduate school experience or upon their acceptance of their first job. So what are faculty members to do when they embark on designing a course of their own? For many, course design may simply default to imitating whatever their mentors / advisors had done before them. (After all, if it worked for them, why wouldn't it work for you?) Of course, adopting that practice may do nothing more than perpetuate the faulty practices of the past. It does little to ensure that your course reflects a structure and design that leads to greater learning success for your students.

A second obstacle that many of our own faculty have discovered is simply a lack of dedicated time. On our campus, as is almost certainly true on yours, faculty are bombarded by emails, phone calls, and committee meetings – not to mention the desire to interact with students and engage in scholarly work within their discipline. In short, there are not often large chunks of time that faculty have available to dedicate to the time and thought-intensive work of course design. As a result, that work sometimes doesn't get done as well as it might.

Finally, course design can be made more difficult by an odd phenomenon that exists within many academic institutions. Many of our most successful research projects are the fruits of collaborative teams, and it is not uncommon for the various members of a research team to meet regularly to discuss ideas for their future scholarly endeavors. However, on many campuses, there is not a comparable venue for faculty to discuss the design of their courses. In fact, many faculty members seem to view teaching as an inherently private activity, not to be discussed with peers, except in passing. That strikes us as unfortunate, as it means that many faculty members miss out on the social support and critical feedback that helps them in other aspects of their professional lives. Course design, done well, is both a scholarly and a deeply

creative activity; we've consistently found that it is the kind of work that is made better through collaboration and frequent interaction with one's peers.

In summary, there are at least three significant challenges that make it tough for faculty to design effective learning-focused courses:

OBSTACLES TO CREATING LEARNING-FOCUSED COURSES

1. Faculty lack the knowledge on how to design courses effectively.
2. Faculty find it difficult to carve out a substantial chunk of time to engage in course design work.
3. Faculty are not in the habit of interacting with their peers about the design of their courses.

In our work with faculty members on our own campus, we have intentionally attempted to overcome these three obstacles. This has been done best in the Course Design Retreat that serves as the basis for this book. Conducted each summer, this intensive four-day experience is attended by approximately 20 faculty members each year[6]. During the retreat, we use a mixture of instruction, individual work time, and facilitated learning community sessions to lead people through the backward course design process introduced in Chapter 1. The results have been remarkable, and exciting courses can be seen in all corners of our own campuses. We've written this book as a way to share the best of the retreat with a wider audience than we are able to reach in our annual face-to-face format.

The retreat is broken into modules, with each module lasting from a few hours to as much as half a day. The modules mirror the organization of this book, with modules representing student learning factors, learning goals, summative assessment, proficiencies, learning experiences, and formative assessment and feedback. We've carefully designed these modules

[6] Faculty interest in the retreat has increased each year that we've offered it. In fact, in each of the last two years, we've had requests to attend from far more faculty members than we could accommodate. In addition, faculty from several other institutions besides USAFA have begun attending as well.

to address the challenges described above. For instance, each module begins with a short plenary session, where one of us leads the participants through a presentation and/or activity designed to help attendees acquire some basic knowledge and/or a specific skill associated with one aspect of their course design. In this book, you can think of the opening sections of each chapter as written versions of these plenary sessions – we've written these sections to share a few insights that set the stage for each phase of your course design work.

In the second part of each module at the Course Design Retreat, we set aside a considerable amount of time for participants to work on the relevant component of their course. Importantly, however, this is more than just "free time" – we structure that time carefully in an effort to obtain the maximum effect. To get started, participants write down answers to several targeted questions designed to help them apply what they've learned in the plenary session to their own specific course context. (For instance, after learning about the importance of student learning factors, participants are asked to identify the most important characteristics of the students in their own course.) As you progress through this book, you'll find that we've inserted several colored "Workboxes" to prompt this kind of targeted reflection on your part. When you encounter one of these boxes, we urge you to pause, taking a few minutes to write your own answers to the questions provided. We want you to do more than just read this book; you need to write in it as well, using the workboxes as tools to help organize your thinking about the design of your course.

An Example: Fink's Dream Exercise

To show you what we mean, let us share an example of a task we ask our faculty to do as one of the very first activities at the Course Design Retreat. It is a thought experiment that we've borrowed from L. Dee Fink (2003). He uses it in his faculty development workshops to encourage faculty members to think about what they really want their students to learn from their courses. This approach begins with a blank piece of paper and about 10 minutes of quiet thinking time. Here's the scenario: suppose you encounter a student who completed your course a year or two ago. What would you like to be true about him or her that would not be

true of students who didn't take your course? Said another way, what is the distinctive educational impact you would like your teaching and your course to have on your students?

Fink (2003) calls this the "Dream Exercise" because he wants faculty to respond as if their deepest, wildest dreams about student learning could come true. We will follow suit. So, as you pause and reflect on your dreams for student learning, try not to constrain yourself with the practical day-to-day challenges that you and your students might face. If those challenges didn't exist, what kind of learning would your students achieve as a result of taking your course?

Workbox 2.1 – The Dream Exercise

In your deepest, wildest dreams, what kind of impact would you like to have on your students? That is, when your course is over and it is now one or two years later, what would you like to be true about your students who have had your course that is not true about others?

A significant factor in the success of our Course Design Retreat is that it is an interactive event. Each module has one or more "deliverables" that attendees need to produce before we move on, and we fully expect participants to share their work with us (as facilitators) and with their peers. With regard to the Dream Exercise, what this means is that we ask all of our retreat

participants to share their dreams for student learning shortly after completing the exercise. In fact, we write our participants' dreams on a whiteboard and keep those dreams "front and center" throughout the remainder of the retreat. Throughout the remainder of the retreat, we will continually come back to the dreams to ensure that each participant is designing a course that comes as close as possible to achieving her dreams for student learning.

We'd like to do the same thing with you, our readers. It is not enough for you to write down your dreams for student learning and then to keep those dreams to yourself. We would like you to share them with your colleagues as well. That is what will make this a truly interactive guide. Now, for instance, we would like you to upload your response to Fink's Dream Exercise to the interactive website.

The Upload Icon

This icon, which you will see in various places throughout the book, is your clue that it is time to pause and upload the work you have done to our interactive website.

Insert directions for logging in a creating a profile in the online website

Please upload your response to the Dream Exercise now.

By sharing your work, you can leverage the collective power of your peers. Doing so will also help keep you on track throughout the book, and it will also give us (and your colleagues) a chance to interact with you about your work. The interactive component of this book is a big part of what makes this book unique. And we think it is so important to your course design process that we've made it the second principle of learning-focused course design.

Principle 2. Building a learning pathway will be most effective if the process is interactive and iterative.

Once our retreat participants have completed each module of the retreat, we ask them to present what they've done to (and receive feedback from) a group of their peers. Prior to the retreat, we divide our participants into small learning communities of approximately 4 participants each, with each community being led by a peer mentor. A key feature of these communities is that we intentionally form them so that they consist of faculty members with very disparate disciplinary backgrounds. In part, we've done this because of the obvious networking possibilities – we hope to build connections across our campuses that might not otherwise be built. A bigger reason for composing the communities in this way, however, is because of the benefits we've seen when it comes to course design.

As we mentioned in Chapter 1, one of the characteristics we strive for in our approach to course design is transparency – we want everyone (students and faculty alike) to be able to see the structure of their courses – and to see that structure clearly. That way, both faculty and students will have a clearer understanding of what exactly they need to do in the course and why they need to do it. Unfortunately, it can be difficult for many faculty to achieve high levels of transparency if they only surround themselves with others who share their disciplinary expertise. Think of this as what Heath and Heath (2007) would call the "curse of knowledge" – those who are knowledgeable in a particular area are, by definition, "in the know." As such, it is difficult for them to assume the perspective of those who are less knowledgeable. In our retreat, we force our participants to interact with people outside their disciplines in an effort to combat that problem. Ultimately, we want all of our faculty members to be able to describe even the most intricate details of their course design in a way that students just entering their course will be able to understand.

Constructing multidisciplinary learning communities has led to some rich conversations between the unlikeliest of colleagues. For instance, at one of our recent retreats, we listened in as the instructor of a Reading Enhancement Course exchanged ideas with the professor of a senior-level Quantum Mechanics course. Despite their very disparate backgrounds, they were

quite capable of reviewing one another's work, asking each other good, challenging questions, and forcing one another to clarify their ideas. As a result, the depth of both of their thinking was enhanced.

Aside from helping to clarify one another's thinking, the process of interacting with peers also serves as a wonderful source of feedback. For nearly a century, psychologists have recognized that people learn better when they are provided with informative feedback about their performance (Thorndike, 1922). More recently, Chickering and Gamson (1987) highlighted prompt feedback as one of the *Seven Principles for Good Practice in Undergraduate Education*, and Ken Bain (2004) has argued that the best college teachers find ways to give students plenty of opportunities to try out their ideas, receive feedback, and then use that feedback to improve their work. Therefore, we've gone out of our way to build multiple feedback opportunities into our Course Design Retreat schedule.

It's unfortunate that the vast majority of faculty development resources available on the market provide so little opportunity for faculty members to get feedback about their work. Consider, for example, a typical faculty development session at a professional conference. The session leaders may spend some time introducing a new technique and the theory behind why it works. Those same leaders may even demonstrate how that technique can be used in a classroom setting. It is rare, however, that the members of the audience actually get to try that technique while the session is going on. And it is even rarer that each audience member receives meaningful feedback about what they are doing well and where they need to improve.

That is where our Course Design Retreat – as well as this book – is different. We've constructed our Course Design Retreat so that attendees are expected to give and receive feedback to their peers. The same goes for this book. When you upload your work to our course design website, we'll provide you with feedback on what you have done. However, we don't want feedback to just come from us – we also want it to come from the rest of our online community. Therefore, we urge you to exchange feedback and ideas with other readers as well. At the end of each chapter, you will also see a "feedback" icon to remind you to visit the supplementary website, review what the other members of the online community have shared, and provide your own

feedback. We suspect that you will learn a lot by reviewing other people's work and providing feedback to them. We also hope that, by enabling this interactive online forum, everyone's courses will benefit as well.

The Feedback Icon.

You'll see this icon at the end of each chapter as a reminder to visit the supplementary website and share your thoughts / reactions with your colleagues. Your contribution to the group enhances the power of the online community.

At this point, we can imagine that at least some of you are a bit intimidated by the thought of sharing your course design with an online community, particularly if you know that others will be reviewing what you write. (After all, you're reading this book because you want some help, and that involves a certain level of vulnerability. Why would you expose this vulnerability to people you don't even know?) However, we insist that our own faculty give it a try, and doing so has consistently led to positive results. The process of giving and receiving feedback helps our faculty members clarify their own thinking about the design of their courses, and it is especially useful in helping faculty see their courses as others see them, something that is critical for the successful construction of your learning pathway. Furthermore, we have found that our faculty benefit greatly from broadening the network of friends and colleagues who are able to advocate for the important work they are doing. We think the same will be true for you. So, we urge you to join us, even if it means stepping a bit outside of your comfort zone.

Please keep in mind that the purpose of giving and receiving feedback is to help us all refine our work. That doesn't mean that you *have* to change your course in response to our feedback or the feedback of the rest of the online community. After all, your course is still *your* course, and *you* are in the best position to know which ideas are helpful and which ones are not. However, we also want you to be open to changing your thinking in response to the feedback you receive. It's OK to make changes to your course design; no one (including us) gets everything right the

first time. Course design is always an iterative process; in fact, that is part of the joy of course design.

As you can probably imagine, our vision for this book is a bit different from other books you may have read. Our aim is to provide you with an experience that is as similar as possible to the experience our faculty have at our Course Design Retreat. As such, in the chapters that follow, we've done our best to provide you with some fundamental knowledge about the different elements of the course design process. We've also included some targeted questions for you to answer, and we've indicated several places where you should upload your answers to our supplemental website and where you should give and receive feedback. It is in that way that this book can become a truly interactive tool. We are convinced that that the combination of reading, working on your own, sharing with others, giving and receiving feedback, and making revisions based on what you learn will put you in the best possible position to create a highly effective learning pathway that will lead to student success.

Where You Will End Up (and What It Will Take To Get There)

By the end of our Course Design Retreat, each of our faculty participants displays their course design by creating a poster that shows the various elements of their course and how those elements interact with one another. The retreat concludes with a capstone poster session where attendees take turns displaying their posters and presenting their course designs to one another. This capstone session provides presenters with one final chance to present their course design to their colleagues – something they find very helpful as they think about presenting them to students and/or more skeptical faculty back on campus[7].

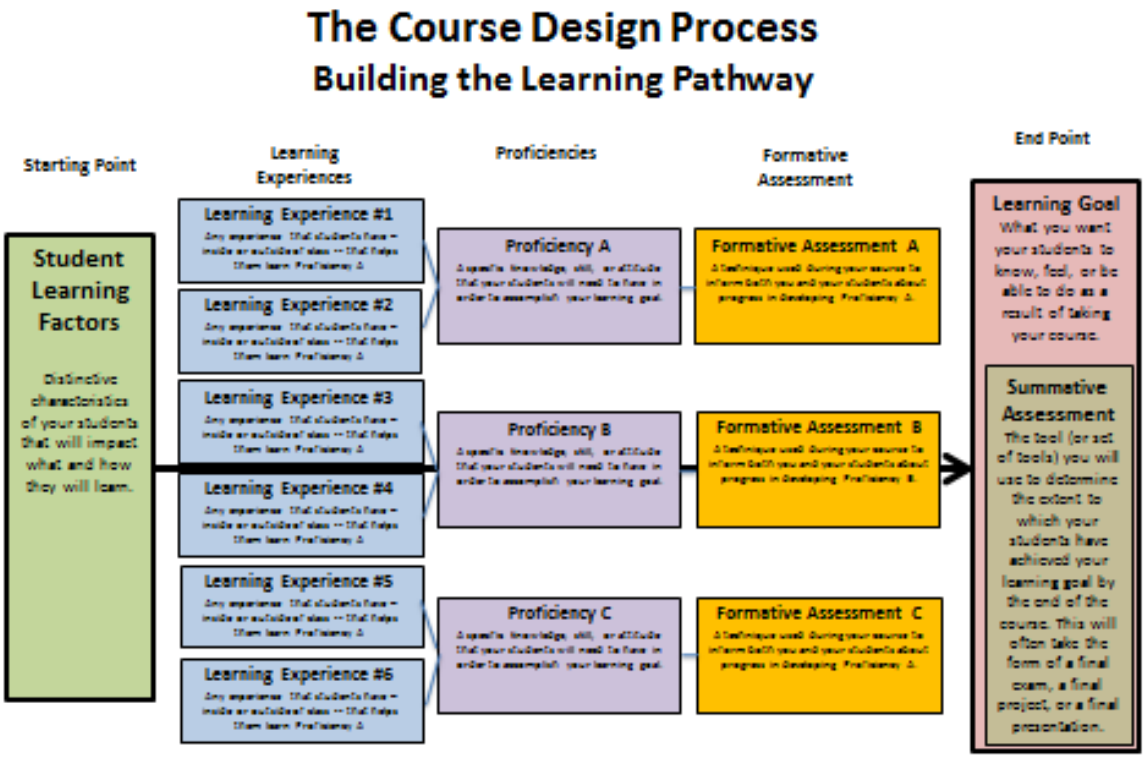
As you work your way through this book, you, too, will create a course poster that depicts all the work you will accomplish. To facilitate that process, we've included an application in our supplementary website that will automatically populate a course poster for you, based specifically on your workbox inputs. As you upload each piece of your course design, a new

[7] The capstone poster session also serves as a valuable assessment opportunity for us. It is our chance to see the various elements of our faculty members' courses, as well as how those elements fit together. By examining participants' final products, we have been able to fine-tune our own processes in a way that continuously improves the retreat experience.

section of your poster will become populated. By the time you reach the end of the book, you will have a complete draft of a poster that you can use to communicate the design of your course. It will include the information you submit regarding your:

- Student Learning Factors (addressed in Chapter 3);
- Learning Goals (addressed in Chapter 4);
- Summative Assessment (addressed in Chapter 5);
- Proficiencies (addressed in Chapter 6);
- Learning Experiences (addressed in Chapter 7); and
- Formative Assessment (addressed in Chapter 8)

A blank template that you will ultimately be completing is shown below.



Of course, none of this will happen without you, the reader. In the chapters that follow, we will do our best to lay out the key elements of the course design process. Ultimately, though, it will be you who does the hard work. As you progress, we ask that you remain open to the process we lay out for you. None of what you will encounter is terribly controversial, but we will ask you to think about your course in ways that may be a little different than you might have otherwise. Stick with it; we think you'll be happy with the results.

More than anything, we ask that you stay committed to what matters most: to improve student learning in your course. Presumably, you're reading this book because you're a college teacher (or perhaps someone responsible for promoting the development of college teachers) interested in promoting meaningful student learning. The extent to which you are effective is dependent, at least in part, on the design of your courses. If you stay committed to that very important goal, we're confident that you will be able to design a successful learning pathway.

PAUSE TO GIVE FEEDBACK ABOUT OTHERS' DREAMS

Before proceeding to the next chapter, please take a few minutes to review what members of the on-line community have shared for their own dreams of student learning. As you read them, do you notice any themes that emerge? How many of faculty members' dreams are closely tied to their disciplinary content (vs. more general thinking skills)? What reactions do you have when reading your colleagues' dreams? Please share your thoughts with your colleagues on the supplementary website. Your contribution to the group enhances the power of the online community. Contributions and suggestions from the online community can also help inform your course design.

Part II – Elements of the Learning Pathway

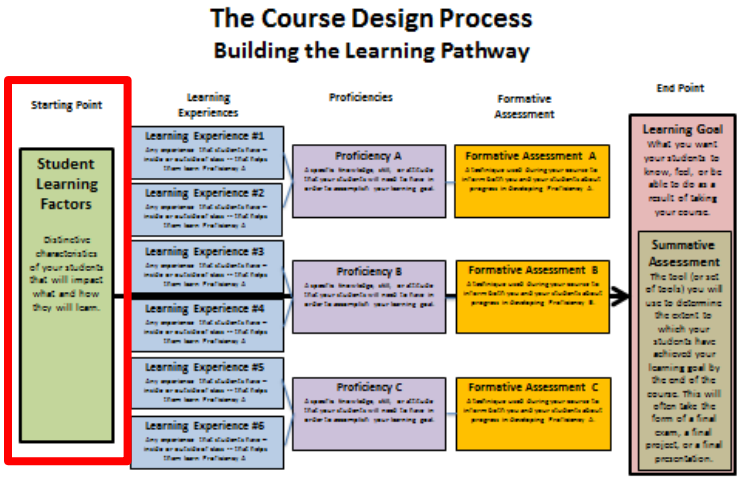
Chapter 3

The Starting Point: Student Learning Factors

In Chapter Two, you outlined your dreams for student learning in your course. And, by definition, your dreams for student learning are boundless and unconstrained. In this chapter, your task will be to begin connecting your dreams to reality by thinking about the students who will be taking your course. What are they like? What previous experiences do they have? And how will those experiences affect their learning in your course? By answering these sorts of questions, you will take an important first step toward designing an effective pathway for student success.

Principle 3 – An effective learning pathway must start with a focus on your students, rather than with a focus on your disciplinary content.

It is no accident that Principle 3 starts the building process by having you focus on your students (red box in Fig 3.1). We are also aware that, for many of you, this chapter may challenge you to think about your course in a way that you wouldn't normally. At the outset of the course design process, many faculty members focus their attention on their disciplinary content – what they are going to teach in their course. In fact, this is the way that nearly everyone who arrives at our Course Design Retreat thinks. We are purposely pushing you think differently. Rather than focusing on what you are going to teach (see Stage 1 of Akerlind's (2007) developmental model, Chapter 1), or even how you are going to teach it (see Akerlind's Stage 2), we want you to focus on your students, as they will be the



ones doing the learning in your course. Focusing your attention in this way will help you be more effective in facilitating student learning in your course (see Akerlind's Stage 5).

Why will knowing about your students help you? We see two major reasons, First, the educational research is clear: your students they will not be passive recipients of the material in your course. Instead, they will see your course material through the lenses of their prior experiences, their own skills and abilities, and the mental models they already possess (National Research Council, 2000). To ignore what your students bring with them to your course would be folly.

Every course has the challenge of working with a diverse set of students, each with a unique set of characteristics. The box below gives a sample of the myriad ways that each student expresses their individuality and diverse set of characteristics. Each may potentially impact the learning environment and the course you design.

Student Diversity and Learning

Distinctive characteristics of students may include the following:

- Past learning experiences & background
- Maturity
- Race/ethnicity
- Sexual orientation
- Disability
- Cultural Background
- Socioeconomic status
- Family issues
- Employment and job-related issues
- Motivation
- Interest
- Learning style
- Aptitude for the subject
- Intellectual development
- Self-esteem and confidence

Second, we find that faculty need to continually be reminded that it is all-too-easy to overlook the ways in which students' perspectives may be different from our own. As faculty members,

we have spent years of our lives developing an extensive body of knowledge related to our discipline. And, unfortunately, once we have that knowledge in place, it is very difficult for us to see the world from the perspective of a novice. This is another example of what Heath and Heath (2008) call the "curse of knowledge," and it calls us to be doubly aware of how our students – as novices in the field – will encounter the material in our courses.

In our faculty development workshops, we enjoy demonstrating the curse of knowledge by conducting an exercise – created by Newton (1990) – called "Tappers and Listeners." In this exercise, we ask a handful of volunteers (i.e., the "tappers") to use their fingers to tap out the rhythm of a familiar song (e.g., the Star Spangled Banner) on the surface of a table. Meanwhile, we ask the members of the audience (i.e. the "listeners") to guess the name of the song, based only on the rhythm they hear being tapped. Interestingly, the tappers – who know the name of the song are almost certainly singing along in their heads while they are tapping -- tend to find their task quite easy, and they are often convinced that guessing the song would be quite easy as well. Meanwhile, the listeners – who lack the tappers' inside knowledge -- find this task utterly baffling. Ultimately, very few are actually able to guess the song correctly. Heath and Heath (2007) describe it like this:

> *The problem is that tappers have been given knowledge (the song title) that makes it impossible for them to imagine what it's like to lack that knowledge. When they're tapping, they can't imagine what it's like for the listeners to hear isolated taps rather than a song. This is the Curse of Knowledge. Once we know something, we find it hard to imagine what it was like not to know it. Our knowledge has "cursed" us. And it becomes difficult for us to share our knowledge with others, because we can't readily re-create our listeners' state of* mind. (p. 20)

Together, these two reasons provide us with the valuable lesson that effective course design depends on our ability to understand *student learning factors* -- the distinctive characteristics of our students that will impact what and how they will learn.. Visually, we represent this using the image in Figure 3.2. This figure emphasizes that helping students learn is not simply a matter of

transferring information to the brain of the student. Instead, learning is an active, constructive process that takes place in the minds of the students, and it is affected by everything students bring with them to the class – their backgrounds, experiences, prior knowledge, and even their misconceptions. To build an effective learning-focused course, we must somehow figure out what those student learning factors are and how they will impact students' learning in your class.

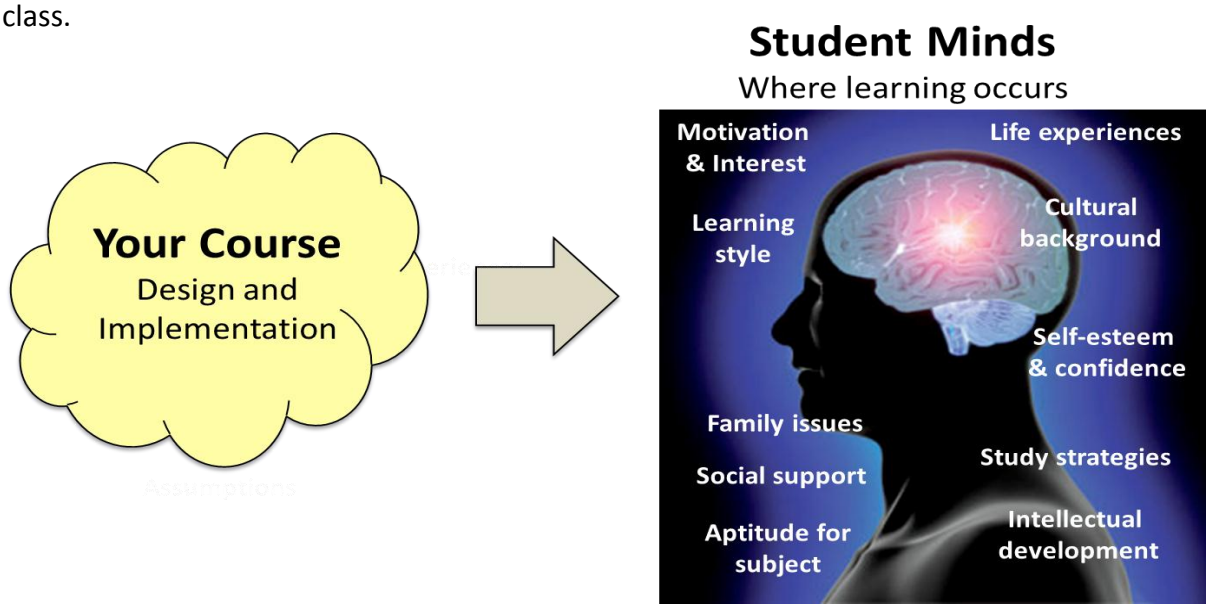


Figure 3.2 – Student learning factors will affect learning in your course.

The purpose of this chapter, then, is to assist you in identifying those student learning factors that will likely impact students' learning in your course. One challenge, of course, is that we are asking you to do this work now – before your course actually begins. What you generate in this chapter will consequently need to be based on existing knowledge of your institution and/or information you can obtain from your campus colleagues. Once your course actually starts, it will be important for you to check the information you report here with the particular students who enroll in your course. In addition, you will find that getting to know your specific students in more detail – something that is probably not possible before the course begins – will help you become even more effective at promoting their learning.

For now, we'll start broadly, asking you to identify – in general terms – the distinctive characteristics of the students who attend your institution. We will proceed by having you identify increasingly specific information about your students, such that you will ultimately describe the course-relevant knowledge, skills, and attitudes that your students will likely bring with them to your course. At each step of the way, we would like you to think carefully about the characteristics that your students are likely to have, and – perhaps more importantly – what impact those characteristics will have on students' learning in your class.

By working through this chapter, we anticipate that you will identify a wide variety of potentially important student learning factors. That is perfectly fine. Allow us to warn you, however, that, at the end of the chapter, we will ask you to narrow down your list to those 2-3 factors that you think will have the most important impact on students' learning in your course. Those will be the factors that you will need to be most conscious of as you move forward in the course design process.

Step 1. What is distinctive about the students at your institution?

Your institution serves a distinctive student population – that is part of what makes your institution what it is. As an example, we (the authors) have all worked together at the United States Air Force Academy (USAFA), which is definitely a distinctive institution. For those who don't know, the Air Force Academy is a 100% residential, undergraduate-only institution, with students from all 50 states in the union. We have a highly selective admissions policy, and our students generally arrive on campus with outstanding academic preparation, particularly in science and math. However, being ages 18-23, our students are still at a relatively early stage of intellectual development, and therefore they often view complex problems/issues in black and white terms.

As you might expect, the distinctive nature of our institution has profound effects on our students' learning – and those effects need to be considered by anyone who designs a course at USAFA. For instance, consider the Ethics class in the Philosophy department at our institution. Because of their strong academic preparation, students in that course often do not have

problems with the heavy reading and writing load. However, because many of the students are in the early stages of intellectual development, it is difficult for many to wrestle with the uncertainty and "gray areas" that is an inherent part of that discipline. As a result, the faculty members in that department need to realize that a significant student learning factor in that course will be students' discomfort with ambiguity. To be successful, a significant part of the course would need to be dedicated to helping students become more comfortable in that realm.

Of course, your institution is distinctive in its own ways. It has its own culture, shaped by campus policies, structures, and by the students who choose to attend. For example, perhaps your institution is open-admission, rather than being highly selective. Perhaps it serves students from a more limited geographical region. Perhaps it attracts a disproportionately large number of first-generation college students or students for whom English is a second language. Or perhaps most of your courses are offered on-line, rather than in a face-to-face format. Regardless of what makes your institution what it is, we would ask that you reflect for a few moments on the distinctive characteristics of the students who attend your institution. One heuristic that you may find helpful is to consider how you would introduce your campus to someone (like us or other readers of this book) who may not be familiar with it. When you have an answer in mind, write your response in Part A of Workbox 3.1 below.

In part B of Workbox 3.1, we ask you to consider how the distinctive characteristics you've identified are likely to impact students' learning in your course. In the case of our philosophy colleagues, the most important consideration is that, while their students have good reading and writing skills, they may not be comfortable dealing with the ambiguity of ethical dilemmas. For you, the consideration is likely to be different. Regardless of what it is, please write it down and then upload the content of Workbox 3.1 to our interactive website to receive feedback from the on-line community.

Workbox 3.1 Student Learning Factors I

Part A. The Distinctive Characteristics of Students at Your Institution

Part B. What impact will your answers in Part A have on students' learning in your course?

Step 2. Where Are Your Students Situated Within Your Institution?

At this point, you've identified the general characteristics of students at your institution. Of course, this doesn't necessarily tell you very much about the specific students who will be enrolled in your class. So, the next step is to begin honing in more specifically on who your particular students will be. In Workbox 3.2, we start that process by asking you to identify what class years your students are likely to be from and what role your course will have in their educational programs. We've chosen these particular questions because of their immediate relevance to your course. The way you design a course for first-year students – particularly those who are fresh out of high school – may need to be quite different than the way you would design a course for more experienced juniors and seniors, whose academic experiences are so much less limited. Similarly, the challenge of motivating your students to do their best

work is likely to be somewhat different if your course is an elective in their academic major than if your course is a required part of their general education curriculum. In short, these relatively simple student learning factors can potentially have a profound impact on how you best facilitate learning in your course.

Fortunately, it is relatively easy to find out the answers to the questions in Workbox 3.2 if you don't know them already. Our philosophy colleagues, for example, would state that their students were juniors who are generally not majoring in Philosophy but rather, taking the course as part of the general education curriculum. As a required course in the junior year, where students are already entrenched in their own academic majors, there is potential for student engagement and interest to wane. As a result, the instructors in that department need to pay attention to student motivation. As you consider your student factors, we encourage you to track down a copy of your curriculum handbook or course catalog, as well as any curricular mappings that may exist within your department or program. You can also check with faculty colleagues in your department or your Registrar's Office if you require additional information.

Workbox 3.2 Student Learning Factors II

Where Are Your Students Situated Within Your Institution?

Part A.

What percentage of your students will be:

First-Year Students?	Sophomores?	Juniors?	Seniors?	Graduate Students?

For what percentage of your students will your course be:

Part of Their Academic Major?	Part of a Minor or other Concentration?	Part of a General Education Requirement?

For what percentage of your students will your course be:

An Elective (i.e., one students are choosing to take)	A Required Course

Part B. What impact will your answers in Part A have on students' learning in your course?

Step 3. What Experiences Have Your Students Had? What Experiences Have They NOT Had?

Now that you have begun to describe where your students are situated within your distinctive institution, it is time to articulate the specific experiences (academic or otherwise) that they have likely had before arriving in your course. In this step (see Workbox 3.3), we ask that you begin describing those experiences, as each one of them will be important in describing what your students will already know or be able to do. For instance, at the Air Force Academy, we have a large general education program. As a result, we can predict with high accuracy what courses all juniors (for example) will have taken – even if not related to our own courses. This helps us a great deal as we design courses for that subset of our student population.

Even if you don't have a general education program as extensive as the one at the Air Force Academy, you can still make reasoned judgments about the experiences your students have already had. As before, we encourage you to consult your faculty colleagues and academic support staff to help you make these judgments accurately. Even if you do think you know the answers to these questions already, we would still encourage you to chat with these other people – it is never a bad idea to supplement what you know with the perspectives of others.

Don't forget to include non-classroom experiences as well. On many campuses, all students experience a freshman orientation program, a required service learning project, or some other student life event. Be sure to include these experiences in Workbox 3.3 as well. Those are all things that will influence how your students will learn in your course.

Perhaps just as important, we also encourage you to take note of those experiences your students have NOT had previously. For example, one of our Course Design Retreat participants once indicated that his dream was to have his students read original journal articles in his field and synthesize them into a review paper. When we dug a bit deeper, however, it became apparent that his students had probably never had any experience reading journal articles in that field. If his dream of having students write a review paper was ever to be realized, he would almost certainly need to help his students complete the more elementary step of reading a journal article. To the extent that there are similar holes in your own students' experiences, be sure to include them in Workbox 3.3.

Workbox 3.3 Student Learning Factors III

Your Students' Prior Experiences

Part A.

1. What relevant courses will your students have taken prior to arriving in your course?

2. What relevant non-course experiences (e.g., orientation, travel experiences, service learning projects, etc.) will your students have had prior to arriving in your course?

3. In what types of learning environments are your students accustomed to working? Are the used to large classrooms? Small ones? Field work? On-line delivery?

4. What relevant experiences will your students NOT have had prior to arriving in your course? That is, what kinds of things in your course are likely to be new for them?

Part B. What impact will your answers in Part A have on students' learning in your course?

Step 4. What Knowledge, Skills, and Attitudes Are Your Students Likely to Possess?

Describing your students' prior experiences is immensely helpful in identifying relevant student learning factors. However, one of the key implications of focusing on student learning is that merely having an experience is not sufficient to guarantee learning. So, just because your students may have experience reading Shakespearean plays (or solving calculus problems, or writing in APA style, or whatever), that doesn't mean that they will necessarily arrive in your course with the ability to do it proficiently. We've all encountered students who had "learned" something in a previous course only to forget it by the time they got to us. Therefore, it is not enough to merely list the previous experiences students have had. It is also necessary to articulate the knowledge, skills, and/or attitudes that they will actually possess when your course begins.

Taking the step from "student experiences" to actual knowledge, skills, and attitudes may be the trickiest one in identifying relevant student learning factors. Even we are occasionally fallible in this regard. For example, one of us (Ken) has been teaching a course in Biomechanics for the last 15 years or so. Ken's dream for this course has been for students to be able to look at a human movement, be able to break it down into its component parts, and then identify which component should be manipulated to improve that movement. Based on the information solicited in Workboxes 3.1, 3.2, and 3.3, this dream seems well within reach for students at the Air Force Academy. In general, Ken noted that USAFA cadets are very athletic, competitive, and highly motivated to improve their academic performance. In addition, Ken saw that Biomechanics is an upper-division elective taken almost exclusively by Biology majors, so he could be reasonably confident that they would be intrinsically motivated to learn the material. Finally, Ken identified that all of his students would have had at least two semesters of coursework related to the "mechanics" portion of the course. Based on those factors, it seemed like a slam dunk.

What Ken didn't fully appreciate, at least at first, was the actual knowledge, skill, and attitudes of the students entering his course. Yes, they had all taken a freshman-level course in physics prior to entering his classroom. However, it had been as much as three years prior to the

course in Biomechanics. As a result, students had forgotten much of the physics knowledge they had learned. For some students, their attitudes about physics played an even more important role. Freshman-level physics is a notoriously tough course at the Air Force Academy, and at least some of Ken's students had had an unpleasant time in the course. As a result, they were somewhat turned off by the notion of revisiting that course material (even in a Biomechanics class, a context that was presumably appealing to them). In fact, some of Ken's students even confessed that they had chosen to become Biology majors, at least in part, to avoid topics like physics in their course of study! Only after struggling through that first semester did Ken realize the importance of these student learning factors for his course.

To help you avoid the unpleasant growing pains that Ken experienced in his Biomechanics course, we've created Workbox 3.4. In it, we would like you to write down the knowledge, skills, and attitudes that your students are likely to actually have when they enter your course. Please be realistic in filling this out. What knowledge will they really have? What skills will they really possess? And what attitudes (both positive and negative) are they really likely to have toward your course and/or your course material? Only by answering these questions here will you be able to design a course that adequately accounts for these very important student learning factors.

Workbox 3.4 Student Learning Factors IV

Your Students' Knowledge, Skills, and Attitudes

Part A.

1. What ***background knowledge*** will students actually possess upon entering your course?

2. What ***skills*** will students actually possess upon entering your course? (Consider the vast array of skills such as reading skills; writing abilities; study skills; test-taking abilities; thinking skills; organizational skills; mathematical skills; laboratory skills; library skills; etc.)

3. What ***attitudes*** will students actually possess upon entering your course? (i.e., expectations, interests, motivation to work and meet the demands of your course, willingness to revise completed work, etc.)

Part B. What impact will your answers in Part A have on students' learning in your course?

Identifying the Most Important Student Learning Factor(s).

In this chapter, you've used several different techniques to generate potential student learning factors, beginning at the broad, institutional level and working toward the more specific knowledge, skills, and attitudes possessed by the students in your class. Chances are good that you now have a fairly extensive list of factors that could impact your students' learning. At this point, we'd like you to narrow down your list to those two or three factors that you consider to be the most important, and then write those in Workbox 3.5. These are the student learning factors that you will carry forward to the subsequent stages of your course design, and these are also the factors that will appear on your course poster.

How can you tell which student learning factors will be most impactful in your course? There are no easy answers to this question, but we do have some general tips to help you arrive at a suitable one. Specifically, we encourage you to:

1. Focus your attention on those student learning factors that are most closely related to your dreams for student learning. For instance, given Ken's dream for student learning in his Biomechanics course, it would be especially important for him to consider students' knowledge, skills, and attitudes related to the mechanics of movement.
2. Consider what you would most want a peer to tell you to look out for as you prepare to teach your course. What words of wisdom would you want your peers to share with you? What barriers or obstacles would they likely see as most significant for you to overcome?
3. If you're unsure of what your peers might say, now is a great time to ask them. Consider talking with faculty who may have taught similar courses or staff who have worked with your students in the past. They are likely to have great insight into the most crucial student learning factors in your course.
4. You can also speak with students who have taken similar courses at your institution. Ask them about the knowledge, skills, and attitudes that they had when they were about to enter your course. It will help most if you ask them to be honest – brutally so.
5. Finally, as with all of the tasks we will ask you to do, we encourage you to share your stories with our on-line community. Sometimes there is nothing quite as helpful as getting the

perspective of a true outsider, someone who isn't already entrenched in your course, department, or institution. That is where the members of the on-line community can be especially helpful.

Workbox 3.5 Student Learning Factors V

Part A. The Most Impactful Student Learning Factors For My Course Are:

Part B. How will the student learning factors identified in Part A impact students' learning in your course?

Conclusion

We would like to conclude this chapter by saying a hearty "Congratulations!" You have now spelled out the most impactful student learning factors in your course, a critical first step in the course design process. As highlighted in Figure 3.1, learning occurs in the minds of students, and what students learn from your course is going to be influenced by the richness of their backgrounds and prior experiences. Achieving your dreams for student learning will depend

upon your ability to identify those student learning factors that matter most. You are well on your way!

We cannot overemphasize the importance of the work you've accomplished in this chapter, as it will absolutely affect every other step of the course design process. If you are not convinced, think of the student learning factors you've identified as a description of the "*starting point*" of your course – they describe where your students are now, before you ever begin interacting with them. In Chapter 4 on learning goals, we will bookend the course design process by clarifying the desired *end points* of your course – what you want your students to know and be able to do by the time the course is over. By establishing where your students are now and then where you would like them to be at the end of the course, you will be well positioned to create a pathway from start to finish that your students can successfully follow.

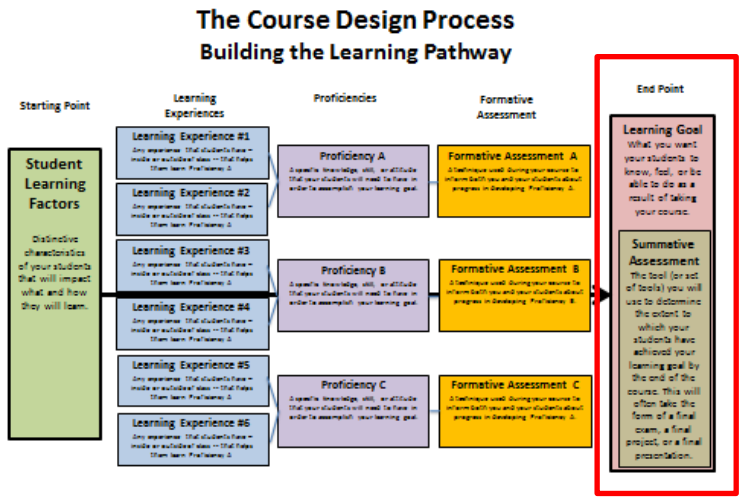
PAUSE TO GIVE FEEDBACK

Before proceeding to the next chapter, please take a few minutes to review what members of the on-line community have shared as their student learning factors. What have you learned about the students who will be taking their courses? How are they similar to (or different from) your own students? Do you think your colleagues have selected the most important student learning factors for their courses? What recommendations, if any, would you make for improvement? Please share your thoughts with the online community. Your feedback contributions enhance the power of the online community. Contributions and suggestions from the online community can also help inform your course design.

Chapter 4

Defining the Destination: Learning Goals

Both the Dream Exercise in Chapter 2 and the introduction of student learning factors in Chapter 3 place the students of your course front and center. After all, we design our courses for our students, the learners. In this chapter, you will shape your dreams into a set of effective **learning goals**, which describe what you want your students to know, feel, or be able to do as a result of taking your course. To help you do this, we will provide you with some information, have you think and write down a draft of your goals, work through a process to revise and refine these goals, and then have you upload them to our interactive website.



Together, your goals will represent the end point, or destination, of the learning pathway (Fig 4.1). When you see your students here at the end of the course, what new capabilities will they possess? What powerful tools will they have? What will they be able to do, or do better, as a result of your course? What personal insights and feelings will they gain? In general, where will your course lead them? As you will see, your course's learning goals will guide you to make other decisions in your course's design and is therefore is foundational work to the design process.

Principle 4: Effective learning goals serve as the final destination for your learning pathway.

Because it's been a while since we worked with your dream, we think this is a good time to recall your dream from the Dream Exercise you completed in Chapter 2 (see Workbox 2.1). Please refer back to what you wrote in Chapter 2 and write it again here, in Workbox 4.1.

Workbox 4.1 Redux: The Dream Exercise

In your deepest, wildest dreams, what kind of impact would you like to have on your students? That is, when your course is over and it is now one or two years later, what would you like to be true about your students who have had your course that is not true about others?

Translating your dreams into a set of effective learning goals involves two steps – clarifying and formatting. The first step is to clarify your dreams – to make the underlying thoughts more visible and more specific. For example, suppose you dreamed that you want your students to "think like a scientist." What does this mean? Does it mean that you want your students to read and summarize scientific papers? Does it mean that you want them to design and conduct experiments? Or does it mean that you want them to collect and interpret data? Clearly, "thinking like a scientist" can mean a variety of things, so merely saying that you want your students to "think like a scientist" isn't sufficiently clear to guide your course decisions.

Step 1. Clarifying Your Dreams.

With the need to clarify your dreams in mind, please use Workbox 4.2 to write down, more specifically, what your dreams for student learning really mean. Be sure to consider the student learning factors for the course you are designing. For example, 'thinking like a scientist' may need different clarification for first-year versus senior students.

Workbox 4.2. Dream Clarification

Clarify what you mean by your dream here:

Step 2. Formatting Your Goals

The second step of this process places your clarified dreams into the proper format, so let's first look at the general format that learning goals take. Keep in mind that a ***learning goal is a statement of what you want your students to know, feel, or be able to do as a result of taking your course.***

Effective goals focus on student performance and are visible; therefore the statement starts with the phrase "*Students will be able to*." This is followed by an *action verb* that states what students will do to demonstrate their learning such as analyze, predict, design, or explain.

Bloom's taxonomy (Bloom, 1956; see also Anderson and Krathwohl, 2001) is an excellent tool to use in selecting the appropriate action verb for your goal. In addition to the cognitive domain, this taxonomy also includes the affective (emotional) and psychomotor domains of learning (Fig. 4.2). The placement of the action verb is then followed by either the object of the action or a learning product. The object refers to what students act on (e.g. what do they analyze?).

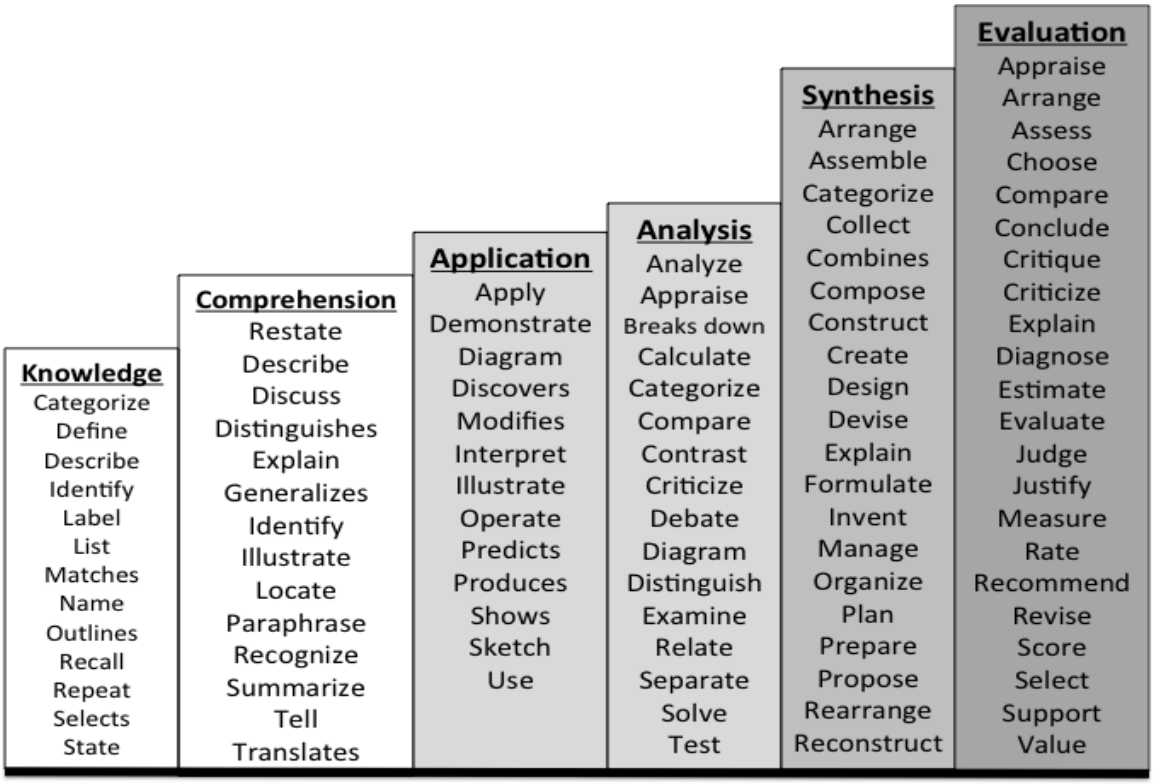


Figure 4.2. Verbs associated with the levels of Bloom's Taxonomy for the cognitive domain.

General Format for Learning Goal

"Students will be able to *[action verb]* [*object or product of action verb*]."

Let's examine a specific learning goal from a biomechanics course.

"Students will be able to *identify* the functional anatomy."

Here the intended goal of instruction is to have students *identify* the functional anatomy, which is under the category of "comprehension" in the cognitive domain of Bloom's taxonomy shown in Figure 4.2. In our example, the learning product refers to the object of their action, or what

they identify: the functional anatomy. Placed together you have the format of a learning goal.

As a slight twist on the format, many retreat participants find it useful to begin their goals statement with a scenario, situation, or condition upon which students' act – a general scenario for students to explain, analyze, or predict. A learning scenario is a real-life situation often faced by professionals in their practice (Errington, 2003). Scenarios are commonly used to motivate and help students connect and integrate their knowledge with professional practice. These types of goal statements often begin with "Given a …" preceding the action verb. The biomechanics example shown in the box below starts with the condition, "*Given a human movement*," and then constructs a goal around what students do with their observation of a body movement. From this set of goals it is clear that the students will be learning about a variety of human body movements in this course.

Learning Goal for "Biomechanics"
Given a human movement, students will be able to identify the functional anatomy.

Other examples include "Given a couple's financial situation and goals, students will be able to analyze and produce specific financial recommendations" or "Given a company's financial statement, students will be able to evaluate the financial health of the company." One major benefit of this scenario approach is the variety of situations, from simple to complex that you can use throughout the course.

A second twist on the format places terms in parentheses to elucidate and clarify the meaning of "functional anatomy." This is another way to help your students and others to clearly understand your goal. While not required, you may want to consider using both scenarios and parenthetical terms in developing your goals.

Learning Goal for "Biomechanics"

Given a human movement, students will be able to identify the functional anatomy *(muscles, tendons, ligaments)* involved.

While this single learning goal is an important part of a biomechanics course, it probably is not sufficient to account for the instructor's dreams of student learning. When we look at the complete set of learning goals for this course, we see that they all adhere to the basic format, they are focused on what students do in a particular situation (when given a body movement) and the use of parentheses allows the instructor to clarify unfamiliar terms. Collectively, they provide a foundation for designing a course that fulfills the instructor's dreams.

Learning Goals for "Biomechanics"

Given a human movement, students will be able to:

1. Identify the functional anatomy (muscles, tendons, ligaments).
2. Predict the forces acting on the joints and how they change during movement.
3. Evaluate the performance based on biomechanical factors (e.g., forces, velocities, angles, etc.).
4. Explain the movement using the language and principles of biomechanics.

In Workbox 4.3, make your first attempt at writing a set of learning goals for your course. As a general rule, courses have a set of learning goals that include between three to five goal statements. If there are fewer than three, then the goals are likely to be so general that they won't be very informative. On the other hand, if there are more than five, then the goals are likely to lack the generality needed to span the entire course. (That would make them much closer to what we are calling proficiencies, as we'll discuss in Chapter 6.)

Workbox 4.3. Your Course Learning Goals

Write in this workbox a set of your learning goals in the proper format

- Students will be able to [action verb] [object or learning product]. or
- Given [scenario, situation, etc.] students will be able to [action verb] [object or learning product].

Now that you have clarified and formatted your dream into a set of goals, we will spend the rest of this chapter helping you refine them so they are really powerful and effective. In fact this is some of the most rewarding work we do at our Course Design Retreat. The next step is to have you evaluate your goals against five criteria of effectiveness.

Characteristics of Effective Goals[8]

An effective learning goal clearly communicates your intent for student learning and therefore meets the following five criteria. We will elaborate on each of these in the space below.

Summary: Characteristics of Effective Goals

An effective learning goal:

1. Is clear & understandable to all.
2. Focuses on student performance.
3. Requires a high level of thinking that is developmentally appropriate.
4. Connects components of the course.
5. Is worthwhile and significant.

[8] This section represents an updated and revised version of a previously shared document, *A Primer on Writing Effective Learning-Centered Course Goals.*

You will use these criteria to evaluate your own goals. To model what we mean by each criterion, we provide a poor example, a commentary on why it is ineffective, and then show you how it can be improved into a better example of a goal statement. In most cases, we follow the better example with a comment on why it's an improved version of the poor example.

Characteristic 1. An Effective Learning Goal Is Clear & Understandable to All.

Clarity is the gateway characteristic; without clarity the goal doesn't function and loses its power. The goal must be clear to students and colleagues. Everyone should have a clear picture of your intended learning outcome. Clear goals are generally phrased in fairly simple terms rather than a complex, dense set of terms. Clarity is especially challenging when you have to communicate to people outside your discipline; to do so, it will be important to use few technical terms and avoid acronyms and jargon. This is where the use of additional or parenthetical language can be helpful to clarify jargon that may be unfamiliar to people outside of your discipline.

- *Course*: Upper-level English course "*Literary criticism"*
- *Poor Example:* "Students will be able to understand *the various critical applications to literary texts and succeed in practicing selected approaches."*
- *Commentary:* The verb "understand" can be interpreted many different ways. The phrases "various critical applications" and "practicing selected approaches" are unclear and need to be revised in easy-to-understand language. A common pitfall is crafting a goal that is clear to the instructor, but not clear to students or others outside of their subject area. In the improved goal below, notice that we use additional language to further clarify the meaning of "critique."
- *Better Example:* "*Students will be able to critique a literary work by breaking down it into its component parts, interpreting its meaning, and weighing its strengths and weaknesses."*
- *Commentary:* This language shows students what the term "critique" means in simple language. Students now have a clearer picture of what they will be expected to do in this course.

Characteristic 2. An Effective Learning Goal Focuses on Student Performance.

The purpose of goals is to focus on student learning; therefore course goals describe what students will have learned at the end of the course. The phrase "be able to do" may mean something mentally, physically or emotionally. Bloom's taxonomy links particular action verbs to various levels of thinking (Fig. 4.2). In addition to intellectual skills in the cognitive domain, Bloom's taxonomy also addresses the two other learning domains of physical skills (psychomotor domain) and feelings (affective domain). Remember to ask yourself "What will students do differently as a result of taking this course?" Asking these questions focuses your attention on the quality of student learning.

- *Course*: Upper-level psychology course "*Theories of Personality"*
- *Poor Example:* "*My goal is to provide you an opportunity to learn and apply personality of psychology knowledge and processes to your personal and professional development."*
- Commentary: As written, this goal is written from the instructor's perspective ("provide you with opportunity") rather than as a student performance. The student-focused piece of this statement is unclear and vague ("to learn and apply psychology knowledge") because it really doesn't specify what students will be able to do (learn?) that is visible and measurable.
- *Better Example:* "S*tudents will be able to identify elements of their own personality (motives, emotions, thoughts) and describe the role these elements play in their personal and professional development."*
- *Commentary:* The better example improves the goal in two ways: 1) it states the learning goal in terms of what *students* will do rather than what the *instructor* will do, and 2) it clearly shows students what they will be doing in the course (looking at various aspects of their own personality and applying it to their future development).

Characteristic 3. An Effective Learning Goal Requires High Levels of Thinking that is Developmentally Appropriate.

Goals at the course level are generally written with action verbs at the higher levels of thinking that are shown in the top four steps in Figure 4.2. This does not mean that fundamental knowledge or skills are unimportant. Indeed, Bloom's taxonomy is hierarchical and high-level goals are supported by lower-level course objectives, or proficiencies, an idea we will explore in more detail in Chapter 6. Many introductory courses focus solely on low-level learning, and assume that students will perform high levels of thinking on their own or in subsequent courses. Why defer this goal to upper level courses? This is analogous to asking musicians in introductory performing arts courses to only practice individual notes and scales without ever putting them together in songs. That would be dreadfully boring. In order to become a good musician, you need to play musical notes in the context of how they're used. Similarly, low-level knowledge is most meaningful when it is learned in the context of how it is used. Think and write goals that ask students to apply, interpret, analyze, synthesize, evaluate, create, or design. It is important to note that some verbs like "explain" or "identify" can represent lower or higher levels of thinking depending on the context, depth, and complexity of the learning task. Choose your action verb carefully, as your choice will ultimately determine the kinds of learning experiences and assessments you will use in your class.

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Goals that are developmentally appropriate directly address student learning factors and use the work you did in Chapter 3. Students vary in terms of their confidence, life experiences and background so this is an especially challenging criterion for someone other than you to evaluate. There is no single right answer to whether your goal is developmentally appropriate for some or most of your students. Students will rise to high expectations; however if goals are too challenging, students will likely become frustrated at their inability to accomplish them. If goals are too easy, they are likely to become bored. The challenge is to create course goals that are challenging, yet achievable, for the students in your class.

- *Course*: Upper-level management course "*Financial Accounting*"
- *Poor Example:* "*Students will be able to list and describe factors that drive the performance of a company."*
- *Commentary*: The action verbs "list" and "describe" are on the lower levels of Bloom's taxonomy and focus on the skill of remembering rather than higher levels of synthesis, application, and analysis. While it is important to know this information, it can be assimilated into a course-level goal that demands higher level of thinking from students.
- *Better Example: "Given a financial report, students will be able to evaluate current performance of a company for a given external stakeholder."*
- *Commentary*: By using the action verbs "evaluate" and "predict," the goal signals to the student that they will take the role of an external stakeholder of a company. They will learn financial terms and information, understand the meaning of that information, apply and pull together the information together so that they will be able predict the future performance of the company. It is an example of a scenario-based goal that is effective because it is clear, requires high-level thinking, and guides the design process.

Characteristic 4. An Effective Learning Goal Connects Components of the Course.

This criterion addresses the integrative quality of course learning goals. An effective learning goal *connects* and weaves together the many parts of the course. It's easy to fall into the trap of

creating goals that are a *collection* of smaller units of study as shown by the learning goal below:

- *Course: Introductory philosophy course "Comparative Religion."*
- *Poor Example:* "*Students will be able to explain the major beliefs and divisions of the following religious traditions: Hinduism, Buddhism, Jainism, Sikhism, Zoroastrianism, Judaism, and Christianity."*
- *Commentary:* We can imagine that this course tackles the beliefs and divisions of each of the religious traditions as a separate unit of study. However, course designers' dreams are usually driven by helping students make connections across course material, rather than merely giving them collections of that material. As it is currently written, this learning goal reflects a collection of course material, falling short of the more connective dream.
- *Better Example:* "Students will be able to compare and contrast the major beliefs and divisions of the following *religious traditions: Hinduism, Buddhism, Jainism, Sikhism, Zoroastrianism, Judaism, and Christianity."*
- *Commentary*: This is a more connective goal because it is aligned with its title (*comparative* religion) and has students analyze knowledge about each religion and be able to compare how they are similar and different in their beliefs. This example shows the importance of the action verb; by changing the verb "explain" to "compare," it is a different learning goal altogether.

Characteristic 5. An Effective Learning Goal Is Worthwhile and Significant.

Your dream most likely has your students accomplishing worthwhile and significant learning that lasts. One effective strategy that many instructors use to meet this criterion involves authentic tasks. Authentic tasks are those in which students face challenges similar to those faced by professionals in the field. Students find authentic tasks highly motivating, as they easily see the relevance of completing them (Yair, 2000). As a result, they are more likely to perform their best work. Obviously, we wouldn't expect the work of beginning students to be

as good as the work of professionals; nonetheless, authentic task will likely elicit the students' very best efforts. Ask yourself, "What is it that professionals in my field do?" How could you build elements of those tasks into your course?

- *Course: Introductory "Aeronautical engineering" course emphasis for non-majors*
- *Effective Example: "Given a set of proposed aircraft specifications (frame, power, purpose), students will produce an innovative wing design.*
- *Commentary*: This goal places students in the role of aeronautical engineer, where they use their knowledge to design the wings of an aircraft. This is what professionals do in this field. Engineering courses are natural areas where students can perform tasks similar to what professionals do, such as design and build bridges, roads, electrical circuitry, or engines.

Step 3. Evaluate the Effectiveness of your Goals

Throughout the design process we'll ask you to stop and consider a few questions about the work you have accomplished. Now examine your set of goals from Workbox 4.3 by asking yourself the following:

- If students accomplish the goals that you have written, will they also accomplish your dream? Don't give up your dream. If you answer 'no' to this question, your goals need to be revised.
- How well do your goals meet the criteria for:
    - Clarity?
      Are your verbs clear, or do they need further elaboration and explanation?
    - A focus on student performance?
      Can you see what students will actually do to meet this goal?
    - Requiring high levels of thinking that is developmentally appropriate?
      Do your goals intellectually challenge students to mentally grow and develop?
      Can students enrolled in the class actually accomplish these goals?

- Connecting all aspects of the course together?
  Does each of your goals connect and bring together underlying proficiencies?
  Are your goals the terminal behavior that connects a set of proficiencies and learning experiences along the learning pathway (more about this later)?

- Being worthwhile and significant?
  Is this goal worth spending your energy, resources and time to achieve?
  Are you willing to allocate the necessary class time to help students achieve the goal?
  What will you do to motivate students to work hard to accomplish these goals?

Step 4. Check for Common Pitfalls

To this point you have drafted a set of your course learning goals and evaluated them for their effectiveness. They are just about ready for you to post them to the website for feedback from the greater learning community. However, before taking that step, let us share a few common pitfalls that we have encountered in working with our own faculty colleagues. We share them now so that you can be sure to avoid them as you move forward.

Pitfall 1. Using verbs that are vague, unfocused and open to many different interpretations such as "to know," "to understand," "to demonstrate knowledge of," and "to discuss."

It is very tempting to use these verbs when writing a learning goal because they often lie at the heart of what we want students to achieve – we really value the understanding of experiences, concepts, objects, processes, people, and events in our disciplines. We want students to have a rich body of knowledge that they can use to discuss and fluently converse with us. These words, after all, involve higher levels of thinking and take students well beyond rote memorization. However, these words *are not clear because they are too complex* (Gardner 1999), too broad, and fail to telegraph to the student a clear actionable outcome. These verbs keep students guessing as to how to study the material and beg the question "what do you mean by that?"

and “is that going to be on the test?” Falling into this pitfall maps directly to the first and gateway criterion of effective goals – clarity.

Often times faculty use verbs like “understanding” when they are not really sure or have a vague notion of what this means or looks like. Therefore what you want students to “understand” can serve as a starting point to think about what you really want students to do in order to demonstrate their learning. The task is to begin unpacking your thinking about the word “understanding.” White and Grunstone (1992) define several targets of understanding such as “Do you mean to understand a concept, a single piece of knowledge, or a whole discipline? Do you mean understanding people, situations, or a communication? How deeply do you expect students to understand - on a fairly superficial level or do you mean a highly connective, deeper level of understanding? How many different elements do you expect your students to connect? How refined and subtle do you expect them to connect the elements? What does it mean to understand or grasp an idea? Providing clear answers to these questions will move you along the process of drafting and writing your course goals.

Pitfall 2. Focusing too much on course content rather than what students <u>do</u> with the content. There’s a great tendency for professors to be strongly wedded to the content; our professional identity centers on it. If we are not careful, our identification with content can become a great weakness as we formulate our learning goals. To be clear, guiding students to build a strong foundation of knowledge and conceptual understanding is important to every college course. Falling into this pitfall maps back to the third criterion of effectiveness – high levels of thinking. Again, it is important to emphasize that content is most meaningful when it is learned in the *context* of how it is used. To reach higher levels of thinking, students must master and connect specific concepts; they must learn the language of your discipline so they are able to communicate and build strong mental models. Here, we are not saying that content is unimportant, but rather urge you to focus on the *student and what they do with the content rather than the content itself.* Falling into this pitfall may leave you with a course that is more

about teaching your disciplinary content rather than teaching students to accomplish learning goals (violating Principle # 3).

Pitfall 3. Confusing a learning goal and a learning experience.

It is easy to confuse a learning goal and a learning experience because they both involve student activity and begin with an action verb. However, experiences and goals play different roles in your course design. Learning experiences build specific skills and proficiencies to support the accomplishment of a larger more encompassing learning goal. Let's look at a potentially confusing example. In some courses, students produce a portfolio of their work. In this context, a course designer might be tempted to frame the course goal as "*students will assemble a learning portfolio of their work*" because it involves a visible, measureable student activity. The fact that the portfolio process occurs at the end of the course makes it appear even more like a learning goal. However, we would say that this is a learning *experience* rather than a learning *goal* because it is likely to be a means to an end, rather than an end in and of itself. The larger goal emerges from the reason students produce a portfolio in the first place. We see the portfolio process supporting a goal that looks something like this: "S*tudents will reflect and summarize (provide supporting evidence) the learning gains they have made throughout the course."* Other learning experiences that support this goal may include writing papers, making drawings, or recording teaching videos. As you can see, the learning goal is the terminal behavior that demonstrates the connection of many learning experiences in the course, which maps this pitfall back to the fourth criterion - connectivity.

Pitfall 4. Choosing higher level verbs without a willingness to commit to them.

The verbs within Bloom's taxonomy can be wielded without realizing their power. It is often thought that verbs must be higher-level as we move through the curriculum or that a course with higher-level verbs is better than a course with lower-level verbs. We see this happen again and again when faculty write their goals. Some will tend to just replace their lower-level intention with a higher-level verb to comply with the criteria for effective course learning goals. Whatever verb you choose, know that this will have implications down the road for your course design. The higher level the verb you choose, the more proficiencies, learning experiences, and

formative assessment that will be needed to define the learning pathway. Be clear and honest with yourself that you are willing to commit to these additions.

Up to this point, you have invested considerable amount of time and brainpower into your course's learning goals. You are now ready to list your revised learning goals in Workbox 4.4, as well as post them onto our interactive website to receive feedback.

Workbox 4.4. Your Revised Course Learning Goals

At the end of my course….

<u>Step 5: Choose one of your learning goals in preparation for the remainder of the course design process.</u>

Your set of learning goals most likely includes several separate goal statements. The next step in the design process is summative assessment, or ways to measure the extent that your students have accomplished a particular goal. The process of designing effective assessment instruments considers how a *single* particular learning goal will be measured. Therefore, to guide you through this process, we ask that you select one of your learning goals from your set above. Select the goal that you consider to be the most effective goal; one that you think is clear, focuses on student performance, is connective, and requires high levels of thinking. This is an important decision because in the next chapter we will take you through the process of

producing a summative assessment of this goal. Write that goal in Workbox 4.5. From there you will work with this same goal to identify learning proficiencies (Chapter 6), learning experiences (Chapter 7), and formative assessments (Chapter 8). We feel that once you go through this process with this single goal, you will have the tools and skills necessary to develop your design and course elements for the other goals in your set. In the workbox below, write the one goal you will move through the following chapters.

Workbox 4.5. The Course Learning Goal Moving Forward

At the end of my course….

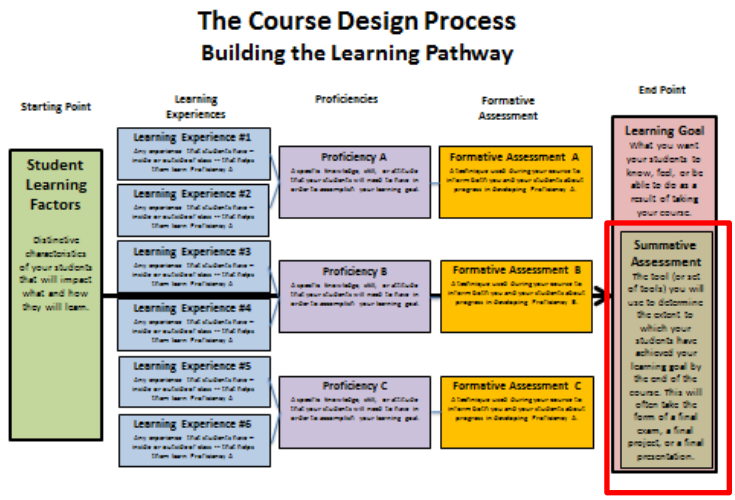
PAUSE TO GIVE FEEDBACK

Before proceeding to the next chapter, please take a few minutes to review what members of the on-line community have shared as their learning goals. Are they written in adherence with our characteristics of well-written goals? What follow-up questions do you have? What recommendations, if any, would you make for improvement? Please share your thoughts with the online community. Your contribution to the group enhances the power of the online community. Contributions and suggestions from the online community can also help inform your course design.

Chapter 5

Students' Successful Arrival: Summative Assessment

At this point, you've established the learning goals that will serve as the foundation for your course and the destination of your learning pathway. You have also identified one specific learning goal to work on in this chapter (see Workbox 4.5). In this chapter, we shift our attention to how you will assess that goal, or how will you know the extent to which your students have arrived at the challenging destination you have set out for them (Fig 5.1). More specifically, our focus will be on "*summative assessment*," which we defined in Chapter 1 as the *tool (or set of tools) you will use to determine the extent to which your students have achieved your learning goal by the end of the course*. By the time you get to the end of this chapter, you will identify a summative assessment task that is well-aligned with that chosen learning goal.



If you are new to the process of course design, it may seem somewhat odd to think about your course's summative assessment so early in the course design process. After all, in the chronology of your course, you and your students aren't likely to actually experience your summative assessment until the very end of the term, and there will be many other class-related activities (e.g., readings, classroom interactions, homework assignments, etc.) before you arrive at that point. This may explain, at least in part, why so many faculty members choose to put off thinking about their summative assessment until the very end of the course, after all of those other activities have taken place.

Rest assured, however, that our choice to have you think about your summative assessment now is very intentional. We're advocating what is known as "backward design" (Fink, 2003;

Wiggins & McTighe, 2005), where the course design process begins by thinking about what your students will know, be able to do, or feel at the end of your course. That is why your articulation of your learning goals is foundational to your course design, and it is also why defining your summative assessment is the very next step. Before you ever actually interact with your students, Principle 5 drives you to think about what you'll actually ask them to do at the end of your course to demonstrate their accomplishment of your learning goal. If the learning goal represents your destination, your summative assessment will represent the tool (or tools) you'll use to determine the extent to which your students have arrived there.

> Principle 5: An aligned summative assessment will tell you how successfully your students have reached your destination.

As simple as it sounds, the most important idea of this chapter is that your summative assessment should be aligned with your learning goals (Cohen, 1987). What this means is that ***the actions required to achieve the course learning goal should be the same as those required to succeed on your summative assessment***. If, for example, your learning goal is to have students be able to create and justify a 5-day weather forecast, then your summative assessment should require that students create a 5-day weather forecast and justify their predictions. It is as simple as that.

While the idea of alignment is an incredibly simple one to understand, it is critically important to the success of your course. The reason is that, for better or for worse, your summative assessment will drive your students' behavior in your course. We're convinced that students are highly rational creatures; they will dedicate their time and energy doing those things that will be assessed, and they will often ignore what is not. Therefore, if you really want your students to accomplish a particular learning goal, it will be vitally important that your summative assessment be aligned with that goal. To do otherwise would be to lead your students away from what you've said is your goal for their learning.

Unfortunately, faculty members often fail to create summative assessments that are well-aligned with their learning goals. According to the National Center for Education Statistics (1995; as cited in Walvoord & Anderson, 1998):

> *Faculty often state that they are seeking to develop students' abilities to analyze, synthesize, and think critically. However, research indicates that faculty do not follow their good intentions when they develop their courses. A formal review and analysis of course syllabi and exams revealed that college faculty do not in reality focus on these advanced skills but instead are more concerned with students' abilities to acquire knowledge, comprehend basic concepts or ideas and terms, and apply basic knowledge. (p. 22)*

Sadly, we've seen this scenario play out in classrooms at our own institution. Several years ago, we observed a general education course taken by first-year students. In speaking with the faculty teaching the course, it was clear that one of the stated learning goals of the course was to develop students' critical thinking skills. However, when we reviewed the summative assessment (in this course, a final exam), we were struck by the large number of multiple choice questions focused exclusively on low-level memorization of terminology in the field. It was a clear case of having a summative assessment tool that had very little to do with the stated course goal.

This scenario was made all the more troubling when we spoke with some of the students in the course. One told us directly that, over the course of the semester, he had stopped doing the required reading assignments and he had also started "tuning out" during many of the classroom lessons. When we asked this student why he had done so, he told us that it became apparent over the course of the semester that his grade would be determined by how well he could memorize the bold-faced terms in the book, not by how well he developed his critical thinking skills. So, rather than spend his time developing the skills that were inherent in the stated learning goal, he chose simply to make flash cards of the bold-faced vocabulary – that

was the true path to success in the course. Was this student's behavior consistent with the stated course goal of critical thinking? No, it wasn't. Was the student's behavior consistent with the instructors' dreams for his learning in the course? No, it wasn't. But did the student's behavior make sense, given the way that he knew he would be assessed. Yes, it absolutely did.

In a nutshell, this anecdote demonstrates why it is so important for you to outline what the summative assessment is going to look like now, before your course actually begins. Generally speaking, students want to perform well on the summative assessment in your course, and they are likely to adapt their behavior so that they can do so. As such, your choice of a summative assessment is very likely to have an impact on how students spend their time in your course. Why not guide their behavior in ways that are consistent with your stated learning goals?

Step 1: Choose a course goal

In general, the first step of creating a summative assessment is selecting a goal to assess. Fortunately, you've already done that, as you selected one goal to pull forward at the end of Chapter 4 (workbox 4.5).

Workbox 4.5 Redux. The Course Learning Goal Moving Forward

At the end of my course….

Throughout this chapter, our intent is to help walk you through the process of creating a summative assessment that is well-aligned with your learning goal. Our experience at the Course Design Retreat suggests that that will be easier for you if we refer to a specific goal as well. Therefore, in this chapter, we will be working with a learning goal generated by one of our retreat participants. This particular faculty member is from our institution's Department of Civil and Environmental Engineering. Her chosen learning goal was as follows:

An Example Learning Goal (from a faculty member in the Department of Civil and Environmental Engineering) At the end of my course, students will be able to design embankments and retaining walls.

Step 2: Identify What Students Will Do In An Aligned Assessment

Recall the overarching principle of this chapter is that your summative assessment must be aligned with your learning goals. Given our definition of alignment, this simply means that the actions required to achieve the course learning goal are the same as the actions needed to succeed on your assessment. So, this step might be easiest thing you do all day. Table 5.1 shows some examples of what we mean.

Table 5.1 – Aligning Your Summative Assessment With Your Learning Goal	
If your learning goal is:	Then, here is what students will do in an aligned assessment:
Students will analyze the causes of the American Civil War.	Students will analyze the causes of the American Civil War.
Given real world data, students will make a recommendation for a course of action.	Students will be given a set of real-world data pertaining to the course material. Then, based on those data, they will make a recommendation for a course of action.
Students will write clear, effective Portuguese.	Students will write clear, effective Portuguese.

Now, take a look at the example learning goal from our colleague in the Department of Civil and Environmental Engineering. Given that her goal was to have students be able to design embankments and retaining walls, here is what students in her course would do in an aligned assessment:

Civil and Environmental Engineering Example
What Students Will Do In An Aligned Assessment

Students will design embankments and retaining walls.

Now it is your turn. Use Workbox 5.1 to identify what your students will need to do in your own aligned assessment.

Workbox 5.1 Aligned Summative Assessment I

Your chosen learning goal:	What Students Will Do in an Aligned Assessment:

Note: If you do this correctly, your response should look essentially identical to your stated course goal, as we demonstrated in Table 5.1.

Step 3 – Identify an Appropriate Summative Assessment Task

It is now time for the somewhat more difficult work of this chapter. Specifically, you now need to identify a task that students will perform in the summative assessment. What will you ask students to do in order to demonstrate their accomplishment of your chosen learning goal? And in what context will you ask them to do it?

If you are like many of our own faculty, you may find it tempting to answer these questions with "take a test" or "write a paper," perhaps because these are assessment tools you have used (or experienced) most often in the past. However, instead of automatically heading down that path, we ask you to pause, for two reasons. First, simply writing "test" or "paper" isn't sufficiently specific to guide the remainder of your course design. For instance, if you ultimately decide on a written paper as the summative assessment for your course, that paper could potentially take on many different forms. Walvoord and Anderson (1998, Appendix B) identify the following possible assessments, all of which could be broadly construed as written papers. Clearly, writing "a paper" can mean many different things.

- Write an annotated bibliography

- Write a client report for an agency
- Write a letter to the editor
- Write a news or feature story
- Write a research proposal addressed to a granting agency
- Write a review of research literature
- Write a technical or scientific report
- Write a term paper / research paper

Besides lacking in specificity, we would also like you to consider that it is possible that a "test" or a "paper" may not necessarily be the best way for you to assess your chosen learning goal. If that is the case, now is a wonderful time to consider alternative approaches. Again, borrowing from Walvoord and Anderson (1998), here is a list of some other ways that you could assess your learning goal. This list is not at all meant to be exhaustive – in fact, the number of possible assessment strategies is bounded only by your imagination. We present this relatively short list here merely to show you the range of things that you might consider.

- Give a briefing or oral argument
- Present a chart, graph, or visual aid
- Write a computer program
- Build a product (e.g., bridge, rocket, solar panel) to certain specifications
- Engage in a debate
- Solve a mathematical problem
- Write a news or feature story
- Write a poem or play
- Create a work of art, music, architecture, or sculpture

In our own Course Design Retreat, it is at this point where at least some of our faculty participants begin to feel a bit overwhelmed. If we're no longer necessarily tied to a "test" or a "paper," then how do you know what the right option is? How are you supposed to choose among the myriad choices that are possible, especially at this relatively early point in the course

design process? These are legitimate questions, and we can certainly empathize with you if you share in these feelings. We will admit that this stage of the course design process is as much art as it is science.

Thankfully, we can provide some specific guidelines that can help you in choosing a summative assessment task. In the remainder of this chapter, we'll share those guidelines. Ultimately, we will ask you to choose a summative assessment task for your specific course, and then upload your response to the on-line community. It is quite possible that your on-line colleagues will provide you with feedback that will help refine both your thinking and the assessment task you ultimately use in your course.

1. Alignment. Remember, your summative assessment must be aligned with your learning goals

   Obviously, we've already highlighted this principle, but it is such an important idea that we've chosen to mention it again. And, in case our previous discussion wasn't sufficiently compelling, here is another way to think about the issue. Your choice of a summative assessment is going to serve as what social scientists refer to as an operational definition of your course goal. That is, it will be how you measure students' accomplishment of your course goal. If someone asks you how well your students ended up doing in achieving your course goal, you ought to be able to use the results of your summative assessment to inform your answer.

   Of course, some learning goals are easier to operationalize than others. And, if you happen to be working with a high-level learning goal dealing with, for instance, students' critical thinking skills, perfect measurement of student accomplishment may be difficult. That's OK; even if your summative assessment provides imperfect information about the extent to which your students have achieved your learning goal, the results of that assessment are likely to be informative (see Hubbard, 2011). We would much rather have you use an imperfect measure that is aligned with your learning goal than to fall back on a precise measure of something far less important.

2. Authenticity. In Chapter 4, we introduced the idea of authentic tasks, which are those in which students face challenges similar to those faced by professionals in the field. Students generally find authentic tasks more motivating than less authentic ones, so they are more likely to elicit your students' best work (Yair, 2000). Therefore, to the extent possible, we encourage our own faculty members to choose authentic tasks for their summative assessment (see also Huba and Freed, 2000; Wiggins, 1993).

   To create an authentic assessment task, try to think of what professionals in your field actually do – and what they don't do. For example, our colleague from Civil and Environmental Engineering is quick to point out that professional engineers do not tend to spend their time taking multiple choice tests related to their knowledge of retaining walls. Instead, professional engineers are presented with a set of environmental conditions and are then asked to design structures that are appropriate for those given conditions. So, it would only make sense that she would ask students in her class to do something similar – to use what they know about engineering principles to design an embankment or retaining wall.

3. A final product and the thought process that led to it. Regardless of what specific assessment task you choose, students' completion of that task will yield a product of some sort. That product could be relatively simple, such as a series of answers on a written test, or it could be much more complex, such as a design for a retaining wall. Regardless, students will produce something, and that product is what you will evaluate to gauge students' success in meeting your learning goal.

   To the extent possible, we encourage faculty members to choose an assessment task that leads to a final product and reveals the thought process that led to it. The reason is that, in many cases, students' thought processes are what we're ultimately interested in seeing – the final product is merely a way to reveal those processes. In addition, gaining visibility to your students' thought processes will also help you learn a great deal more about the quality of their learning. You will be better able to see what they have done correctly, where they have gone astray, and what they could do to improve. This

information will be invaluable both to them as students and also to you as a teacher, particularly as you consider further revisions to your course. Presumably, if you notice that your students frequently fall short in a certain area of their thinking, it will point you toward aspects of your course that could be improved when you teach it again in the future.

Again, let's return to our civil engineering colleague as illustration. Having students design embankments and retaining walls is both an aligned and an authentic assessment task. However, by itself, a series of designs may not provide very rich information about how students arrived at those designs. So, we would recommend that our colleague ask her students to submit their final designs and also present some sort of rationale for how they made the design choices that they did. Doing so would help our colleague make more informed decisions about what her students were thinking when they made the design decisions that they did.[9]

4. Weighing costs and benefits. All assessments, no matter how simple or complex, have costs for both you and your students. Students will presumably invest time and energy in preparing for your summative assessment, and they will certainly invest time and energy in completing it. Meanwhile, there can also be rather significant costs to you associated with creating a new assessment tool and administering it to students in your course. And, if you are like most faculty members, you are intimately familiar with the costs associated with evaluating students' work. It would be foolish not to acknowledge that these costs will play a role in the choices you will ultimately make.

[9] Astute readers will notice that we've tried our best to follow our own advice with regard to revealing students' thought processes in the design of this book and the accompanying website. We think of your final course poster as something akin to a summative assessment you will complete as you work your way through this book. That is a big reason why we are so interested in seeing your posters when you are finished. However, by itself, we don't consider the final course poster to be enough. We also want to see the thought processes you use to arrive at that final poster, fully recognizing that the path to the finish line may not be a direct one. Uncovering those thought processes will provide much richer information for both you (as course designers) and us (as facilitators of your learning).

Obviously, the balance of costs and benefits are likely to impact the choices made by our civil engineering colleague. In a perfect world, perhaps she might want her students to design an embankment and a retaining wall and then test their designs in the field by actually building them – if students' embankments and retaining walls could withstand the test of time, our colleague would really know that her students were successful in achieving her goal! However, the added benefit of field-testing student designs may not justify the substantial costs (of both time and money) associated with pursuing that option. So, instead, she may ask students to design a structure that could potentially be built, but not actually have students proceed with field testing of that design.

Ultimately, our colleague from Civil and Environmental Engineering settled on a design project as the aligned summative assessment in her course. In an effort to make her summative assessment authentic, she gave her students real-world situations where embankments and retaining walls were needed and asked her students to use what they learned in the course to create their designs. She chose not to have students actually build any embankments or retaining walls, simply because it would not be practical. However, she did decide to have students make a presentation of their design projects, something that would allow her to see both their final products and the thinking that led up to it. All in all, it was a wonderful example of an effective summative assessment.

What summative assessment task will you use in your course? Please describe your assessment task in Workbox 5.2 below. When you've completed this step, we ask that you upload your response to our supplementary website. We look forward to seeing what you came up with!

Workbox 5.2. Aligned Summative Assessment II

What Your Students Need To Do in an Aligned Assessment (from Workbox 5.1)

Your Choice of an Aligned Assessment Task

What About My Other Learning Goals?

It is important to note that, to this point, you have created a summative assessment for only one of the course goals that you generated in Chapter 4. So, you may be wondering what you should do with the remaining goals you created. After building a learning pathway for this goal at the conclusion of Chapter 9, we would like you to return to your other course goals and work through the design process for each of them as well. If you generated three learning goals in Chapter 4, that means we would like you to work through the course design elements three separate times. If you are really committed to having your students accomplish all three of those goals, this work is absolutely essential.

The good news, however, is that this shouldn't necessarily imply that your course will have three separate summative assessment tasks in it. In fact, we would suggest that the very best

courses we have encountered do not. Instead, we have found that the most clever course designers find ways to create assessment tasks that provide information about more than one learning goal at a time. For instance, consider one final time our colleague from civil engineering. Her first course goal was to have students design embankments and retaining walls, but an equally important course goal was for students to apply current research in retaining wall design. Her choice of a final assessment is ideally suited for addressing both of these two goals simultaneously. Students' designs and their accompanying explanations can help her assess their achievement of the first course goal. Their incorporation of appropriate research into their designs can be used as an assessment of the second goal. This is a situation where a single assessment allows for the integration of multiple course goals into a single course event.

Looking Ahead: Proficiencies

Now that you have described the specific task that you will use to assess students' accomplishment of your course goals, we will turn our attention to "proficiencies," which you will recall we define as the specific knowledge, skills, and attitudes that your students will need to have in order to accomplish your learning goals (and therefore succeed on your summative assessment). In the next chapter, you will discover that identifying the proficiencies associated with each of your learning goals will be important for two reasons. First, doing so will guide you in figuring out how to evaluate students' performance on your summative assessment task. Second, identifying these proficiencies will point you toward the knowledge, skills, and attitudes that you will need to cultivate in your students once your course actually begins.

PAUSE TO GIVE FEEDBACK

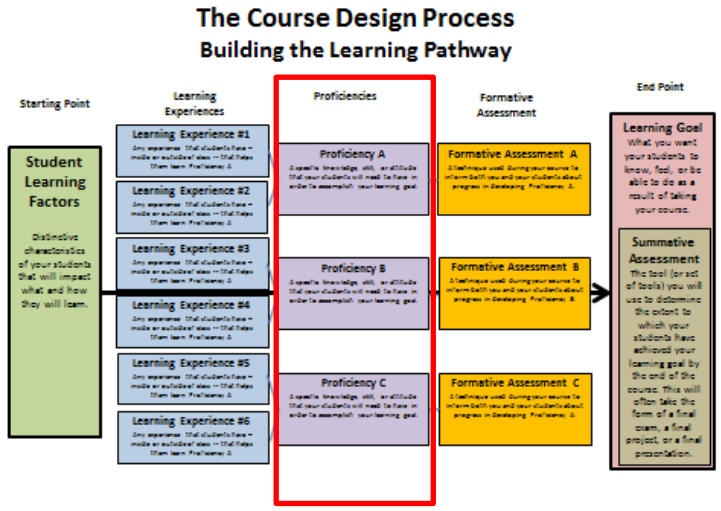
Before proceeding to the next chapter, please take a few minutes to review what members of the on-line community have shared as their summative assessments of student learning. Based on the descriptions, are your colleagues' proposed assessments aligned with their learning goals? Do you have additional ideas for how they could assess their goals? What recommendations, if any, would you make for improvement? We invite you to share your thoughts on the supplementary website. Your contribution to the group enhances the power of the online community. Contributions and suggestions from the online community can also help inform your course design.

Chapter 6

What Your Students Need to Be Successful: Learning Proficiencies

To this point in our course design process, you have outlined your student learning factors, your course goals, and a summative assessment that is aligned with one of those goals. As we've described, you can think of your work thus far as articulating both the starting point and the ultimate destination of your course. The student learning factors describe who (and where) your students are at the beginning of your course; the goals of your course describe where you ultimately want your students to be; and your summative assessment is designed to inform you and your students as to the extent to which they've actually arrived there by the end of the course.

In this chapter, you will begin to outline the path that your students will take as they travel from where they are before your course to where they will ultimately need to be at the end of it. What knowledge will they need to acquire to successfully arrive at your course goal? What skills will they need to develop? What attitudes will they need to possess? Taken together, we use the phrase "***learning proficiencies***" (or simply "proficiencies") to describe the specific knowledge, skills, and attitudes that your students will need to have in order to accomplish your course learning goal (Fig 6.1).



As you will see, the articulation of your learning proficiencies serves a very important function in your course design process. If students gain all of the proficiencies that you outline in this chapter, they will be well-positioned to succeed on your summative assessment, and, consequently, to show achievement of your stated learning goal. Therefore, at a tactical level, the task of your course is to help your students develop the proficiencies that are necessary for them to progress along the learning pathway (Principle 6). You will do this by creating learning experiences (Chapter 7) to help students develop those proficiencies and formative assessment mechanisms (Chapter 8) to inform you and your students about the extent to which those proficiencies are actually being achieved. By doing a thorough job of outlining your proficiencies in this chapter, you will have established a framework for all of the remaining choices you will need to make in your course design.

Principle 6: Learning proficiencies lay out the capabilities your students will need to have or acquire in order to successfully progress along the learning pathway.

To be honest, many of faculty members that we work with find the task of outlining their learning proficiencies to be a challenging one. Generally speaking, there appear to be two primary reasons for this challenge. First, many faculty are accustomed to thinking exclusively in terms of the content to be "covered" in their course (Davis, 2009), rather than in terms of what students really need to learn in order to achieve a course goal. The shift in mindset can be difficult for some faculty to make, especially at this stage of the course design process where relatively difficult choices may need to be made.

As an example of this first challenge, consider a hypothetical faculty member who is assigned to teach an introductory course in her discipline. She may not necessarily have taught such a course before, but she has certainly taken such a course. Furthermore, she is also almost certainly familiar with the content and organization of typical introductory textbooks in the area, which gives her at least some information about what such introductory courses typically include. Her familiarity with "how the course is normally taught" may cause her to include

certain aspects of that typical course, even if the "typical" course isn't particularly well-aligned with her own goals for student learning. If this phenomenon sounds at all familiar, we remind you to remain focused on your course goals; there is a reason we've already asked you to work so hard in articulating what they are. If you've done a good job writing those goals, and if those goals are really reflective of what is most important for your students to learn in your course, then your task at this point is to deconstruct those goals into the specific knowledge, skills, and attitudes needed to accomplish them … even if that takes you down a different path than "how the course is normally taught" in your discipline.

A second challenge associated with identifying learning proficiencies comes from the "expert blind spot" (Ambrose et al., 2010). By virtue of their extensive education and experience, faculty members are experts in their respective disciplines. While this expertise is obviously helpful overall, it may cause faculty members to have trouble unpacking their course goals into the fundamental knowledge, skills, and attitudes that make them up. They are simply so well-acquainted with certain knowledge, skills, and attitudes that they may take them for granted! This makes the task of spelling out learning proficiencies quite difficult, and faculty sometimes overlook some of the most fundamental proficiencies that are important for their students to learn.

Despite these challenges, we have found that faculty members can indeed successfully articulate learning proficiencies for their courses. What they need is simply a step-by-step process for how to do it. We've written this chapter to provide you with such a process. As we dive into that process, we also encourage you to review the list in the box below, which describes some general tips that you may find helpful as you work through each step. Ultimately, articulating learning proficiencies is a deeply reflective exercise, and we have found the entries in Table 6.1 to be helpful in guiding faculty members through the reflection required at each step.

Suggestions for Generating a List of Learning Proficiencies

1. **Reflect on Your Professional Life**. Think about how you perform your course goal in your own professional life. The key is to break your performance down into its component parts. What knowledge, skills, and attitudes do you need to have in order to be successful?
2. **Journal as You Complete Your Own Summative Assessment**. Set some time aside to complete the summative assessment in your course. As you complete it, take note of the knowledge, skills, and attitudes that are necessary for you to succeed.
3. **Talk with your Peers**. Your peers at your own institution, in your professional organizations, or in our on-line community can be incredibly valuable resources in helping you deconstruct the knowledge, skills, and attitudes necessary to achieve the course goal you've articulated. That is one of the reasons our on-line community can be so helpful!
4. **Talk with Faculty in Follow-On Courses.** These are the faculty members that look to your course to provide students with certain knowledge, skills, and attitudes. What (specifically) are they counting on students to have when they arrive at their courses?
5. **Talk with your Students.** This can be especially helpful if you engage with students as they try to achieve your course goal for the first time. What obstacles do they face? Where do they get stuck? What knowledge, skills, or attitudes are they apparently lacking when they enter your course that they will need in order to succeed on your summative assessment?

Table 6.1. Suggestions for generating a list of your learning proficiencies.

Identifying Proficiencies For Your Course

In the remainder of this chapter, we will lead you through a step-by-step process for identifying the learning proficiencies in your course. This will include separate sections for identifying the knowledge, skills, and attitudes necessary for your students to achieve your course goal. When you are done generating these proficiencies, we will lead you through a sequencing exercise in which you will sort your proficiencies into those that students will encounter early in your course, those that students will encounter in the middle of your course, and those that students will encounter late in your course. We will conclude by having you add one final proficiency to your list – the ability to pull all of the other proficiencies together simultaneously. If students have achieved each of your individual proficiencies and can also pull them together successfully, they should be well-positioned to succeed on your summative assessment (and therefore accomplish your course goal).

There are two important keys to success in identifying proficiencies for your course. First, you will want to make sure that the proficiencies you list are both **individually necessary** and **collectively sufficient** for accomplishment of your course goal. By indicating that a proficiency is "individually necessary," you are stating that students cannot successfully achieve your course goal without having that proficiency. (Staying mindful of this criterion will keep you from including things in your course for reasons like "it has always been done this way." If something isn't necessary to achieve your course goal, it doesn't need to be in your course.) Taken together, your list of proficiencies should also be sufficient to accomplish the course goal. This means that if students acquire all of the proficiencies you spell out in this chapter, they should be well positioned to succeed on your summative assessment and achieve your course goal. Nothing else should be required for students to be successful.

The second key to success is to write the proficiencies for your course using the same general rules you applied in Chapter 4 on learning goals. Specifically, statements of your proficiencies should begin with the phrase *"Students will be able to,"* and should include an action verb that states what students will do to demonstrate their learning of the proficiency. This will make the

process of assessing your proficiencies much easier once you actually begin teaching your course.

As in other chapters, we will model each step of our process by showing walking you through an example from a specific course. In this chapter, our example comes from a course entitled "Probability and Statistics for Engineers and Scientists." This course is taught by our Department of Mathematical Science, and it is a required course for all students who are pursuing a major in one of the STEM (Science, Technology, Engineering, and Math) disciplines at our institution. Students typically take this course in their junior year at our institution.

Step One: Focus On A Single Course Goal

The first step in articulating proficiencies is to focus specifically on one of the learning goals you've identified for your course. In the case of the Probability and Statistics course, the course goal we will use to illustrate our process is written as follows:

A Sample Course Goal

Course: Probability and Statistics for Engineers and Scientists

Goal: Given a real-world scenario involving uncertainty, students will be able to apply statistics to recommend an appropriate course of action.

In a similar fashion, we would like you to remind yourself of the specific learning goal that you will be working on in this chapter. This should be the same learning goal you focused on in Chapter 5. This is the same goal you selected and shared in Workbox 4.5. You will need to refer to this goal throughout the remainder of the chapter.

Step Two: Identify Knowledge Proficiencies

In order to generate knowledge proficiencies, ask yourself "What do students need to know in order to accomplish my course goal?"[10] Your response will include the facts, concepts, and principles that students will ultimately be learning in your course (Morrison, Ross, & Kemp, 2001). As such, you are likely to identify knowledge proficiencies by using action verbs in the lower cognitive levels of Bloom's (1956) taxonomy (see Figure 4.2). It is not unusual for faculty members to use words like "describe," "state," or "explain" as they write down the knowledge proficiencies for their course.

As you identify the knowledge proficiencies for your course, one important thing to be mindful of is how students can best organize the knowledge in your course. As an expert in your field, your knowledge is much more than just a random set of facts, concepts, and principles; instead, what you know is organized into rich, coherent knowledge structures that help you to retrieve your knowledge and see the relationships between different things you know. Ultimately, your students' learning will be enhanced if their knowledge is similarly built within a coherent organization as well (National Research Council, 2000).

Mayer (2001) and Ambrose et al. (2010) identify several different kinds of knowledge structures, to include processes (often represented as flow charts showing how something works), comparisons (often represented as matrices comparing one concept or method to another), and classifications (often represented as hierarchies with specific details being subsumed by more general rules or principles). Classification hierarchies are particularly relevant for our statistics professor, as that type of organization helps him to make the most sense of his own knowledge of statistics. That is, his knowledge of specific statistical techniques, such as "standard deviation" or "Analysis of Variance," is subsumed within broad categories, such as "descriptive statistics" and "inferential statistics." Formalizing this

[10] Note that this question is very different from "What do I, the professor, know about this topic?" or "What topics are covered in my favorite textbook?" We've purposefully phrased this question to keep you focused on what is necessary to accomplish your course goal.

hierarchical knowledge structure in his course is likely to help his students make sense of the disparate knowledge in his field as well.

The idea of knowledge structures is particularly important for you to consider at this point in the course design process because your students may not necessarily come to your course with those kinds of structures already in place. As a result, when students encounter the knowledge of your discipline, they may treat it as seemingly random pieces of information. The more you can help your students build coherent knowledge structures, the deeper their learning will ultimately be (Ambrose et al., 2010). Therefore, we encourage you to organize your knowledge proficiencies in a way that mirrors the knowledge structures that they will ultimately need to have in order to achieve your course goal.

Given the hierarchical nature of our statistics professor's knowledge, he found it most helpful to begin the process of identifying knowledge proficiencies by thinking about the major organizing principles that students would need to know in order to use statistics effectively. He then filled in his hierarchy with the more specific concepts and facts that students would need to learn in the course. The box below shows a subset of knowledge proficiencies that he generated.

Sample Knowledge Proficiencies

Goal: Given a real-world scenario involving uncertainty, students will be able to apply statistics to recommend an appropriate course of action.

Sample Knowledge Proficiencies:

Principle: Students will be able to describe that assumptions are made when real-world phenomena are translated into numbers.

Concept: Students will be able to distinguish between descriptive and inferential statistics.

Concept: Students will be able to match appropriate descriptive and inferential statistics to the characteristics of a particular scenario.

Facts: Students will be able to define and describe the characteristics of:

- Measures of central tendency (e.g., mean, median, mode)
- Measures of variability (e.g., variance, standard deviation)
- Probability
- Random variables and parameters

Even working through this rather limited example should make it clear that articulating all of the knowledge proficiencies for your chosen course goal is going to be a sizable job. That is OK; we expect the steps in this chapter to take a while. We urge you to use the strategies in Table 6.1 to help you get started in unpacking your own knowledge proficiencies, and we especially encourage you to interact with our on-line community if you have questions or concerns.

So, now it is your turn. What are the knowledge proficiencies that your students need to achieve your chosen course goal? Please write your response to this question in Workbox 6.1 below.[11]

[11] You'll notice in each of the workboxes in this chapter, we will ask you to rewrite your learning goal. We recognize that this may seem redundant but writing it out each time keeps the learning goal in the forefront of the decisions you make. This will help to ensure that your proficiencies are aligned directly with your learning goals.

Workbox 6.1. Your Knowledge Proficiencies

Goal:

Knowledge Proficiencies:

Step Three: Identify Skill Proficiencies

In addition to knowledge, your students will also need skills to successfully achieve your course goal. In some cases, these may include physical skills, like those described in the psychomotor domain of Bloom's taxonomy (see Appendix A). More often, however, your students will need a variety of thinking, analytical, or even interpersonal skills to be successful. For example, students may need to be able to construct an essay; solve mathematical problems; use basic laboratory equipment; or work effectively in a team. Regardless of what the specific skills are in your course, we have found that all academic courses have at least some skills that students need to master in order to be successful.

Given the importance that skills have in fostering student success, it is disappointing that so many college classes don't do more to overtly help students develop them (e.g., Arum and

Roksa, 2011; Bok, 2006; Keeling & Hersh, 2011). In fact, it sometimes seems that faculty spend more time lamenting their students' poor writing, speaking, or teamwork skills than in actually making earnest attempts to help students develop them. If your students are lacking the skills that are ultimately necessary for them to be successful in accomplishing our course goals, we argue that is incumbent upon you to help students develop them. That process begins by unpacking exactly what those necessary skills really are.

As you experienced when articulating your knowledge proficiencies, unpacking the skills that are necessary for your student success can be a challenging task. To assist you in thinking about the skills that are needed in your course, here are some questions you might consider as you move forward:

- Are there specific physical skills (e.g., in a laboratory) that your students need in order to accomplish your course goal?
- Are there specific procedures (e.g., for solving problems in your discipline) that students will need to master in order to accomplish your course goal?
- Are there general-purpose writing or speaking skills that students will need to have in order to accomplish your course goal?
- Are there critical thinking skills (e.g., critical reading, evaluation of evidence) that students will need to have in order to accomplish your course goal?
- Are there metacognitive skills (e.g., monitoring their own progress) that students will need to have in order to accomplish your course goal?
- Are there interpersonal skills (e.g., working with diverse team members) that students will need to have in order to accomplish your course goal?

When these questions were posed to the professor of our statistics course, here is a subset of the skills he generated:

Sample Skill Proficiencies

Goal: Given a real-world scenario involving uncertainty, students will be able to apply statistics to recommend an appropriate course of action.

Sample Skills Proficiencies:

Students will be able to translate real-world phenomena into mathematical terms.

Students will be able to manipulate data and execute statistical functions using Microsoft Excel.

Students will be able represent statistical results in charts, tables, and graphs such that they are easy to understand.

Students will be able to interpret the real-world implications of their statistical results

It is now time for you to list the skill proficiencies students will need in your course. Please write your responses in Workbox 6.2 below.

Workbox 6.2. Your Skill Proficiencies

Goal:

Skill Proficiencies:

Step Four: Identify Attitude Proficiencies

Your students will also likely need to have important attitudes to succeed in your course as well, and, if students lack those attitudes when they enter your course, one of your challenges will be to help students develop them. Intentional development of student attitudes is conspicuously absent from many college courses, but we argue that it is just as important as the intentional development of students' knowledge and skills. The reason, as the American Psychological Association (1997) points out, is that "the rich internal world of thoughts, beliefs, goals, and expectations for success or failure can enhance or interfere with the learner's quality of thinking and information processing" (p.4). The best college courses take a proactive approach in developing these attitudes, not merely expecting students to attain them on their own.

In our experience, there are three kinds of attitudes that are particularly important for students to have and/or develop in most college classes. The first has to do with *motivation* – students need to be sufficiently motivated to invest the time and energy necessary to accomplish your course learning goals[12]. In his book *What The Best College Teachers Do*, Bain (2004) outlines several examples of faculty members who have taken intentional strides to address student motivation in their courses. We suggest you do the same, particularly if your course is in an area that does not naturally align with students' academic interests. The Student Factors that you identified in Chapter 3 can be useful for you to consider as you think about including a proficiency related to student motivation.

A second important element to consider when outlining attitude proficiencies pertains to *students' beliefs about their ability to be successful* in particular your course. Psychologists (e.g., Bandura, 1977) refer to people's beliefs about their ability to be successful as "self efficacy," and research indicates it can play a key role in determining student success. For example, students with high levels of self-efficacy have been shown to spend more time and effort on learning activities (Bassi, Steca, Delle Fave, & Vittorio Caprara, 2007) and are more

[12] Discussion of student motivation is closely related to the "Caring" dimension within Fink's (2003) Taxonomy of Significant Learning.

likely to persist when confronted with difficult tasks than students with low self-efficacy do (Pintrich & De Groot, 1990). Therefore, it would be wise to consider building the development of students' self-efficacy into your course[13]. This may be especially true if your course is designed for students who may be new to your discipline or whose academic backgrounds are particularly weak.

Finally, a third idea to consider when developing attitude proficiencies has to do with students' *willingness to engage with ideas that may challenge their current ways of thinking*. For instance, consider the insights that emerge from the Reflective Judgment Model (RJM; Kitchener & King, 1981; King & Kitchener, 2004). According to the RJM, students in late adolescence and adulthood progress through a series a developmental phases regarding how they think about ill-structured problems. Many beginning students are likely to show signs of "prereflective thinking," such that they assume that knowledge is certain and that any question has a single correct answer. Not surprisingly, these students may struggle when faced with uncertainty. To succeed, they will need plenty of support from you, the faculty member, and they will also need a willingness to face uncertain situations and to become comfortable when those situations may challenge their epistemic assumptions. For your course to succeed, you may need to foster the development of students' attitudes in this regard.

Upon reflecting on these issues, our Probability and Statistics instructor identified the following attitudes as being necessary for students to succeed in his course.

[13] One what to build self-efficacy is to give students a taste of success relatively early in your course. Therefore, once you've identified some of the most fundamental proficiencies in your course, we encourage you to create ways for students to see their progress in developing those proficiencies early in their time with you.

Sample Attitude Proficiencies

Goal: Given a real-world scenario involving uncertainty, students will be able to apply statistics to recommend an appropriate course of action.

Sample Attitude Proficiencies:

Students will be motivated to solve real-world scenarios involving uncertainty.

Students will believe that they can solve real-world scenarios successfully.

Students will be comfortable recommending courses of action, even in the face of probabilistic information.

Now it is time to turn your attention to your course. In general, what attitudes will students need to have to meet your course goal? Will students need to be highly motivated in order them to succeed in your course? Will students need to have high self-efficacy? Will you challenge your students' thinking such that they will need to approach your discipline with an actively open mind? If you answer that, "yes, they need these attitudes to be successful," then you need to include them in your list of proficiencies. In the next chapters, we will discuss how to build these proficiencies and see if students have them at the level they need to be successful. Please write your responses to these questions in Workbox 6.3 below. See Appendix A for a description of the affective domain and its associated verbs.

Workbox 6.3. Your Attitude Proficiencies

Goal:

Attitude Proficiencies:

Step Five: Review / Revise Your Lists of Proficiencies

At this stage, you have generated knowledge, skill, and attitude proficiencies for your chosen course goal. Remember that the intent is to have the items on your lists be both individually necessary and collectively sufficient to accomplish your chosen course goal. If there are proficiencies on your lists that aren't *really* necessary for students to accomplish your course goal, they can be deleted. On the other hand, if there are proficiencies that are needed to accomplish your course goal that are not on your lists, those proficiencies should be added.

Being mindful that your proficiencies need to be both individually necessary and collectively sufficient, please review the lists you've created and revise them, as appropriate. Better yet, now would be a good time to ask your peers (both at your home institution and in our on-line community) to review your lists with you. We've routinely found that course designers benefit from sharing their ideas with (and receiving feedback from) their peers. Those who are even one step removed from your course are highly likely to come up with ideas that may have escaped you to this point.

Now is also a good time to consider the extent to which your students may already possess any of the proficiencies on your lists. It is likely that there are at least some proficiencies on your lists that students already have or at least have a reasonable base for possessing. For instance, students at our institution are generally very technically savvy, and they receive extensive experience manipulating data in Microsoft Excel, even before they arrive in a junior-level Probability and Statistics for Engineers and Scientists course. With this in mind, our statistics professor may wish to revise the second of his skill proficiencies to focus less on data manipulation in Excel (which his students already have experience doing) and focus more on using specific statistical functions (which will be new to them). That revision may look as follows:

- Original Skill Proficiency: Students will be able to manipulate data and execute statistical functions using Microsoft Excel.

- Revised Skill Proficiency: Students will be able to execute statistical functions using Microsoft Excel.

To the extent that your students possess any of the proficiencies on your lists, you similarly may wish to revise your list to focus specifically on the knowledge, skills, and attitudes that they don't already have. If you are certain that your students already possess one or more of the proficiencies you've generated, those proficiencies can be deleted.

On the other hand, it is likely that at least some the proficiencies will be completely new for your students; that is, students will have to be building the necessary knowledge, skills, or attitudes completely from scratch in your class. For instance, there is no reason for our statistics professor to believe that his students will come to his class familiar with the terminology of "random variables" or "parameters," as students will not likely have encountered those terms in previous courses. As a result, he will need to keep those proficiencies on his list, written as he had originally generated them.

As you reflect upon what your own students' knowledge, skills, and attitudes will be when they enter your course, it is once again helpful to refer back to the work you did in Chapter 3 on Student Factors. In addition, we would encourage you to ask faculty colleagues in your department what students are likely to be like – they can provide a very realistic perspective. If you are still uncertain, we recommend that you collect information about your students' proficiencies in the form of formative assessment (see Chapter 8) during the early portion of your course.

Step Six: Sequence Your List of Proficiencies

By themselves, having three disparate lists of knowledge, skill, and attitude proficiencies won't define a very useful pathway for your course. To be more useful, you will need to combine your lists and then put them into some semblance of order. We encourage you to begin by identifying those proficiencies that are most foundational – these are likely to be things that you develop in early stages of your course. Next, you can consider those proficiencies that are more intermediate – these will likely be developed in the middle part of your course. Finally,

you can think about those proficiencies that will tend to be developed later or near the end of the course, building upon what students have accomplished earlier. In reality, your students' development of your learning proficiencies is unlikely to follow this strict linear sequence, and, in fact, many of our most successful colleagues have at least introduced students to relatively complex proficiencies quite early in their courses. Nonetheless, this general framework can still be helpful for organizing your proficiencies into a meaningful sequence.

As a model, let's return to the Probability and Statistics for Engineers and Scientists course. In the table below, we have re-written the proficiencies generated earlier in the chapter, but notice that we have mixed together the proficiencies from the knowledge, skill, and attitude categories. Also, notice that we have sorted the proficiencies into a meaningful order. The foundational proficiencies pertain largely to student attitudes, as well as to the fundamental knowledge and skills needed to represent real-world problems in numerical terms. The intermediate proficiencies relate to the knowledge and skills associated with use of descriptive and inferential statistics, to include executing appropriate statistical functions in Microsoft Excel. The most complex proficiencies pertain to students' ability to interpret the results of their statistical analyses and represent those results in an appropriate format, as well as their level of comfort in making recommendations on the basis of probabilistic information. Organized in this way, hopefully you can see a pathway start to emerge for what students will be doing at various stages of this particular course.

An Example of Sequenced Proficiencies

Goal: Given a real-world scenario involving uncertainty, students will be able to apply statistics to recommend an appropriate course of action.

Early Proficiencies:

Attitude: Students will be motivated to solve real-world scenarios involving uncertainty.

Attitude: Students will believe that they can solve real-world scenarios successfully.

Skill: Students will be able to translate real-world phenomena into mathematical terms.

Knowledge: Students will be able to describe that assumptions are made when real-world phenomena are translated into numbers.

Middle Proficiencies:

Knowledge: Students will be able to define and describe the characteristics of:

- Measures of central tendency (e.g., mean, median, mode)
- Measures of variability (e.g., variance, standard deviation)
- Probability
- Random variables and parameters

Knowledge: Students will be able to distinguish between descriptive and inferential statistics.

Knowledge: Students will be able to match appropriate descriptive and inferential statistics to the characteristics of a particular scenario.

Skill: Students will be able to execute statistical functions using Microsoft Excel.

Late Proficiencies:

Skill: Students will be able to interpret the real-world implications of their statistical results

Skill: Students will be able represent statistical results in charts, tables, and graphs such that they are easy to understand.

Attitude: Students will be comfortable recommending courses of action, even in the face of probabilistic information.

Now it is your turn to sequence the proficiencies in your own course. Using an approach similar to the one taken by our statistics professor, sort your proficiencies into three categories of early, middle, and late. Write your responses in Workbox 6.4 below. We also ask you to upload your results from Workbox 6.4 to our on-line community so that we can provide you with support and feedback.[14]

Workbox 6.4: Your Sequenced Proficiencies

Goal:

Early Proficiencies:

Middle Proficiencies:

Late Proficiencies:

[14]Once you have identified your learning proficiencies and the general order in which they are developed within your course, you have effectively developed the dimensions for a rubric that you could use for summative and/or formative assessment. It is now only a short step to developing a full assessment rubric. For more information on rubrics, see Stevens and Levi (2012).

Step Seven: Pull All Of The Other Proficiencies Together

Before we move on to the next stage of our course design process, we would like you to include one final proficiency to the list you generated in Workbox 6.4. Specifically, we'd like you to add that **students need to be able to pull all of the other proficiencies together, in the form of demonstrating accomplishment of the learning goal itself**. Once upon a time, we thought it was sufficient for course designers to deconstruct their learning goals into the individual proficiencies that made them up (like you've done thus far), and that students would be well-positioned to succeed if they could simply master each of those individual proficiencies, one by one. When we implemented such a system in our own classes, however, it became immediately clear that there is something about achievement of the larger learning goal that is not captured by the mere collection of deconstructed proficiencies; the whole is somehow greater than the sum of its parts. Therefore, it is necessary to add a synthesizing or integrative proficiency, such that students learn how to pull all of the other things you've identified in this chapter together in the form of demonstrating accomplishment of the learning goal itself.

From a practical standpoint, the inclusion of this final synthesizing or integrative proficiency will become important as you move forward in developing learning experiences (Chapter 7) and opportunities for formative assessment (Chapter 8) in your course. In short, an important part of your course will be dedicated to giving students practice performing the complete task associated with your learning goal and providing them with feedback about their performance of that complete task. This is very much in keeping with Bain's (2004) observation that learning occurs best when students are given the chance to try, fail, and receive feedback, all before encountering a summative assessment that will be used to make a formal statement (often in the form of a grade) of the students' learning.

So, what does this mean for the professor of the Probability and Statistics for Engineers and Scientists course we've been illustrating in this chapter? In keeping with the idea of an aligned summative assessment, this professor has a final exam in which he gives students a real-world scenario and asks them to apply statistics to recommend an appropriate course of action. We

are suggesting that the final exam not be the first time that students have the chance to demonstrate their accomplishment of the course goal. Instead, we would recommend his course include some specific learning experiences dedicated to helping students pull together what they've learned to complete the whole task, some assessment of how well they are able to do it, and an opportunity for students to receive feedback on their performance, all before the final exam arrives. By taking this approach, he puts his students in the very best position to succeed on the summative assessment, thereby demonstrating their accomplishment of the overall course goal. We urge you to adopt a similar approach in guiding your students toward your course goal as well[15].

Step 8: Looking Ahead

In this chapter, you have articulated all of the learning proficiencies that your students will need in order to be successful in meeting your larger course goal. Taken together, these proficiencies mark the pathway for what you and your students will be doing. These proficiencies will also be critical to the rest of your course design, particularly as you consider learning experiences (Chapter 7) and formative assessment (Chapter 8).

While all of the proficiencies will ultimately play a role in the design of your course, the work you will do in Chapters 7 and 8 will become a bit cumbersome if you pull forward all of your listed proficiencies simultaneously. Therefore, moving forward, we encourage you to focus your energy on a subset of the proficiencies you've identified. Specifically, we'd like you to list no more than four proficiencies (one each from early, middle, and late in the course, as well as the final proficiency that pulls all of the other proficiencies together) and list those in Workbox 6.5. These will be the proficiencies that you will be working on in Chapters 7 & 8. In addition, these will be the proficiencies that will appear on your course poster.

[15] When we make this argument with our own colleagues, someone inevitably raises a concern about us encouraging faculty to "teach to the test." We address this concern, as well as several others that we have heard faculty members raise, in Chapter 11.

Workbox 6.5: The Proficiencies You Will Pull Forward Into Chapters 7 & 8

Goal:

An Early Proficiency:

A Middle Proficiency:

A Late Proficiency :

Pulling All Of The Proficiencies Together:

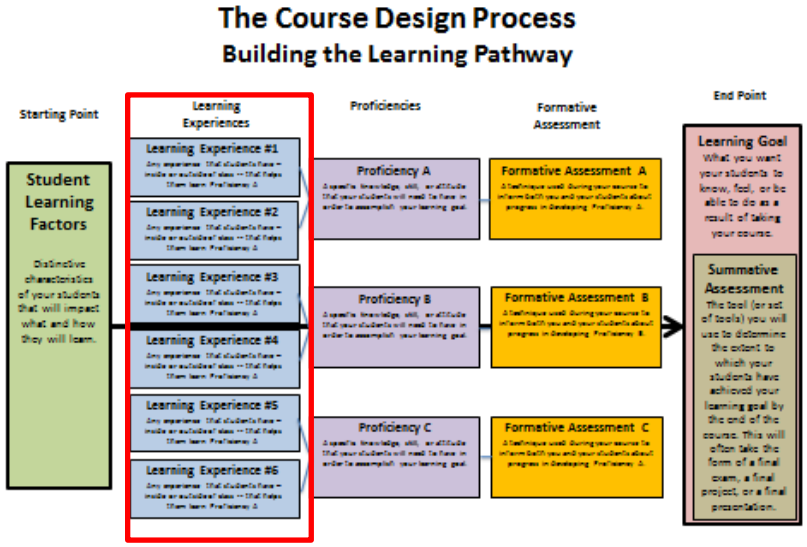
PAUSE TO GIVE FEEDBACK

Before proceeding to the next chapter, please take a few minutes to review what members of the on-line community have shared as their learning proficiencies. In your view, is each of the listed proficiencies necessary to accomplish the stated learning goal? Taken together, are the proficiencies collectively sufficient to achieve that goal? What recommendations, if any, would you provide to your peers to help them improve? Please use this opportunity to collaborate with your peers in the on-line community. Your contribution to the group enhances the power of the online community. Contributions and suggestions from the online community can also help inform your course design.

Chapter 7

Travelling the Pathway: Learning Experiences

This chapter takes you through a part of the design process that is perhaps the most familiar to you – learning experiences (Fig. 7.1). If you are like many college faculty, you have planned your classes around particular teaching "techniques" or "methods," such as lectures, class discussions, collaborative learning activities, demonstrations, or laboratory experiments. In our experience, an emphasis on using a specific teaching technique reinforces faculty to look at these activities from a teaching-centered perspective. They ask themselves what *they* will do, what topics *they* will cover, how *they* will organize the course material. Everything is focused on what the teacher will do. This mindset leads them to emphasize *what they do to students* and reinforces the misconception that the way to improve student learning is through the use of a particular technique alone. Decades of learning research and our own experience tells us that student learning is very complex and how we teach, while important, is only one of several factors involved in determining what students ultimately learn.



Principle 7. Learning doesn't depend on what is done to your students, but instead on how they interpret their experiences.

As you know, one of the hallmarks of our philosophy and course design process is to take the perspective of the learner, or student. This brings us to *Principle #7: "Learning doesn't*

depend on what is done to students, but instead on what students do and how they interpret their experiences." This principle is framed in a "learning-focused" mindset where your lesson plans create *learning experiences* for your students, and now the questions you ask yourself shift perspective as well; for example:

- "What will students do in this lab?"
- "What kinds of thinking will students have to do in order to succeed on this project?"
- "What will my students experience from my lecture?"
- "In what ways will students be cognitively engaged in the class discussion?"
- "How will students be motivated to learn by my demonstration?"
- "What misconceptions will steer *students* in the wrong path in solving this type of problem?"

When framed as a learning experience, it's more likely that classroom activities will be planned and implemented in a deliberate and intentional way to promote student learning. In our design process we define a ***learning experience*** as something a student does (i.e. physically or mentally) that changes their knowledge, skills, or attitudes. Learning experiences occur in our classes when students interact with their peers, listen to our lectures, participate in discussions, or work in small groups, but they also occur out-of-class, when students engage in literature searches, write papers, read textbooks, take online quizzes, or solve problems. Regardless of when and where they occur, the purpose of a learning experience is stated as *Principle #8 "Effective learning experiences help students develop necessary proficiencies* (Fig 7.1)*."*

Principle 8. Effective learning experiences will help your students develop necessary proficiencies.

In this book, we have presented the elements of course design in the order by which we want you to plan your course; starting with student learning factors, and then developing learning goals and summative assessments and so on. However this process is not how students

will encounter your course. They will engage in your course through the learning experiences you design. The main task of this chapter, as shown in Fig 7.2, is to assemble a *sequence of learning experiences* that intentionally build the necessary and sufficient proficiencies you developed in Chapter 6, so that students will accomplish the stated learning goal (Chapter 4) and successfully perform on your summative assessment (Chapter 5). To model this task we will use an example from a plant biology course in the box below and thread it throughout the chapter.

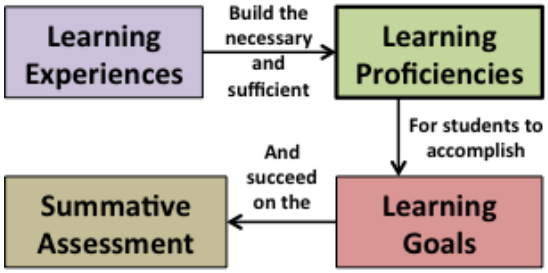


Figure 7.2. The relationship of learning experiences to other components of the course design process.

Course Goal and Proficiencies for a Plant Biology Course

Learning Goal: Students will identify an unknown plant using a field guide

Proficiencies:

1. Early: Describe the form and arrangement of leaves on a plant.
2. Early: Describe and name the parts of a typical flower.
3. Middle: Observe and point out the parts of leaves and flowers in nature
4. Middle: Students will be aware, open, and comfortable with variation of plants in nature between their specimen and the figures in the field guide
5. Late: Use a field guide to identify a known plant and then an unknown plant.

In the chapter ahead, you will embark on this task in three steps: First you will generate a list of possible learning experiences. Second you will explore the characteristics of each of the

learning experiences on your list. Third, you will match appropriate learning experiences with each of the proficiencies you identified in the previous chapter. The result of your work in this chapter will be a list of learning experiences that are well-aligned with the proficiencies identified in Chapter 6.

Step 1 – Brainstorm Possible Learning Experiences

To start off, think of as many types of learning experiences as you can and write them in Workbox 7.1 below. List the learning experiences that occur in the classes you teach or in classes you have taken as a student. To ensure that you're appropriately focused on your students, be sure to begin all of the learning experiences with a verb that indicates what students will be doing during the experience. It is important to note that some learning "techniques" actually involve several different learning experiences. In this case, it is necessary to unpack the technique to describe what students are experiencing during the activity. For example, listing a "jigsaw" activity (Millis, 2010, Barkley et al., 2005) in the workbox needs further elaboration by describing that students interact with others in small groups, research a topic, and then teach others about their particular topic. Thus, this cooperative learning *technique* involves at least three different learning *experiences*. Finally, remember a brainstorm is a list-generating activity that does not evaluate the ideas; it just gets them out on paper to consider later, in this case Step 2.

Step 1 Example Brainstorm Related to a Plant Biology Course

Students…

1. Listen to a face-to-face lecture
2. Listen to a podcast
3. Participate in a discussion
4. Watch a demonstration
5. Read the textbook and look at the accompanying illustrations
6. Create a Venn diagram
7. Enter data into a spreadsheet
8. Taking an online quiz (selecting answers to questions)

Workbox 7.1 – Possible Types of Learning Experiences

In this workbox, list as many types of learning experiences as you can.

Students …

[add wiki web address information here]

As you examine your list of learning experiences, you probably realize that you, like most of us, have a limited repertoire of learning experiences to choose from. The set of experiences we use in our courses is often limited by how we were taught, or what we did as students, which for most of us was the lecture-based, instructional delivery model. On the other hand, a wider range of learning experiences to choose from gives you the power to better align a particular learning experience to the proficiency you are trying to have students build. To expand your set of possible learning experiences that you can use in your course, we have developed an online wiki. This web-based wiki allows you and other users to build a large database of learning experiences and their attendant characteristics. Searching and browsing this wiki will hopefully spark innovation and intentionality in the selection of learning experiences for your students. While you don't have to visit the wiki to complete the workbox, we invite you to collaborate with other course designers through adding or editing the database. In our course design retreat an individual faculty member will typically generate less than a dozen learning experiences, but when they network with other faculty they can easily generate a list of over 50

different types of experiences. The community of instructors and course designers often benefit from a larger toolbox of tools to guide student accomplishment of specific learning goals.

Step 2 – Characterize the Capabilities and Constraints of Learning Experiences

It may be helpful to view your brainstormed list of learning experiences as your teaching toolbox; each tool is particularly well suited to help students accomplish a particular task. In this way, each of the learning experiences you described in Workbox 7.1 has a set of particular characteristics and capabilities that help students acquire specific learning proficiencies. Take listening to a podcast for example. Some of the advantages include convenience and portability; students can listen to it at a time they are mentally alert and at a place they desire. They can listen to its information many times at a pace that suits them. Podcasts also allow students to target areas of lectures that are confusing or unclear. On the down side, podcasts do not allow for student interactivity or provide students with feedback on their learning; they are simply tools designed to transmit bodies of information. There are other learning experiences that serve this same function such as reading a textbook or listening to a lecture. Therefore, before you begin to figure out which learning experience will be most appropriate for the proficiencies you are trying to build in your class in Step 3, it is necessary to consider the characteristics (we categorize these as 'strengths' and 'weaknesses and constraints;' see Table 7.1 below) of each learning experience. This is your task in this step.

Before you begin the task, let's further define what to consider as a constraint. There are often practical constraints that may force you to choose a learning experience that is less than your optimal choice. For example, if you wanted to identify flowers from a variety of habitats (e.g. desert, rain forest), you might want to have students visit a botanical garden with a worldwide collection of plants. In many cases this learning experience is not possible for the entire class; it's constrained by cost, travel, and/or time. However, there are alternative experiences such as viewing images, or doing library research. Other practical constraints include teacher preparation time, student workload, lack of equipment, or technology.

Table 7.1 Characteristics of Learning Experiences			
Learning Experiences	**Strengths How it helps learning**	**Weaknesses & Constraints**	**Reference for More Info**
Listen to a lecture	Orally transmits organized information efficiently about a particular topic	Often not very engaging for students; students generally passive; requires listening skills and a focused attention	Bligh, D. *What's the use of lectures?*
Participate in a class discussion	Engages students in dialog and critical thinking	Takes large amount of class time; difficult with large classes; unpredictable	Brookfield, S. *Discussion as a way of teaching*
Laboratory experience: dissection	Practical; hands-on; Stimulates curiosity & observation on a skill, process, or event; makes abstract concepts more concrete; models a skill	Students often passive in the process; Time to set up; and obtain materials; may make skill look easier than it is	Ahmad, J. 7.3 Demonstration in *The teaching of biological sciences*
Taking an online quiz	Exposes students to vocabulary terms and their definitions. Builds and tests factual knowledge. Provides immediate feedback Completed on students time, out-of class.	Tends to fragment knowledge into pieces rather than shows students the concept relationships	Dobson, J. *The use of formative online quizzes to enhance class preparation and success on summative exams*.

In this step you will pull a subset of the learning experiences from Workbox 7.1 and describe their capabilities, as well as their possible constraints in Workbox 7.2. Note that we modeled this work in Table 7.1 above by using examples from a botany course. We also included a reference if you would like more information.

Workbox 7.2 Characteristics of Learning Experiences

Learning Experiences (from Workbox 7.1)	Capabilities How it helps learning	Weaknesses & Constraints

Once you have accomplished this step, set it aside and go back and look at the learning proficiencies that you listed at the conclusion of Chapter 6. Our next step will match these proficiencies with the learning experiences that will help students accomplish them.

If you would like to add the information from your Workbox 7.2 to the wiki database of learning experiences, the online community appreciates it. Similar to Table 7.1, please include references if possible.

Step 3 – Match Proficiencies to Learning Experiences that will accomplish them

Now is the time for you to get to the heart of what a learning experience does for your students – build proficiencies, or the knowledge, skills, and attitudes necessary to accomplish the learning goal. It is likely that there will be many different learning experiences that will help students learn any given proficiency. So, from several choices how do you select the best learning experience?

How to Select Effective Learning Experiences: An Example

Selecting the most meaningful learning experience(s), like all course decisions you make, involves trade-offs where you will gain some learning benefits while giving up other benefits, or minimizing some constraints while accepting others. With all things considered, we choose learning experiences that combine and balance the following characteristics:

- **Aligned** – The experience directly supports and leads to the accomplishment of the proficiency and learning goal.
- **Engaging** – The experience cognitively engages students to spend the time necessary to focus, concentrate, and successfully complete the learning task.
- **Well-supported** – The experience adequately supports students with the resources (i.e. textbook, classroom notes, instructor assistance) necessary to help them successfully complete the task or experience.
- **Efficient** – The experience has large learning benefits relative to the constraints; students' becomes more proficient – more knowledgeable, more skilled, or more indicative of the attitudes you desire, with fewer or less intense constraints such as class time, student time, preparation time, and cost of resources.

Even with the above qualities, a learning experience can be quickly undermined if students' perceptions are not fully taken into account. First students' need to be ***clear*** on how to complete the task and clear on the purpose of the activity and easily see how it leads to the particular proficiency they are working to accomplish. Overly complex learning experiences diminish clarity by placing an added burden on students to understand and follow instructions (Marcus et al., 1996), as well as taking time away from the learning task. Second, students also need to feel ***safe*** with the opportunity to fail and make mistakes in a low-stakes environment. After all, the purpose of the experience is to help them develop learning proficiencies and guide them along the learning pathway; the summative assessment, or evaluation is down the road.

Let's now apply these criteria to an early learning proficiency that states that "*students will describe and name the parts of a typical flower*." It is important to clarify that the verb "describe" means that the student will represent by a figure, model, picture, or words the form,

parts, and the relationship of the parts of an object – in this case a typical flower. Recognizing and naming the parts of a flower they are given is essential to achieving the goal. This proficiency could be supported by a variety of learning experiences where students, 1) listen to a lecture or a podcast, 2) do a drag and drop activity on a computer (the student uses a mouse to select and drag a name and drops it into its proper place on a diagram), 3) make a physical model of a flower, 4) draw a flower and then label it, or 5) label a diagram of a flower. Which learning experience best balances the above criteria? Face-to-face lectures are very efficient, but like a podcast, students are passive observers of the instructor doing the bulk of the thinking work[16]. Also, students come to the course already familiar with the concept of a flower, so they do not need direct instruction at this stage. The drag and drop, model building, drawing, and labeling experiences are much more engaging. However, model building comes with higher upfront costs such as time, materials, complexity, and instructor guidance. Similarly, a drag 'n drop activity requires the skills to build the activity and then post it onto a web site. Giving a student a flower diagram to label is well aligned because it is similar to the learning goal they will be asked to perform. Also, students are supported by a textbook that they can refer to in order to complete the task. This experience has few constraints and the task is simple and easy to understand, which is especially useful early in the sequence.

It's always important to keep in mind that a single learning experience may not build the proficiency in its entirety, but the proficiency is accomplished through a combination of learning experiences that work together in a particular sequence.

[16] This point emphasizes Principle 7 "Learning depends on what students do and how they interpret their experience." Lectures can serve an important role in helping students to organize course material. However, done poorly, lectures reduce students to passive listeners and transcribers.

Table 7.2 Align Learning Goal to Proficiencies to Learning Experiences **Learning Goal:** Students will identify an unknown plant using a field guide	
Sequence of Proficiencies **Students will…**	**Learning Experience** **Students will…**
1. Early: Describe and name the parts of a typical flower. 2. Early: Describe the form and arrangement of leaves on a plant.	Label a diagram of flower parts. Label a diagram of common leaf forms and their arrangement on a plant.
3. Middle: Observe and point out the parts of leaves and flowers in nature.	Watch instructor point out parts on a complex flower Dissect a flower Observe & characterize different leaf forms and arrangements
4. Middle: Students will be aware, open, and comfortable with variation of plants in nature between their specimen and the figures in the field guide.	Watch instructor point out how a plant varies from figures shown in the field guide.
5. Late: Use a field guide to identify a known plant and then an unknown plant.	Listen to an explanation of how to use a field guide Use a field guide to identify a known simple plant, and then an unknown plant.

An Example of Aligning and Sequencing Learning Experiences

Let's return to our plant identification example for our alignment task. From Table 7.2 we see that the learning goal is supported by five proficiencies that are sequenced from the early, middle, and late phases of the learning process that moves the acquisition of cognitive skill from simple to more complex problem solving (Anderson 1982, VanLehn 1996). The first two proficiencies involve knowledge, the third and fifth proficiency are skills, and the fourth proficiency involves an attitude.

The right hand column shows the specific learning experiences that build these particular proficiencies. Field guides generally use flowers and leaves in the identification process. Therefore, Proficiencies 1 and 2 require that students are able to observe and describe basic flower and leaf forms. Students become proficient by reading and labeling a diagram of

flower parts and leaf forms from their textbook. This simple, low level learning experience is easily accomplished outside of class as a student assignment.

Proficiency 3 requires students to apply their "book knowledge" to a plant from nature. Here they watch a demonstration before embarking on a flower dissection on their own. This assumes that students are proficient with the use of forceps and a dissecting microscope. Also, it is not implied that a learning experience represents an entire lesson or class period - the flower dissection could be a 20-30 minute activity. Proficiency 3 can also move students from simple flowers that are similar to those shown in the text to more complex flowers in nature that show variation on the basic plan (i.e. petals form a tube rather than their leaf-like form, some parts are lacking, etc.). Together, this intermediate proficiency is supported and built by earlier learning experiences; one that builds their vocabulary (discerning flower parts and matching terms), and one that builds their visual literacy (by watching the instructor point out the parts).

Many course designers tend to overlook attitude proficiencies and the accompanying learning experiences that develop them. They often see attitudes as by-products of other experiences. However, in our design model, all proficiencies need to be intentionally developed and supported through learning experiences. In our example, Proficiency 4 requires that students become aware of and open to the fact that plants in nature do not always conform to the figures and photos in the field guide. Students without this attitude often become frustrated with the process. Knowing this is an important proficiency, the instructor can make students aware by pointing out several examples of how plants in nature vary from the prototype shown in the field guide.

Also note that this example shows a gradual strategy to move students from simple, more concrete tasks in the early phase to more complex tasks in the middle and late phases of the goal accomplishment. The fifth and final proficiency pulls together all the previous proficiencies with a synthesis type of authentic learning experience. Here, students begin to become proficient with using a field guide and making decisions about the flower and leaf

characteristics of their unknown plant. Notice that the final proficiency is similar to the learning goal itself and represents a critical step in the learning process.

Now that we have modeled the task, it is your turn to match the learning experiences you listed in Workbox 7.2 (or add others) with the sequence of learning proficiencies you listed in the last workbox in Chapter 6 (6.4). Also pull forward the learning goal that the proficiencies support. The challenge is to structure the learning so that students receive adequate opportunity to build their proficiency through practice. It is especially effective to build and then reinforce the same proficiency through a variety of learning experiences (Ambrose et al., 2010).

Your deliverable at this step is to complete Workbox 7.3 by restating the learning goal you are working on from Chapter 4, and then pulling your proficiencies into the first column from Chapter 6. Then select appropriate supporting learning experiences from Workbox 7.2 into the right column. Do not be constrained by the table's rows, simply add rows as you see fit. Also merge rows in the table when more than one learning experience aligns and supports a particular proficiency. Upload this information to the website as shown by the symbol in the workbox.

Workbox 7.3 Align Learning Goal to Proficiencies to Learning Experiences

Learning Goal:

Sequence of Proficiencies	**Learning Experience**

Step 4: Evaluate the Sufficiency of your Learning Experiences

Throughout the design process we ask you to stop and consider a few questions about the work you have accomplished. Take a moment to look at the learning experiences you have assembled in Workbox 7.3. Ask yourself a very important question:

*Is this collection of learning experiences **sufficient** to accomplish the various proficiencies?*

If you are confident that the answer is yes, then you are ready to proceed; if the answer is no, then this is the time to add additional experiences. It is better to do this now than find out later through formative assessments that your list was incomplete and left students unprepared for success.

Preparation for the Next Step: Formative Assessment

As we all know, building learning proficiencies and attaining learning goals is a gradual process; students' thinking skills evolve slowly, with practice. Plus there is a wide range of time periods over which different students reach their own peak of proficiency. We see once again the ever-present influence of student learning factors on all phases of the course design process. Be sure to look back at all that you have accomplished with your course design and make sure there is alignment from the student learning factors you identified all the way along the learning pathway to the learning experiences that students will encounter.

Finally, it's important to note that every student will have a different learning experience from a particular activity. Since the experience is internal to the learner, it can only be inferred from the learner's performance or behavior (Mayer 2003). As you lead your students along the path to the accomplishment of the learning goal, it's important to make sure that students have mastered the proficiencies in the learning sequence. This is why formative assessment is so critical to the design process and will be tackled in the next chapter.

PAUSE TO GIVE FEEDBACK

Before proceeding to the next chapter, please take a few minutes to review what members of the on-line community have shared as their learning experiences. Do you see a strong connection between the learning experiences listed and the proficiencies they are designed to build? Are there other learning experiences that you could suggest that you think would work even better? Please share your thoughts with your peers in the online community. Your contribution to the group enhances the power of the online community. Contributions and suggestions from the online community can also help inform your course design.

Chapter 8

Staying on Track: Formative Assessment

In this final chapter of Part II, we turn our attention to the last element of our course design process: formative assessment. In contrast to summative assessment (Chapter 5), which gathers information about your students' learning at the *end* of your course, ***formative assessment*** gathers information about student learning *during* your course. At first, this difference in timing may appear relatively unimportant, but it has important implications for the purpose of the assessment activity itself (Palomba & Banta, 1999). As you saw in Chapter 5, the primary purpose of summative assessment is *evaluative*, allowing you to determine the extent to which you and your students were ultimately successful in reaching your final destination, your course goals. In contrast, the primary purpose of formative assessment is *improvement*; you'll be using formative assessment as your students are moving along the pathway to your goals to determine if they are staying on track. Using the language of our course design process, your focus will be examining the extent to which your learning experiences (Chapter 7) are successful in helping your students acquire the proficiencies (Chapter 6) they need to be successful. If students are indeed acquiring the needed proficiencies as you expect, then you can continue with your course's plan. If, on the other hand, your students are not acquiring the necessary proficiencies as you expect, then some sort of adjustment must occur on the part of both you and your students (e.g., additional practice, further concept development, exploration of more and different examples) would be appropriate.[17]

Unfortunately, we've found that effective formative assessment is one of the most underappreciated practices in higher education. Too often, faculty make assumptions about what their students are learning in their courses without really having any compelling evidence

[17] In our experience, many faculty assume that students are the only ones that need to adjust what they are doing in the face of poor performance on a formative assessment. Often, that comes in the form of asking (or telling) the students to 'work harder' or 'study more.' Working harder or studying more can be interpreted by students as merely spending more time with the material. This may or may not be an effective strategy to improve student learning (Treisman, 1992).

to support them. For instance, some faculty adopt a very instruction-centered mindset, falsely equating the quality of their own teaching performance with the quality of their students' learning. We see this when our colleagues say something akin to "Students really learned a lot today. My presentation was very clear and well-organized." It is only later, when students may do poorly on an exam, final project, or written paper that they discover that students aren't really "getting it" as they had originally thought. Of course, by that time, it is too late for them (or their students, for that matter) to do anything to make needed adjustments (see Angelo & Cross, 1993 for a similar argument).

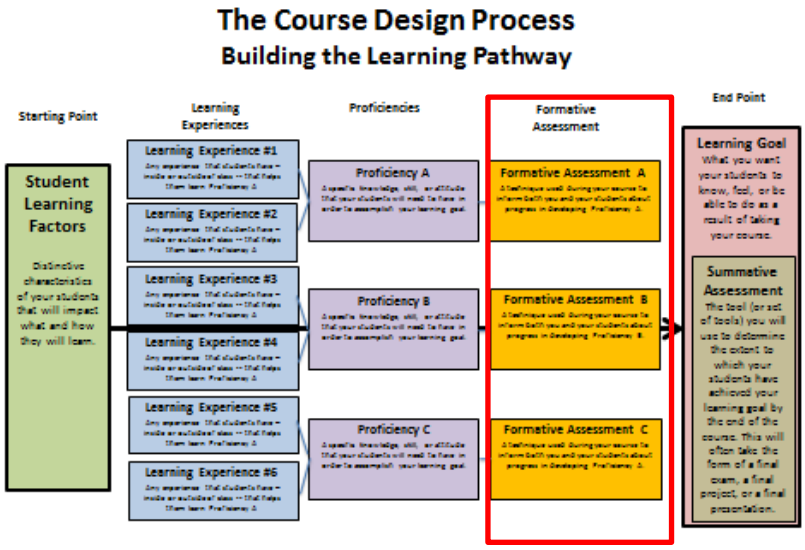
We've also seen faculty try to focus on the quality of student learning, but do so in a way that does not take full advantage of the power of formative assessment. For instance, they may notice one or more students nodding approvingly during a classroom lecture, or they may notice that a particular student is asking especially insightful questions in class. In such cases, we've seen faculty use this information to infer that their student learning is progressing as it should. However, they fail to recognize that the "data" they are basing that inference on are very limited – certainly too limited to be convincing. What these colleagues need, we insist, are more systematic ways to frequently gather evidence about the quality of their students' learning[18], to include from students who are not nodding approvingly or asking insightful questions in class. It is only then that more reasoned judgments can be made about where learning is really happening and where it needs to be improved.

Principle 9. Formative assessment allows both you and your students to monitor progress along the pathway and make necessary adjustments to improve student learning.

[18] At our Course Design Retreat, some of our own faculty colleagues bristle at the notion of such frequent use of formative assessment. Their most significant concern is one of time; they just don't sense that they have enough time to check in with their students for each and every one of the proficiencies in their course. Furthermore, they claim that any time spent engaging in formative assessment takes away from time that could be spent moving on to more complex material in the course. In response, we note that, while engaging in formative assessment does take at least some time to perform, the benefit of doing so easily justifies the time investment required. In fact, we've found that regularly performing formative assessment saves a lot of headaches in the long run, simply because it will help you and your students identify shortcomings while there is still enough time to make improvements. Furthermore, as you will see, many of the formative assessment techniques that can provide rich information about your students' learning can be done relatively quickly and are surprisingly easy to implement within the flow of your course.

The goal of this chapter is to help you integrate formative assessment into your course design. We begin by sharing some ideas about how you can do this well. Later, we will ask you to incorporate formative assessment into your course design by having you work through three distinct steps. First, in an exercise reminiscent of the one you performed in Chapter 7, you will brainstorm a list of possible formative assessment techniques for your course. Second, you will match one or more of those formative assessment techniques to each of the proficiencies you identified in Chapter 6. Finally, you will develop a specific plan for incorporating your formative assessment strategies within the flow of your course. Your work in this chapter will culminate in Workbox 8.3 (see page ##), the contents of which we will ultimately ask you to upload to our on-line website.

Done well, your work in this chapter will fit seamlessly with the other elements of your course design. Recall that, in Chapter 6, you identified the proficiencies that are both necessary and collectively sufficient for your students to achieve your learning goal. Then, in Chapter 7, you identified the learning experiences that your students would have – both inside and outside of class – to develop those proficiencies. In this chapter, the focus will be on finding out the extent to which those learning experiences are indeed effective in developing the needed proficiencies. As a result, we will ask you to identify one or more formative assessment tools for each and every proficiency you identified in Chapter 6. Your work in this chapter will represent the final entries in your interactive course poster (see Figure 8.1).



Throughout the chapter, we will again be walking you through the work you need to do by modeling the progression through the step-by-step process. We will ask you to consider the example of an English professor teaching a course on Shakespearian Literature. When planning her course, this professor identified one of her course goals (Chapter 5) as having her students be able to analyze a variety of Shakespearian sonnets. In identifying the learning proficiencies (Chapter 6) needed to accomplish that goal, she noted that students would need to be able to identify the structure of a Shakespearian sonnet: fourteen lines of iambic pentameter with a predictable rhyming scheme. To help students learn this proficiency, she planned to have students listen to a brief podcast of sonnets being read out loud, as well as to listen to a mini-lecture explaining the structure of sonnets. Based on her best judgment, these learning experiences (Chapter 7) should be sufficient to help her students achieve the desired proficiency. What the professor will be producing is a plan for using formative assessment to inform both her and her students about the degree to which those learning experiences are actually effective in developing the needed proficiency.

A Sample Course on Shakespearean Literature

Learning Goal: Analyze a variety of Shakespearian sonnets

An Early Proficiency: Identify the structure of a Shakespearian sonnet

Learning Experiences Designed to Develop This Proficiency:

- Students will listen to a podcast of sonnets being read out loud
- Students will listen to a mini-lecture explaining the structure of sonnets.

Characteristics of Effective Formative Assessment

Before moving directly to the step-by-step process of incorporating formative assessment into your course, many faculty find it helpful to learn a bit more about what they are striving for in this chapter. As a result, in this section, we will outline four characteristics that make formative assessment particularly effective. As you build formative assessment techniques for your own course, we will ask you to do so in a way that is consistent with these four characteristics.

Characteristic 1. Make Student Learning Visible

The most basic key to successful formative assessment is to make visible the learning of your students. For better or worse, nearly all of what happens in the minds of your students is invisible to you as a faculty member. In order to gain access to your students' thinking, they have to do something that reveals what they are learning. Sometimes, this can be done when students complete some sort of work (e.g., small quizzes, homework assignments, etc.) for your course. Other times, it can be done when students are actively engaged in some sort of activity during class time itself (Angelo & Cross, 1993; Barkley, 2009). Regardless, the idea is to have them make their learning visible, so that both you and your students can be better informed about the quality of their learning.

Consider, for example, how our English professor could assess the extent to which students can successfully identify the structure of a Shakespearian sonnet. One approach would be to lead an in-class exercise in which she gives her students a collection of poems and asks students to identify which ones have the characteristics of Shakespearian sonnets and which ones do not. Further, students could be asked to identify what is missing from those poems that are not consistent with the structure of a sonnet (e.g., a poem may be written with only 12 lines, may be written in a different meter, or may have a different pattern of rhyming). If students can complete this exercise successfully, then the professor would have evidence that students really had acquired the desired proficiency. However, if students are unable to demonstrate proficiency in this exercise, then an additional learning experience may be needed. The key starting point, however, is that her students' learning was no longer hidden from view – the in-class exercise made their learning visible.

Characteristic 2. Assess the Learning of All Students

Effective formative assessment is also inclusive; that is, it collects information about the learning of *all* students, not just some. This is important because, ultimately, your obligation as a teacher is to promote the learning of all of your students, not just those who are most vocal

or outspoken. Therefore, it is necessary to reveal the learning of as broad array of those students as you possibly can.

Unfortunately, much of the formative assessment we see faculty members use in their classrooms is inconsistent with the notion of inclusiveness. For instance, many of our colleagues rely on some version of Socratic questioning, such that their classroom is characterized by frequent, targeted questioning of individual students. This method certainly makes for a lively classroom environment, and it can even be an effective way for the instructor to explore the learning of individual students in the class. However, it doesn't say anything at all about those students who remain silent. Are they learning as well? Unfortunately, it is impossible for our colleagues to know.

To be more inclusive, we recommend that faculty members find a way to reveal the learning of all their students. For instance, we would recommend that our Shakespearian Literature professor give the collection of poems to all of her students and ask all of them to indicate whether each poem is a sonnet or not. Again, this could be done in the form of a quiz or assignment that students complete for a grade. However, it is also possible that it could be done in a less formal activity (perhaps where students "vote" on each poem by holding up a white sheet of paper if they think it is sonnet and a colored sheet of paper if they think it is not). Regardless, it ought to be something that reveals the learning of all students.

Fortunately, technology is making it increasingly easy to administer these sorts of in-class assessments and to compile the results quickly. Rather than having students hold up sheets of colored paper, for instance, many faculty members rely on some form of Student Response System (i.e., clickers), where students have a small device that allows them to answer questions posed during class time. One of the most significant benefits of this technology is that it is possible to compile a summary of students' responses in real time. Therefore, if students do have some fundamental misconception (e.g., about the structure of Shakespearian sonnets), it is very easy for the instructor to identify that misconception immediately. This increases the

instructor's ability to react if/when she learns that there are areas where students may need additional help.

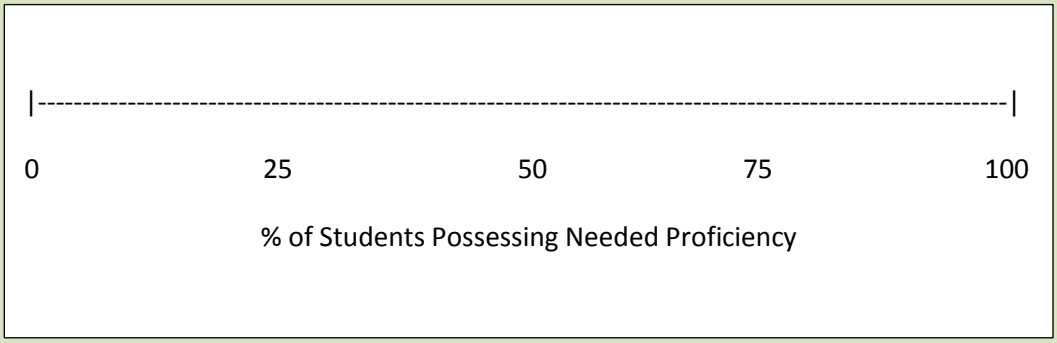
Characteristic 3. Use What You Learn For Improvement

Of course, merely administering a formative assessment tool and gathering information about your students' learning is not sufficient. The power of incorporating formative assessment into your course comes from using the results of a formative assessment to improve student learning. For example, imagine that our English professor conducts her in-class exercise, only to discover that her students perform poorly. It is not enough for her to merely take note of their poor performance and then move on to the next topic in her course. Instead, she should take this opportunity to diagnose the specific area (or areas) where students are having difficulty and then provide the additional learning experiences that are necessary to improve her students' learning. If the proficiency of describing the structure of a Shakespearian sonnet is really necessary for students to have in order to succeed, then it would be foolhardy to do anything less.

As you can probably see, taking the results of your formative assessments seriously will almost certainly have implications for the flow or rhythm of your course. As a result, a certain amount of flexibility is going to be required in your course design. When you outlined your sequence of learning experiences in Chapter 7, you did so on the basis of educated guesses about what students would require in order to develop the desired proficiencies. If you have sufficient experience teaching your course, chances are good that your educated guesses are fairly accurate. However, in some cases, you may very well have either overestimated or underestimated what students would need to achieve your proficiencies. Using formative assessment can help you identify those spots where your initial estimates were off. In those cases, your students will either develop the proficiencies more quickly (and with less assistance) than you thought would be necessary or more slowly (requiring more assistance) than you anticipated. It is then up to you to make the necessary adjustments to your course, in real time, to better serve the learning needs of your particular students.

The need to make adjustments based on how your students are progressing further highlights the importance of understanding your student learning factors. The more you can find out about the particular group of students in your course, the more informed your estimates will be about what learning experiences will be needed to accomplish the proficiencies in your course. Careful consideration of student learning factors will also reveal the diversity within your student population as well. Responding to the needs of a relatively heterogeneous group of students will obviously be more challenging than responding to the needs of a more homogeneous population. The box below, labeled "A Thought Question to Consider," presents one particularly challenging situation that our faculty wrestle with in teaching their courses.

A Thought Question To Consider



If you administer a formative assessment in your course and 100% of your students demonstrate that they possess the proficiency needed to succeed, we would suggest that you should feel comfortable moving on to more complex material in your course.

In contrast, if you administer a formative assessment in your course and 0% of your students demonstrate that they possess the proficiency needed to succeed, we would suggest that you should NOT feel comfortable moving on to more complex material in your course.

What happens when the percentage of students demonstrating proficiency lies between 0 and 100%?

What do you see as your threshold for moving on in your course? That is, what percentage of your students would need to demonstrate that they possess a given proficiency in order to make you feel comfortable progressing to more complex material in your course? If your answer is "It depends," what are the factors it depends on?

Characteristic 4. Ensure That Students Get Informative, Timely Feedback

Finally, it is worth noting that using formative assessment has benefits for more than just you as the instructor. Done effectively, formative assessment can also serve as a valuable mechanism for providing feedback to your students. Hattie and Timperley (2007) define feedback as "information provided by an agent (e.g., teacher, peer, book, parent, self, experience) regarding one's performance or understanding." By making students' learning visible, formative assessment provides students with the opportunity to receive feedback on that learning. Specifically, they can see what they are doing well and what they are doing poorly, as well as to be guided toward areas of your course that may require additional time, effort, and study.

To achieve the maximum benefit from feedback opportunities, however, it will be important for you to design your course in such a way that the kind of feedback students receive is effective in supporting their learning. For example, one of the key features of effective feedback is that it provides students with meaningful information about what they are doing correctly, what they are doing wrong, and what they can do to improve (Ambrose et al., 2010; Evans, 2013; Gibbs & Simpson, 2004; Hattie & Timperley, 2007). This sounds quite simple, but we have found that much of the feedback that students receive is not sufficiently informative to really help them improve their learning. For example, one of our STEM colleagues assigns his students to complete a series of on-line homework problems at the end of each class period, and the on-line system he uses provides students with automated feedback about which questions they answer correctly and which ones they don't. However, when students answer incorrectly, the automated system merely indicates that they've done something wrong; it does nothing to inform students about what (specifically) they've done wrong or what they need to do to improve. As a result, his students learn more slowly than they might if the automated feedback were more informative.

Even in situations where feedback on formative assessment tasks is not automated, one must be careful to ensure that feedback provides students with enough information to improve their learning. This is especially true if your formative assessments come in the form of graded

assignments. If students only receive a “C” grade on a writing task or a “75%” on a set of homework problems, they don’t really have sufficient information to guide their learning in the future. To be more useful, those grades should be accompanied by information that more clearly shows the gap between the current level of performance and where they ultimately need to be (Evans, 2013; Hattie & Timperley, 2007). One way to do this is by introducing a grading rubric(s) that you could ultimately use for the summative assessment relatively early in the class and give students practice at using it to see how well they are learning each of your proficiencies. Doing so will help your students better understand the criteria you will ultimately use to evaluate their success and can also show students where there work stands up relative to each of those criteria (Stevens & Levi, 2012).

A second very important characteristic of effective feedback has to do with timing. In general, feedback received quickly is more effective at guiding student learning than feedback that is delayed (Gibbs & Simpson, 2004). The reason is simply that prompt feedback allows students to take corrective actions while their original learning display is relatively fresh in their minds. If, for example, students need to wait for an extended period of time for feedback on their work, it is likely that their thoughts will have moved on to other things by the time the feedback is actually received. As a result, the benefit of the feedback will be greatly reduced.

Gibbs & Simpson (2004) astutely note that there is a bit of a tension between the two characteristics of feedback we have listed here. On the one hand, student learning is best supported if the feedback students receive is informative, guiding them toward what they need to do to improve. Of course, providing students with that level of feedback often takes a significant amount of time, meaning that students may not necessarily receive that level of feedback very quickly. On the other hand, of course, faculty aiming to provide quicker feedback (such as our STEM colleague using the automated approach) may end up providing feedback that lacks a sufficient level of information to be maximally helpful.

This tension is indeed a real one, and it is one that we see our very best faculty colleagues wrestling with on a near daily basis. While there are no simple solutions, there are three approaches that we've seen many of our colleagues use successfully. First, many faculty report success in creating formative assessment tasks that are not graded (or at least not all graded). Part of the struggle that faculty members face in reviewing student work is in assigning grades, which aren't really necessary in order to provide students with feedback about their progress. In fact, Black and William (1998) even suggest that students may benefit more from feedback if it is not accompanied by a grade, simply because students who receive grades are so preoccupied with those grades that the information value of other feedback may be overwhelmed.

Another strategy that many of our colleagues use is to provide feedback in the aggregate, rather than at the individual level. For instance, several of our colleagues ask students to display some aspect of their learning and then turn in that display – often in written form – at the end of a given class period. Prior to the next class, the professor reviews what students submitted and then summarizes the strengths and weaknesses of what she saw at the beginning of the following class. This aggregated feedback may not be as richly informative as more specific feedback provided to each individual student, but the cost of presenting it in aggregate is likely offset by the timeliness in which the feedback can be provided.

A final strategy to keep in mind is that feedback does not necessarily need to come from you in order to be effective. For example, given the right conditions, students are able to give quite meaningful feedback to each other. For instance, students could be asked to review one another's writing assignments with a particular eye toward identifying one another's thesis statements, topic sentences, particularly clear or confusing arguments, etc. (Nilson, 2003). By using a peer feedback approach, students are able to receive the benefits of informative feedback, and – because the workload associated with reviewing the writing assignments is

distributed across multiple people – they are also able to receive that feedback relatively quickly.[19]

With these strategies in mind, let's return to the example of our Shakespearian Literature professor. In an effort to provide informative, timely feedback to her students, she may ask her students to turn in written responses to the collection of poems at the end of a given class period, in the form of an ungraded quiz. Then, prior to the next class, she could review students' responses with an eye for which attributes of Shakespearian sonnets students seem to understand and which ones they don't. At the beginning of the next class session, she could then highlight those areas and follow-up with supplementary instruction if it is needed. Providing students with information about what they can do to improve, and doing so in a timely manner, will give her students the best chance to learn the structure of a Shakespearian sonnet.

Summary: Characteristics of Effective Formative Assessment

1. Effective formative assessment makes learning visible.
2. Effective formative assessment is inclusive, collecting information from all students.
3. The results of effective formative assessment are used to improve learning.
4. Effective formative assessment allows students to receive informative, timely feedback.

Building Formative Assessment Into Your Own Course

Step 1 – Brainstorm Possible Formative Assessment Techniques

To begin your work in this chapter, we ask you to brainstorm a list of formative assessment techniques. To assist in your brainstorming, we suggest that you refer to Angelo and Cross' (1993) landmark book, *Classroom Assessment Techniques*, as well as any of several other excellent collections of teaching tips (e.g., Davis, 2009; Svinicki & McKeachie, 2013). In addition, we have seeded your brainstorming with the entries included in the Step 1 example below.

[19] Often, students will need some guidance from you on how to effectively offer feedback so that they are not offering feedback on how they feel but, rather, applying the appropriate criteria.

Step 1 Example: Brainstorm Possible Formative Assessment Techniques			
Name of Technique	**How does this technique make learning visible?**	**Example of how technique is put into action**	**Reference for more information**
Just-in-Time Teaching	Prior to a lesson a particular topic, students respond to an open-ended question related to that topic and submit their answers to an on-line server.	Prior to a biology lesson on cloning, I ask students to complete the assigned reading and then answer a series questions related to the topic. (e.g., Dolly is clone of a sheep born six years earlier. Does Dolly have parents? Why or why not?) I then review students' answers prior to the lesson, and I do my best to weave students' responses into the day's activities.	Novak, G., & Patterson, E. (2010). An introduction to Just-in-Time Teaching (JiTT). In S. Simkins and M.H. Maier (eds.), *Just-in-Time Teaching* (pp. 3-23). Sterling, VA: Stylus Publishing.
Minute Paper	Students write a short response to a question posed at the end of a class session.	At the end of an introductory lesson on the civil war, I ask my students to summarize what they've learned during that day's class. After class, I read students' responses to determine if they have picked up on the most important points.	Angelo, T.A. & Cross, K.P. (1993). *Classroom assessment techniques: A handbook for college teachers*. San Francisco: Jossey-Bass.
Student Response Systems (i.e., Clickers)	During a class session, students answer a question using an electronic student response system.	In my class on Constitutional Law, I know that students often get confused about the scope of the Bill of Rights. So, halfway through the lesson, I pause and ask them to answer a Clicker question. The software automatically compiles a frequency distribution of student responses, so I can immediately see what percentage of my class is following me and what	Duncan, D. (2005). *Clickers in the classroom: How to enhance science teaching using classroom response systems*. San Francisco, CA: Pearson Education.

		percentage isn't.	
Ungraded Quiz	Following a lecture (or other learning experience), students are asked to complete a quiz over the course material. While not submitted for a grade, the quiz is still useful as a way to check students' learning.	In my Shakespearean Literature class, I give students a series of poems, and they have to use what they know about the structure of sonnets to identify which ones are sonnets and which ones are not.	Bonwell, C.C. (1996). Enhancing the lecture: Revitalizing the traditional format. *New Directions for Teaching and Learning*, *67*, 31-44.

Using the entries in the Step 1 example as your guide, it is now your turn to brainstorm additional formative assessment techniques. Remember, these techniques can be anything that students do to make their learning visible, either in-class (as in the ungraded quiz used in the Shakespearian Literature class) or outside-of-class (as in the preclass work in Just-in-Time Teaching). Also be aware that some of the very best formative assessment techniques are natural outgrowths of the learning experiences you have already generated. For instance, the Shakespearian Literature professor may give students the categorization task, in part, to help them learn the distinction between those poems that are sonnets and those that are not. So this task may be a valuable learning experience in its own right. However, by being attentive to the level of student performance on the task, she can also use the task as a valuable source of formative assessment. Similarly, we would encourage you to consult the list of learning experiences that you generated in Chapter 7 to see if you can also use them as a chance to collect information about the status of your students' learning.

Workbox 8.1 Brainstorm Formative Assessment Techniques		
Name of Technique	**How Learning is Made Visible**	**Example of how I would put this technique into action in my course**

If you would like to add the information from your Workbox 8.1 to the wiki database of formative assessment techniques, the online community appreciates it. Similar to the Step 1 Example, please include references that allow fellow members of the community to seek additional information, if appropriate..

Step 2 – Match Formative Assessment Techniques to Proficiencies

Now that you have brainstormed a list of formative assessment techniques, it is time to narrow down your list, choosing those specific techniques that are most appropriate for each of the proficiencies you identified in Chapter 6. This is very similar to the work you did in Chapter 7, where you matched learning experiences to proficiencies. By ensuring that there is at least one formative assessment technique matched with each and every one of your proficiencies, you can be sure that your design allows for the benefits of formative assessment at each step of your course. The Step 2 example below provides an example of how the Shakespearian Literature professor would complete this step.

Step 2 Example: Match Formative Assessment Techniques to Proficiencies **Learning Goal: Analyze a variety of Shakespearian sonnets**		
Proficiency	**Learning Experience(s)**	**Formative Assessment Technique(s)**
Describe the structure of a Shakespearian sonnet	• Students listen to a podcast of sonnets being read out loud • Students listen to a mini-lecture explaining the structure of sonnets.	Ungraded quiz. I will show students a series of poems and ask them to identify whether each one is written in the structure of a sonnet. For those that are not, I will ask them to describe what is missing.

Given the myriad formative assessment techniques that are possible, it may not be obvious which technique is most appropriate to match with each of your proficiencies. To assist you in making this choice, remember that the purpose of formative assessment is to provide you and your students with good information about their development of the proficiencies. Also, be aware that many formative assessment techniques will be rather natural outgrowths of the

learning experiences you have already paired with each proficiency. For instance, the in-class exercise used by the professor of Shakespearian Literature could easily be inserted immediately after the mini-lecture that she is already planning to give on this topic in class.

Of course, any formative assessment technique you choose will also need to fit within the practical considerations of your particular course / institution. So, while it might be ideal to regularly provide one-on-one verbal feedback to each of the students in your course, it may be impossible to do if you have more than just a few students. Therefore, only include those formative assessment techniques in Workbox 8.2 that you can realistically incorporate into your course, given the constraints of your particular situation.

As with all elements of your course design, we encourage you to discuss your choices in Workbox 8.2 with your peers. At our Course Design Retreat, these discussions happen in face-to-face meetings between faculty members. We urge users of this book to seek out similar interactions in our on-line forum and/or in face-to-face meetings with peers on their home campuses.

Workbox 8.2 Match Formative Assessment Techniques to Proficiencies

Learning Goal:

Proficiency	**Learning Experience(s)**	**Formative Assessment Technique(s)**

Step 3 – Incorporate Formative Assessment Into Your Course

Once you have identified appropriate formative assessment techniques and matched them with their corresponding proficiencies, it is time to incorporate them into the flow of your course. Specifically, your task is to plan your use of each technique so that you are proceeding in a way that is consistent with the characteristics of effective formative assessment. For each of your chosen techniques, this means that you will need to be able to answer each of the following questions:

- How does this technique make student learning visible?
- Is this technique inclusive?
- How will you use the results of the formative assessment to improve student learning?

- How will students receive informative, timely feedback?

The Step 3 example below shows an example of how our Shakespearian Literature professor would answer each of these questions for her course.

Step 3 Example: Incorporate Formative Assessment Into Your Course **Learning Goal: Analyze a variety of Shakespearian sonnets**					
Proficiency	**Formative Assessment Technique(s)**	**How does this technique make learning visible?**	**Is this technique inclusive?**	**How will you use the results of the formative assessment?**	**How will students receive informative, timely feedback?**
Describe the structure of a Shakespearian sonnet	Ungraded quiz. I will show students a series of poems and ask them to identify whether each one is written in the structure of a sonnet. For those that are not, I will ask them to describe what is missing.	For each poem, students will write their responses on a sheet of paper, which they will turn in at the end of class	Yes. All students will be asked to turn in their written responses.	I will examine the pattern of right and wrong answers for any meaningful patterns. During the next class period, I will review those areas where students had difficulties.	I will debrief each of the correct answers in class, following the exercise. Students will also receive personalized feedback on their written submission.

Now it is your turn. For each the formative assessment techniques you identified in Workbox 8.2, follow the example of our Shakespearian Literature professor and write your answers to these questions in Workbox 8.3 below. Because this is the final workbox for this chapter, we

also ask you to upload your responses to our interactive website. Your responses will become the final piece of your interactive course poster.

Workbox 8.3 Incorporate Formative Assessment In Your Course

Learning Goal:

Proficiency	Formative Assessment Technique(s)	How does this technique make learning visible?	Is this technique inclusive?	How will you use the results of the formative assessment?	How will students receive informative, timely feedback?

PAUSE TO GIVE FEEDBACK

Before proceeding to the next chapter, please take a few minutes to review what members of the on-line community have shared as their methods of formative assessment, as listed in Workbox 8.3. Do they have some means of assessing each of their learning proficiencies? Are you satisfied that your peers have built in techniques that make learning visible, are inclusive, can be used for improvement, and provide students with meaningful feedback? What recommendations, if any, would you make for improvement? Please use this opportunity to provide feedback to members of the on-line community. Your contribution to the group enhances the power of the online community. Contributions and suggestions from the online community can also help inform your course design.

Part III – Pulling the Elements Together

Chapter 9

Visualizing the Learning Pathway: The Course Poster

Congratulations on fully constructing the learning pathway for one of your course's goals! You have now worked through each of the elements of the learning-focused course design process. In this chapter, your task will be to pull together all of the course design pieces you've worked on to this point and represent them in a visual display. This will be done in the form of a Course Design Poster, using the format shown in Figure 9.1. Creating this poster will help you (and others) to see the logic of the course you have worked so hard to design.

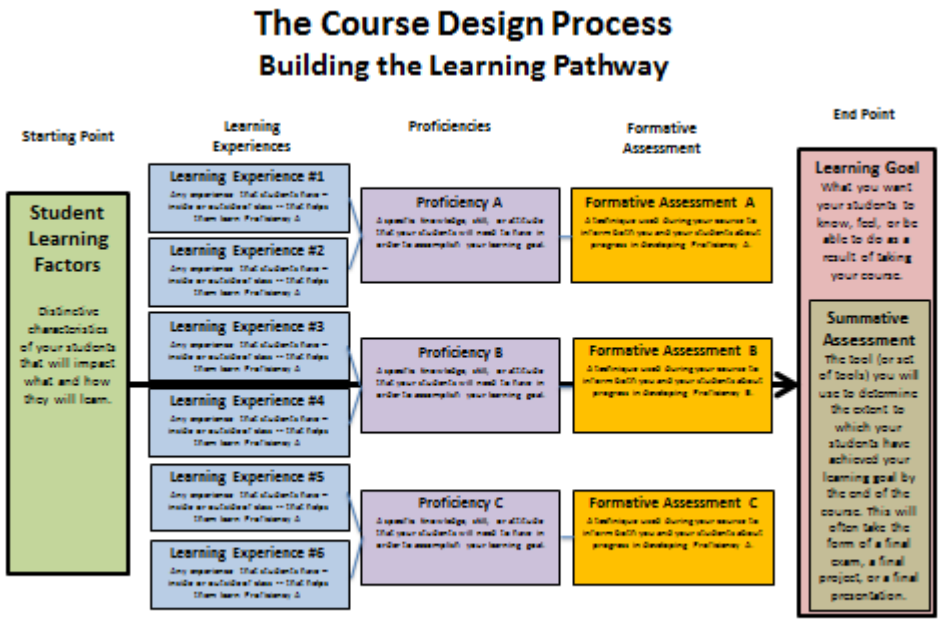


Figure 9.1 – A Template for Creating a Visual Representation of Your Course

At our Course Design Retreat, our faculty participants create posters similar to the one shown in Figure 9.1, and we dedicate several hours on the last day of the retreat to allow participants to present their posters to one another in a conference-style setting. Obviously, the format of

this book prevents us from recreating that poster session exactly. However, we are still asking you to create a poster for your course, and we encourage you to share it with colleagues on your home campus and in the on-line community. Doing so can be very helpful as you review the work you've done and begin thinking about the implementation of your course design.

In our own work with faculty members, we have discovered at least three significant benefits associated with developing a course poster and sharing it with others. First, we have found that creating a course poster can be a deeply reflective exercise for course designers themselves. By progressing to this point in the course design process, you have completed a lot of difficult work, and now is a terrific time to sit back and celebrate the progress that you have made. We have also found that engaging in this process helps course designers clarify their thinking even more than they may have already. Generally speaking, faculty members are not in the habit of representing their course design visually and then presenting it to colleagues and students. In order to make such a presentation clear, concise, and logical, faculty members need to be crystal clear about the function and role of each element of their course design, as well as how the different elements interact with one another. Only by having a deep clarity of thought will you be able to express the details of your course design clearly to others.

A second benefit of creating a course poster and presenting it to others is that it allows your peers to review your work and further guide your thinking as well. Remember that the course design process is most effective if it is both interactive and iterative, and we've intentionally designed the process so that you frequently have a chance to present your ideas, get feedback from your peers, and then refine your thinking accordingly. Creating and presenting this visual display is just the next step in the process. Obviously, you are welcome to share your work with colleagues on your home campus, but we encourage you to share it with peers on our supplementary website as well. This will allow you to receive feedback from us (i.e., the authors), as well as other users of the book – these are the people who are most familiar with the process you have been using and the challenges you have likely faced.

Finally, we have found that the course poster can be a potentially powerful way for you to communicate the details of your course design to your students. All too often, faculty members

teach courses without making any overt attempt to share the logic of their course design with their students. As a result, students are often unsure of why they are taking particular courses, what those courses are supposed to help them do, or why a course's assignments or tests are set up the way they are. To combat this problem, we urge you to share the thinking that went into your course design with the students enrolled in your course. Perhaps this could be done as a page in the syllabus (see Chapter 10), or perhaps it could be done in one of the early lessons of the course. Regardless, we have found that students respond very positively if they are clear about the "why's" of your course and if they can see a clear pathway to success (Principle 10).

Principle 10. An effective learning pathway is clear to all.

So that you can achieve the benefits of creating and presenting a course poster, we will ask you both communicate and review the details of your course design. You will need to be attentive to how you represent each of the course design elements you've worked on to this point, and you will also need to pay attention to how you represent the relationships *between* each of those elements. We've written this chapter in an attempt to help you do that. If successful, by the time you reach the end of the chapter, you will have created at least one highly effective poster for your course[20].

One of the important tools we will introduce in this chapter is a rubric we use to evaluate the course posters created by our own faculty colleagues. That rubric, presented in its entirety in Appendix B, includes separate rows for each element of the course design you worked on in Chapters 3-8 and also includes rows for the global characteristics of *transparency, alignment, and integration*, which we originally introduced in Chapter 1. We encourage you to use this rubric, both in reviewing your own work and in providing feedback to your peers. If you are

[20] As you will see later in the chapter, you will ultimately be creating separate course posters for each of the course goals you identified in Chapter 4. As a result, you may use this chapter as an opportunity to create multiple posters, one for each of your course goals.

participating in our on-line community, you will notice that it is the same rubric that we will be using to provide feedback on your work as well.

Step 1: Create Your Poster

The first step we would like you to take in this chapter is simply to create a visual display of your work. We have historically created the display using Microsoft PowerPoint, with each of the course design elements you've worked on to this point fitting onto a single slide. We find PowerPoint to be a useful application, both because nearly all of our colleagues already know how to use it and because, when connected to a digital projector, the software makes it easy for users to display their poster for colleagues and students to see. Obviously, if you are familiar with an alternative application (e.g., Keynote, Prezi) that you think is more suitable for creating your course design poster, you are welcome to use that instead.

If you haven't done so already, please take a moment to notice that one of the features of our supplementary website is an option to automatically create a first draft of your course poster. To do this, log on to the website, at which time you will see a screen similar to the one shown in Figure 9.2:

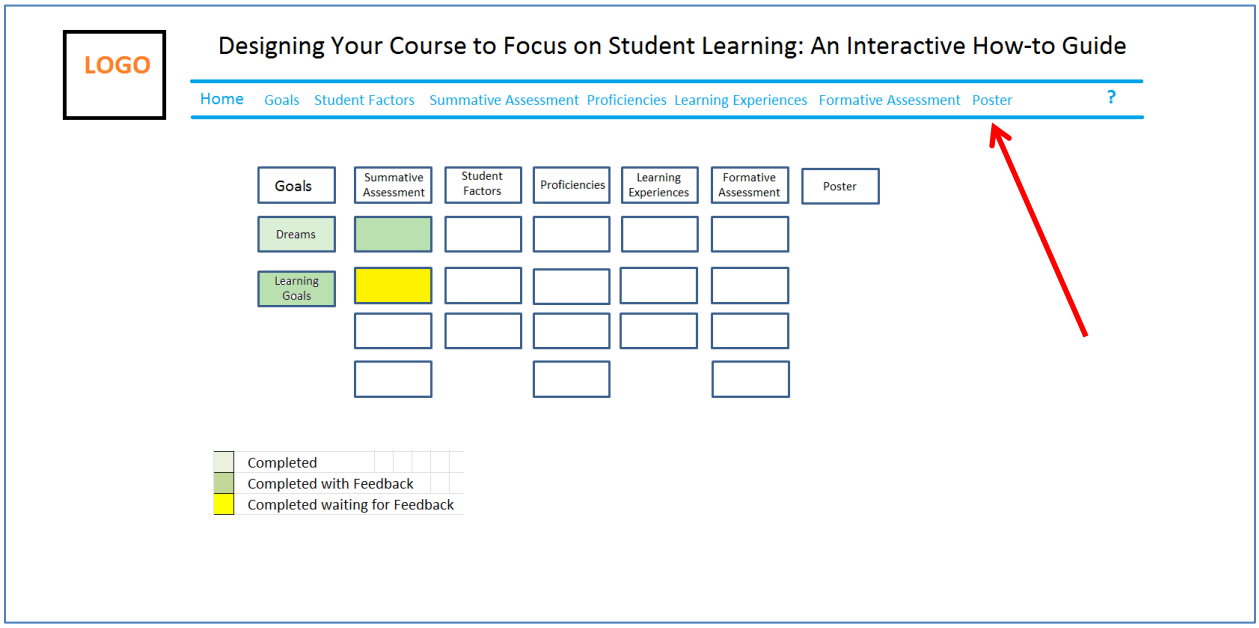


Figure 9.2. Screen Shot From Supplementary Website

By clicking on the link entitled “Poster” (see red arrow in Figure 9.2), a draft poster will automatically be generated for you. If you choose to take advantage of this automated process to generate your own course poster, there are at least three important caveats you should be aware of as you proceed.

1. Be aware that our software will populate your poster using inputs that you have submitted in previous chapters. If you haven’t already uploaded the work you’ve completed in Chapters 3-8, this is another good reason to take the time to do so now.
2. Be aware that the poster you are creating will be focused exclusively on the single course goal that you chose to pull forward at the end of Chapter 4 and that you have been working on in Chapters 5-8. If you wish to make a comparable poster for your other course goals, it will be necessary to repeat the steps in Chapters 5-8 for each additional goal in your course.
3. Finally, be aware that the poster our software will generate will not include an exhaustive collection of the student factors, proficiencies, learning experiences, and formative assessments you have generated in previous chapters. In the past, we have asked faculty colleagues to make posters that were fully comprehensive, and the resulting displays were – quite frankly – so complex that they were not very useful. Since then, we have come to realize that the poster-making process is far more beneficial if you limit your display to those student factors that you’ve denoted as most important, a subset of the most important proficiencies that support your learning goal, and the specific learning experiences and formative assessments that support that subset of proficiencies. Admittedly, the resulting poster will technically be incomplete, but it will do a much better job of illustrating the overall process you have used in designing your course. As authors, we are principally concerned with your mastery of that process. If you use your poster to show your mastery of that process, we are convinced that it will be relatively easy for you to explain the relevance of other student factors, proficiencies, learning experiences, and formative assessments to your colleagues and students.

Step 2: Review Each of the Individual Course Design Elements

Once you've created a rough draft of your poster, the next step is to review each of the individual course design elements that you generated in Chapters 3-8. We recognize that you already dedicated significant time and energy to these elements when you were working through the earlier chapters. However, we also know that it may have been a while since you have reviewed each of them. Many faculty members find it helpful to revisit their thoughts on each one, especially now that they have made it all the way through the entire course design process. This is yet another example of the iterative nature of the course design process.

As a refresher, Table 9.1 lists some of the most important questions you need to be able to answer as you reflect upon the work you have done thus far. Note that these same questions serve as the basis for the "Rubric for Evaluating Course Posters," included in Appendix B.

Table 9.1. Questions to Ask Yourself as You Review Each Element of Your Course Design

Course Design Element	Chapter	Questions You Need To Be Able To Answer

Student Learning Factors	3	• What are the most impactful student learning factors in your course?
		• How will those student learning factors impact students' learning in your course?
		• Have you considered:
		  ○ The distinctive characteristics of students at your institution?
		  ○ Where your students are situated within your institution?
		  ○ Your students' prior experiences?
		  ○ The knowledge, skills, and attitudes that your students are likely to possess?

Learning Goals	4	• How well does your goal operationalize the dream you have for student learning?
		• Have you written your goal in a way that it meets the criteria for:
		  ○ Clarity?
		  ○ Focusing on student performance?
		  ○ Requiring high levels of thinking that is

		developmentally appropriate? ○ Connecting all aspects of the course together? ○ Being worthwhile and significant?
Summative Assessment	5	• Is your summative assessment aligned with your learning goal? That is, are the actions students need to take in order to be successful on your summative assessment the same as the actions needed to demonstrate accomplishment of your learning goal? • Is your summative assessment authentic? • Will your summative assessment yield both a product and the thought process that led to it?
Proficiencies	6	• What knowledge, skills, and attitudes must students have in order to accomplish your stated course goal? • Are the proficiencies on your list both individually necessary and collectively sufficient? • Have you sequenced the proficiencies in a way that is sensible?
Learning Experiences	7	• Have you identified one or more learning experiences for each of your proficiencies? • Are those learning experiences: ○ Aligned? ○ Engaging? ○ Well-supported? ○ Efficient? • Taken together, are you confident that the collection of learning experiences is sufficient to accomplish your stated proficiencies?
Formative Assessment	8	• Have you identified at least one formative assessment mechanism for each of your proficiencies? • How does each technique make student learning visible? • Is each technique inclusive? • How will you use the results of the formative assessment to improve student learning? • How will students receive informative, timely feedback about the quality of their learning?

Step 3: Check for Transparency

Once you have reviewed each of the individual elements of your course design, it is time to examine your poster as a whole. The first (and simplest) characteristic to look for is what we call "transparency." (See Appendix B for the "Rubric for Evaluating Course Posters") In short, a course design is transparent when it is clear to all participants, to include you, your colleagues, and your students. In the context of your course poster, this means that those viewing your poster are able to understand your course design with minimal additional explanation from you.

The best way to gauge the transparency of your course design is to show your poster to someone not directly connected to your course. In fact, at our Course Design Retreat, we find it helpful to have faculty members present their posters to colleagues who are from completely different disciplines. This helps course designers overcome the "curse of knowledge" (Heath and Heath, 2007) simply because it forces them to articulate the details of their course design so clearly that even someone who lacks their disciplinary expertise can understand them.

Our vision for the on-line community is that it will be an especially helpful group for you in checking the transparency of your work. Our community consists of faculty members from a variety of different academic disciplines, and we urge community members to freely share feedback and ideas with one another. An additional benefit, of course, is that the members of the on-line community are already familiar with the terminology of our course design process and the layout of your poster. If / when you choose to share your poster with those outside this community, you will obviously need to be prepared to introduce your audience to the poster layout, as well as to any terminology ("student learning factors," "learning proficiencies," etc.) with which they may not already be familiar.

Step 4: Check for Alignment

The next characteristic to check for is "alignment." (See Appendix B for the "Rubric for Evaluating Course Posters.") Overall, your course is aligned when all of the individual course elements point you and your students in the same direction – toward the desired learning goal.

In our own experience working with faculty colleagues, poor alignment is a very common problem in college course design. Too often, students encounter courses that either lack well-articulated learning goals or that have assessments, proficiencies, or learning experiences that are poorly-aligned with them. This misalignment puts students in a very tenuous – and frustrating – position. For instance, students may work hard to develop a course's stated proficiencies, only to be surprised by a summative assessment that is focused on other things[21]. Misalignment makes the pathway to student success muddled; a better aligned course makes the pathway to student success much clearer.

Because alignment is so important, it should be no surprise that it has been a pervasive theme throughout the design process. In Chapter 5, we asked you to ensure that your summative assessment was aligned with your goal; in Chapter 6, we asked you to create proficiencies that were aligned with your summative assessment; and in Chapters 7 and 8, you generated learning experiences and formative assessments that were aligned with your proficiencies. As a result, one would hope that all of these elements are well-aligned with each other. However, it is still helpful to take the time to double-check to ensure that this is indeed the case over the entirety of your course.

To illustrate the importance of performing an overall alignment check, consider a simple analogy. Imagine a (somewhat poorly-equipped) carpenter who is attempting to use a 12-inch ruler to draw a straight line across an 8-foot wide piece of plywood. Because the ruler is much smaller than the overall width of the board, the carpenter will be forced to draw multiple shorter lines across the board. Using the ruler will make it relatively easy for the carpenter to ensure that each of his 12-inch segments is straight. However, it may be much more difficult for him to ensure that the 12-inch segment on the far left-side of the board falls on a straight line with the 12-inch segment on the far right-side of the board. In other words, drawing a series of straight 12-inch lines may not guarantee that the resulting line is straight across the entirety of the 8-foot piece of wood.

[21] In our faculty development workshops, we typically ask our colleagues if they have ever taken a course where they were on the receiving end of this type of poor alignment. We've yet to encounter a faculty colleague who didn't have at least one frustrating experience of this sort.

Applying this analogy to course design, consider the course poster shown in Figure 9.3. We present this poster as an example of what a professor of plant biology (see Chapter 7) might produce as a result of dutifully working through each of the individual elements of the course design process. Overall, this poster is a relatively good first draft; it is likely to be similar to the kind of work you created if you have worked diligently developing each element of your course thus far. Notice, however, the alignment across the entire poster is less than perfect. Furthermore, examining this poster makes it clear that even the smallest misalignment between the individual elements of the poster can add up to rather significant misalignment overall.

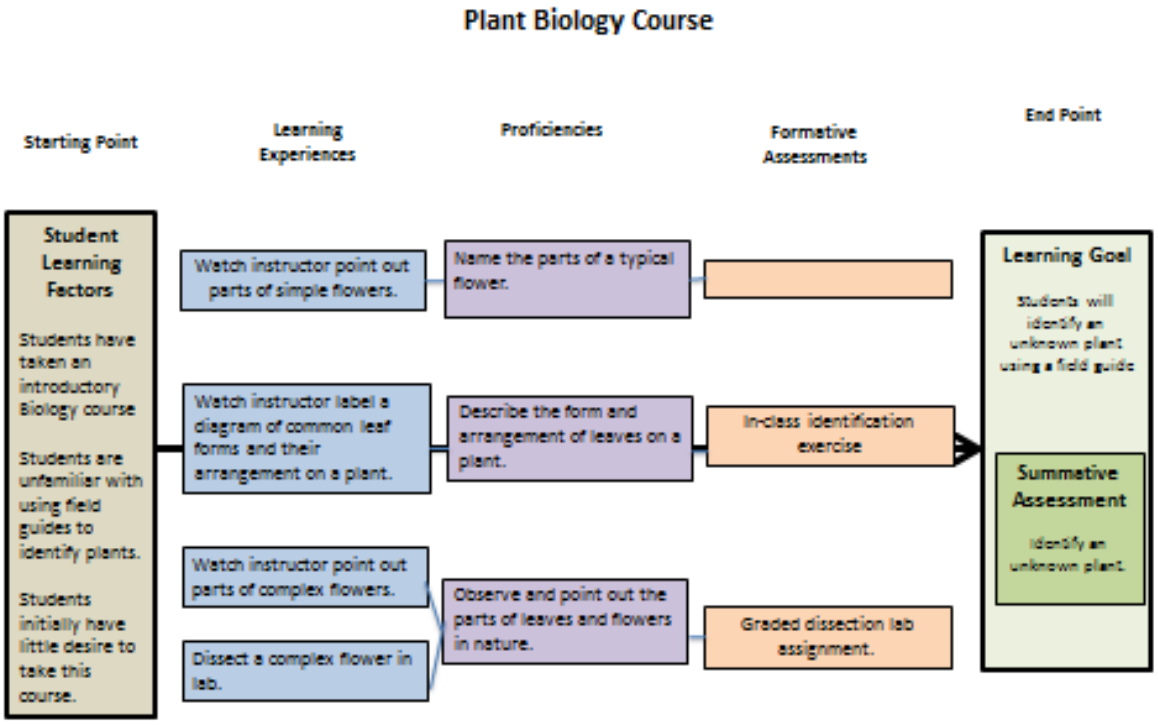


Figure 9.3. An Example of a Poorly Aligned Course.

Take a close look at Figure 9.3, and see if you can identify specific places where overall alignment could be improved. What improvements would you recommend? What follows are some of our observations.

1. **Misalignment of Student Learning Factors with Other Course Elements**. The student learning factors make it clear that students are unfamiliar with how to use a field guide. Yet, we see nothing in the current learning experiences (or other elements of the course design) included that will help them learn how to use a field guide. Students would be very unlikely to make their way successfully to the learning goal without some additional guidance and practice.
2. **Misalignment of Learning Goals and Summative Assessment.** While the summative assessment ("Identify an unknown plant") is similar to the learning goal ("Students will identify an unknown plant using a field guide"), it is not identical. Most notably, the summative assessment says nothing about using a field guide. Because of this omission, note that none of the proficiencies, learning experiences, or formative assessments that are listed have anything to do with using a field guide – something we know from the student learning factors that students don't already know how to use. This is a case where a seemingly minor omission in articulating the summative assessment could have important long-term implications for the overall success of the course. As a result, we would recommend that the wording of the summative assessment be modified to be more closely aligned with the ultimate course goal. This would then need to have a cascading effect on the other course design elements in the poster.
3. **Misalignment Between Proficiencies and the Goal**. While the proficiencies identified in this poster are certainly necessary for student success, notice that they are all focused on relatively low-level skills associated with identifying the different parts of plants. Even if students were to achieve these proficiencies, we would not be confident that they would be able to succeed on the more complex summative assessment of identifying unfamiliar plants. We would recommend that this professor display proficiencies from a broader array of the course – perhaps one from early, one from the

middle, and one from later in the students' developmental pathway – to better represent the range of proficiencies that students will ultimately need to acquire.

4. **Misalignment Between Learning Experiences and Proficiencies.** We are concerned with the relatively passive nature of many of the learning experiences listed on the poster. Notice that three out of the four learning experiences involve nothing more than watching the instructor do things (such as point out the parts of simple flowers). These experiences may not be the most effective in promoting the learning of the stated proficiencies. If the learning goal is to have students identify plants, we recommend that students take on a more active role in the learning of the relevant proficiencies.
5. **Misalignment Between Proficiencies and Formative Assessment.** Finally, notice that there is no formative assessment mechanism identified for the first proficiency of "Name the parts of a typical flower." This is troublesome, particularly given that this proficiency is so foundational that students would likely be lost if the course proceeded without them being able to grasp it. We recommend that the course designer build in some mechanism to ensure that students have indeed acquired this foundational principle before moving on to more complex proficiencies.

Thankfully, each of the observations we made in Figure 9.3 are relatively easy to address. In fact, Figure 9.4 reflects a revised poster from the same botany professor. In our view, this poster is a much stronger product, as it addresses each of the concerns raised above. Notably,

1. The student learning factors (unfamiliarity with field guides in this context and low motivation for this course) are now directly addressed in the proficiencies and learning experiences.
2. The summative assessment has been revised to more closely match the stated learning goal.
3. The proficiencies now reflect a broader range from throughout the course, to include the more complex skill of using a plant guide to identify plants.
4. The learning experiences include some instructor-led experiences, but they also include an array of more engaged activities for students to learn the stated proficiencies.

5. There are now formative assessments for each of the proficiencies. Furthermore, it is relatively easy to see how each of these assessments make learning visible, are inclusive, and can provide feedback to students. Our only remaining question would be how the faculty member planned to use the results of those formative assessments to inform the direction of his course.

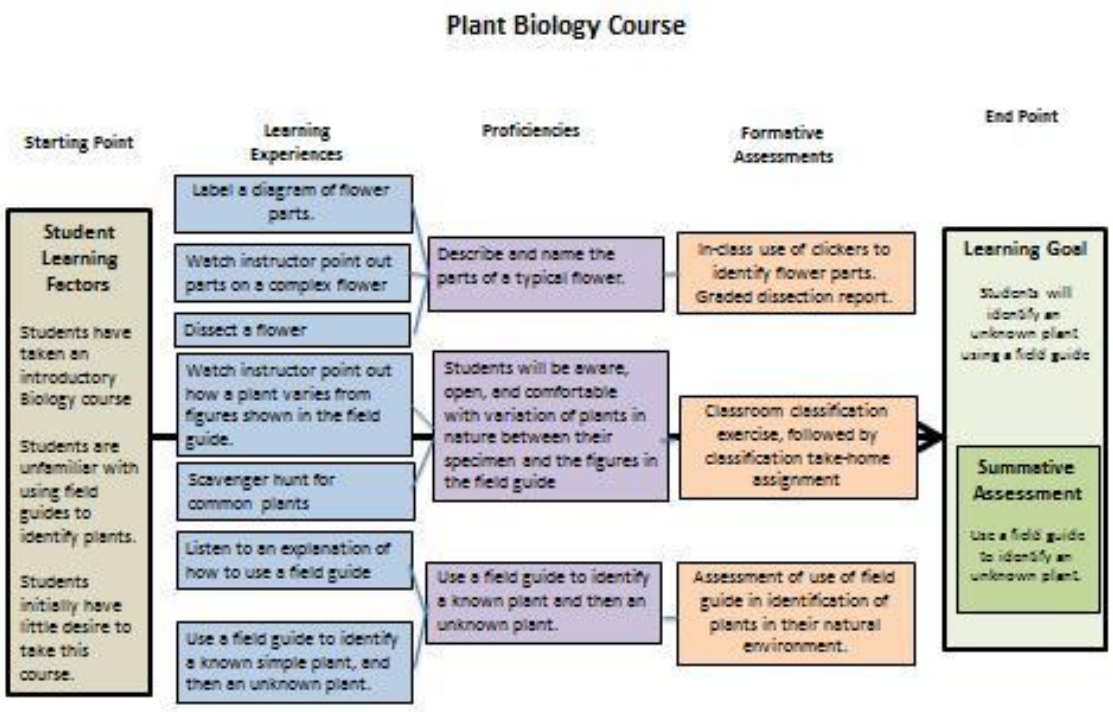


Figure 9.4. An example of a well-aligned course

Step 5: Revisit Your Other Course Goals – Look for Points of Integration

To this point in the course design process, we have asked you to elaborate on only one of your course goals. We've done that intentionally, as we have generally found that faculty members have an easier time working through the various stages of the course design process if they

focus their energy on only one goal at a time. However, we are also aware that most course designers are interested in accomplishing several different learning goals in their course. Therefore, we will acknowledge that the work you have done to this point in your course design is likely to be incomplete.

To develop a more complete design of your course, it will be necessary for you to repeat the process you've used to this point for each of your other course goals. More specifically, we encourage you to go back through the workboxes shown in Chapters 5 through 8 for each of the goals you articulated back in Chapter 4. The result will ultimately be separate course poster for each of your course goals.

Each of the course posters you create – one for each course goal – should meet the standards we have set for both transparency and alignment. In addition, one final characteristic we are calling for is "integration." (See Appendix B for the "Rubric for Evaluating Course Posters.") A well-integrated course is one in which the different course goals work together, perhaps by jointly contributing to a common summative assessment. In contrast, a course that is not well-integrated includes course goals that are independent of one another. In short, a well-integrated course requires students to *connect* learning goals through its summative assessments, proficiencies, and learning experiences; a poorly-integrated course allows students to accomplish the learning goals separately without drawing connections between them.

What we ask you to do, then, is to look for possible areas of integration across the multiple learning goals of your course. Fortunately, these opportunities are relatively easy to see when you look at multiple posters from the same course. For example, let's return to the example from our botany professor. Upon finalizing the poster for his first course goal (see Figure 9.4), this professor proceeded to create a similar poster for his second course goal, which was to have students "construct a plant collection showing the variety of plants growing around campus." That second poster is shown in Figure 9.5.

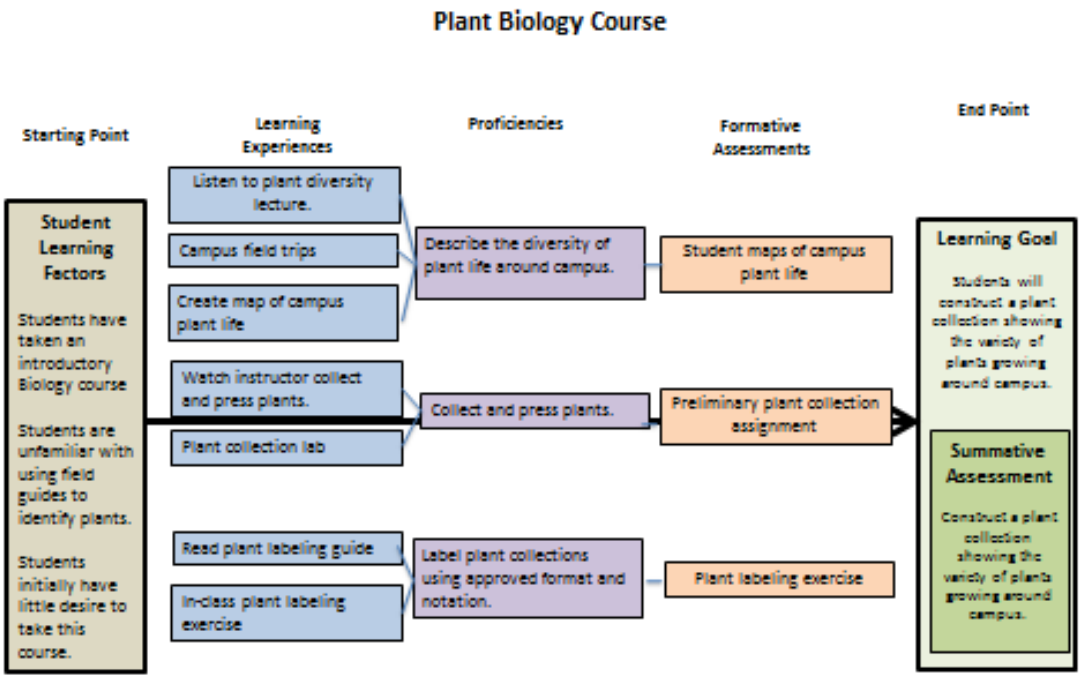


Figure 9.5. A sample poster for a second course goal. Look for possible areas of integration with the poster for the first course goal, shown in Figure 9.4.

In this course, the first course goal ("Students will identify an unknown plant using a field guide" is clearly distinct from the second course goal ("Students will construct a plan collection showing the variety of plants growing around campus."). However, it is easy to imagine ways that these two course goals could work together. For instance, perhaps a common summative assessment could be used to provide information on both course goals. That is, students could be asked to collect a variety of plants from around campus, identifying each one – even those with which they are initially unfamiliar – using a field guide. Their final grade on this project

could be a reflection of both their plant identification skills and their skills in constructing the final plant collection[22].

A second point of possible integration comes from the campus field trips described in the learning experiences section of the poster. Currently, the idea of campus field trips is only shown in the second poster, tied to the proficiency of describing the diversity of plant life around campus. However, it is relatively easy to imagine that campus field trips could serve multiple purposes. They could also be used to help them learn to use a field guide, a key proficiency from the first course poster. By having specific course experiences that serve multiple course goals, students will have a more integrated course experience.

Conclusion

Upon completion of this chapter, you have generated a course poster for at least one of your course goals. If you haven't done so already, we urge you to share that poster in our on-line community so that you can benefit from the feedback of your peers. As you create additional course posters for your other course goals, we encourage you to share those as well. By doing so, you will maximize the chances that the various elements of your course are sound, but also that the elements within each poster are well-aligned. By producing separate posters for each of your other course goals, you will also be able to examine the extent to which your different course goals work together in a well-integrated way. We are confident that if you do this well, you will be well on your way to a highly successful course.

[22] For the purposes of recordkeeping, it would be especially useful if students received separate grades for each course goal, even if they were each assigned following a common summative assessment. This would allow the professor to summarize students' performance on each goal separately.

PAUSE TO GIVE FEEDBACK

Before proceeding to the next chapter, please take a few minutes to review the course posters produced by your peers in the on-line community. As you do so, we encourage you to use the rubric in Chapter 9 to help point out those things that people are doing well and those things that still need improvement. What additional questions do you have? What recommendations can you provide for your peers in the online community? Your contribution to the group enhances the power of the online community. Contributions and suggestions from the online community can also help inform your course design.

Chapter 10

Students' Pathway to Success: The Course Syllabus

It's the first day of the semester and students anxiously await meeting you, other students, and the course they are about to take. They ask themselves, "Who is the instructor?" "What kind of experience will this be?" "Will the classroom atmosphere be cool or warm?" "What kind of workload will the course demand?" "What will be expected of me?" Some students enter your course with confidence, while others may enter with doubts about their ability to succeed. But in all cases, they will first encounter your course and start to answer their questions through your *course syllabus*.

Figure 10.1. Through the syllabus students see themselves on the learning pathway.

Many faculty view the syllabus as solely an administrative document. While it certainly has an administrative component to it, an effective syllabus goes further and capitalizes on its power to propel the course forward and create the course's identity and personality. An effective learning-focused syllabus reveals your course design to students in a way that makes sense to them, in a form that allows them to get a snapshot of the whole course. One way it can do that is by emphasizing what students will be learning in the course, rather than on what will be delivered.

The syllabus is a different communication vehicle than the poster you created in Chapter 9. The poster was part of the design *process* that allowed you to get some distance on your work and step back and show others to help you assess its transparency and alignment. The syllabus, on the other hand, is one of the *products* of your design and is the tool, or vehicle, by which students see themselves on the learning pathway (Fig 10.1).

As the primary means by which you communicate your design, your syllabus addresses students' questions about the journey they are about to embark on. From a learner's

perspective, what do they need to know to start off on the right foot? From your perspective, what do you want to communicate? What do you want to emphasize? What impressions do you want to make?

This chapter helps you answer these questions and build the mental framework necessary to make decisions about the learning focused syllabus you want to create. Here we incorporate the six elements of course design that you developed (i.e., student factors, goals, summative and formative assessments, proficiencies, and learning experiences), as envisioned through your poster, into an *effective* syllabus. Your syllabus can take on many forms. To be effective, we mean that the syllabus clearly accomplishes four communication goals. It clearly communicates: 1) a positive attitude about the course through its tone and motivates the students to care and learn; 2) the learning goals of the course, or what students will accomplish by taking the course; 3) what students will need to do to be successful and the ways the course will help students achieve the goals; and 4) necessary administrative information. Administrative information is an essential part of any syllabus, but note that we have chosen to address it last, simply because it is the part that is least related to your design for student learning. Let's now apply our design elements to these four communication goals.

Characteristic 1. An Effective Syllabus Communicates a Positive Attitude about the Course through its Tone

Your syllabus is a powerful communication tool for establishing a positive learning environment from the moment the course commences on Day 1. The tone of your syllabus, along with your presentation of it, is the overarching characteristic that subsumes everything else. This characteristic is one you have to get right, because the *tone* communicates your attitude toward the subject and toward the students (Ambrose, et al. 2010). You establish the tone of your syllabus through the words, language, and punctuation you use. Tone is the very first thing that students see and feel, which causes them to rapidly form an impression of you, your competence, and your course. Research has shown that students form impressions within the *first two hours* of the course , and that those impressions persist all the way to the end of the

course months later (Kohlan 1973). In other words, students form impressions within the first two class periods that are virtually unchanged throughout the semester. Student first impressions influence their judgments about an instructor's approachability (Ishiyama, et al. 2002), as well as their subsequent behaviors such as engagement (Bond 1973) and incivilities such as tardiness, and inappropriate cell phone use (Boice 1998). Therefore, your syllabus represents an opportunity to motivate and inspire students to put in the energy needed to learn.

As an example, suppose a student enters the chemistry course shown in the box below with a neutral attitude. How will her attitude likely shift after reading the first few lines of this syllabus? What are her first impressions likely to be for the course that lies ahead? What words describe the syllabus' tone? What kind of attitude does it convey? Is the instructor perceived as a partner or an adversary? What kind of learning environment does it create?

Attitude and First Impressions

From an actual syllabus we have reviewed for a required organic chemistry course…

Welcome to Chem 250!!

This course is designed to teach you some organic chemistry, and that alone may be somewhat daunting. You may have heard the horror stories of organic chemistry being the bane of any science student's existence—mostly that's true.

<u>Step 1. Describe the impressions you want your course syllabus to make.</u>

In Workbox 10.1 below, list adjectives that you want your syllabus to communicate to students such as challenging, fun, worthwhile, tough, insightful, useful, or transformative. When done, upload this to the website.

Workbox 10.1 – Creating a Positive Impression

In this workbox, list words that describe how you want your course to be perceived through your syllabus. What impressions do you want students to have after reading your syllabus?

Now that you have a list of words you want to communicate to students through your syllabus, you can look for language consistent with these words. In the Chemistry example above, words and phrases like "daunting," (i.e. tending to overwhelm or intimidate) "horror stories," and "bane of existence"(i.e. a cause of harm, ruin, or death or a source of persistent annoyance or exasperation) all evoke strong negative reactions from students. If presented in a required course (like organic chemistry), students may feel particularly trapped and threatened. The stressful "fight or flight" response is not motivating or conducive to higher-order thinking. Also be on the look out for phrasing that telegraphs negative expectations of student behavior; this only turns off students who are sincere, hard working, courteous, and ethical – the very students you are trying to motivate.

On the other hand, we are not advocating that you sugar coat or downplay the challenges ahead. After all, you want your course to stretch students to think, feel, and act in different ways that may feel uncomfortable. Thinking is hard work, uncertain, and avoided by many people (Willingham, 2009). Courses that have difficult, abstract, and complex concepts (such as organic chemistry) demand a deep level of commitment and hard work from students. Motivating students to this high level of performance and success, in turn, demands a very positive tone and attitude in the learning environment.

Another powerful way that your syllabus can present a positive attitude and spirit is through its visual design. Many course syllabi that we have reviewed have a very dull, unexciting, administrative looking appearance that does not motivate students to read or refer to it. This

does not have to be the case, as advertisers and marketing professionals clearly understand. In their world, the visual appearance of products is a critical determinant of consumer response and product success (Crilly, Moultrie, & Clarkson, 2004). Applying this concept here, students are consumers of your course, and they make many judgments about your course product – its content, organization, relevance, and value – based on the visual design of the syllabus layout. It is relatively easy to insert graphic elements to your syllabus, such as photos of the course content, images of students engaged in learning experiences, or colorful tables , graphs, or pie charts. Together, the language and visual design of your syllabus can make a positive impact on how your course is perceived by students and motivate them to follow you along the learning pathway.

Characteristic 2. An Effective Syllabus Communicates the Goals of the Course

When they read your syllabus, students want to know where you are taking them; what new capabilities they will have as a result of their work, what success looks like – what's in it for them, so to speak. This characteristic communicates that your course focuses on them and their learning successes. It sends the message that *their* learning success is *your* success – you are in this together.

Revealing the goals show students the end point, or destination of learning pathway. Recall from Chapter 4 that the power of the goals to motivate learning lies in their clarity and transparency to students; their power is directly related to the degree that students can envision themselves accomplishing them on the summative assessment. Ken Bain (2004) calls this "the promising syllabus" because it explains the goals of the course in terms of a promise and begins a conversation about how the teacher and the student would best come to understand the nature and progress of student's learning. The promise of an aligned, transparent, and integrated course reassures students that they can see what the final exam, project, or paper begins to looks like from Day 1; you can assure them that this is where the course is heading, and all activities are intentionally designed to help them accomplish the goals – another way you communicate the learning partnership. This is one reason why we spend

several hours developing them during our course design retreat. However, simply placing goals in a syllabus without discussing how they function in your design relegates them to administrative, or most likely irrelevant information to students.

Step 2. Write a description of how students will be different as a result of the course

Make sure to include your dream for students and their learning into your syllabus. You may need to help students better be able to see how accomplishing the course learning goals will lead to this dream.

Characterictic 3. An Effective Syllabus Communicates How Students Achieve the Goals

Students are much more motivated to work and are likely to remain engaged if they know your course takes them along the path to a goal that they personally value (Meece, et al. 2006). Students want to succeed on the summative assessment and demonstrate that they have accomplished the learning goals. Once they understand *where* they are going and the challenges ahead, they are interested in *how* they will get there. This is where the alignment and integration of your design stands front and center – students need to see that the the pathway leads to the goals and success on the summative assessment. What projects will be researched, papers will be written, or exams will be taken? How do they prepare for class? What will happen during a typical class session? An effective syllabus shows students the learning pathway, that you developed through your design work in this book. The pathway to the goals include the proficiencies they will need to achieve, the learning experiences that support them, and formative assessments that inform their progress. It is important to communicate this *relationship* between these elements. It is not necessary to list all of the proficiencies and learning experiences from your poster – students simply need to see a sample of what's in store for them. This gives students a reason why they are doing the work of the course.

The learning challenges may be very intimidating to students, and it is important that your syllabus shows them how they will be supported in their learning. The Challenge and Support Model advanced the idea that for growth to occur, a person needs a balanced amount of

challenge and support as appropriate for the task (Sanford 1966). Figure 10.2 shows the impact on students that occurs when the challenge you pose to students matches and mismatches the level of support they receive. In Chapter 4, we advocated that your course goals provides a high challenge that is developmentally appropriate. That, in turn, requires high levels of support that result in the upper right quadrant of the graph – high performance and cognitive growth.

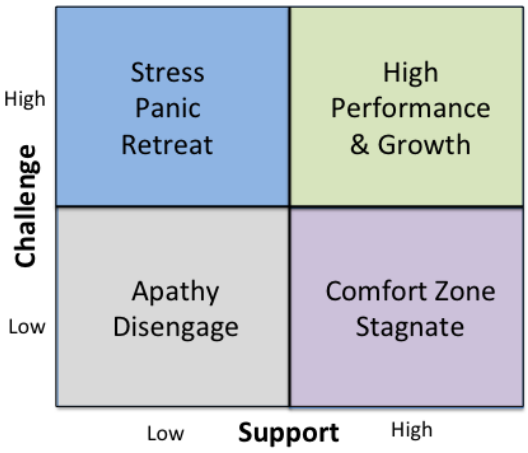


Figure 10.2. Students' reactions to different levels of challenge and support.

The support for their learning is connected to the *learning experiences*, or what students will do *during* class and the assignments *out of class* – this is how they will encounter and experience the course. We suggest that the syllabus outlines and describes a typical class session where they will practice thinking and building their *proficiencies* (Paul & Elder, 2003). Is there a rhythm to a lesson? What level of participation will you ask of the students? Be sure to tell students that *formative assessment* and *feedback* will be part of their classroom experience – this sends the message that the course values their learning progress. This sets the rationale for student preparation and reinforcement. Next, we suggest describing how students prepare for in-class activities. What kinds of assignments and projects will you require? It is important to keep in mind two things: first be sure to frame the course work in a positive way (i.e., "learning experiences support success"), and second, only present enough detail in the syllabus to give

them a sense of what to expect. Students don't need to know all of the complex details at this point in time; complexity will only dilute and weaken your message.

Finally, students like a certain level of predictability – they want to know what to expect. If your course, like your class lesson, has a particular rhythm such as lecture, followed by student-led discussion, followed by a quiz, then incude this as part of the map along the learning pathway.

Step 3. Describe how students will progress along the learning pathway

In Workbox 10.2 below, you will speak directly to the student and describe your pathway, your approach, or your strategy for guiding them to the accomplishment of the course goals. Once again this sends the message that the teaching-learning process is a partnership, an interaction that involves the appropriate levels of challenge and support. When done, upload this to the website.

Workbox 10.2 – The Pathway to Achieve the Course Goals

In this workbox, briefly describe how students will progress along the pathway to meet the goals. Remember that your syllabus is speaking directly to the students:

Example: We have challenging goals this semester, let me briefly describe how the course is designed to support you to progress along the learning pathway to meet them…

Characteristic 4. An Effective Syllabus Communicates Necessary Administrative Information

In addition to being a course *designer*, instructors also take on the role of course *manager*. This part of the syllabus speaks to your management of the course rather than incorporating the specific design elements. Here you set expections and boundary conditions, show students how their learning will be observed by you, and orient students to the resources available to them. In the box below, we have included an outline of many common items included in course syllabi that fall into this category. There is an abundant amount of advice in books (e.g., Grunert

O'Brien, Millis, & Cohen, 2008; Svinicki & McKeachie, 2013) and websites that elaborate on these items and may help you decide which administrative information you want to include. If you upload the information in this chapter's workboxes, our software will automatically generate a starting template for you which you can adapt to fit your specific contexts. While this is rather straightforward in its approach, there are a few pitfalls to avoid.

Common Administrative Information in Syllabi

Course Information – public information

- Course title and description from catalog
- Prerequisites – informs students about their expected readiness for the course

Instructor Information - establishes lines of communication, credibility, and personal connections

- Contact information – office location, email, telephone
- Office Hours

Resources and References – supports learning

- Books and textbooks – telling students why you select it is always appreciated
- Electronic resources – online systems such as Blackboard
- Course materials – study guides, problem solution guides, workbooks
- Support Centers – Writing Center, Student Success Center, Math Center

Grades and Grading - informs students of the workload and how they their grade will be determined

- Graded events – papers, research projects, design projects, exams, quizzes, assignments
- Grades - criteria for student success

Policies and Expectations of Students - establishes boundaries

- Make sure that all of the necessary components of a course syllabus, as required by your institution, are included.

Step 4. Decide which administrative information to put into your syllabus

In Workbox 10.3 below, write down the types of administrative information and policies that you want to include in your syllabus. When done, upload them to the book's website. where there is a syllabus generation program to help you build a starting template of your syllabus.

Workbox 10.3 – Administrative Information

In this workbox, list the administrative information you want to include in your syllabus and also state how it functions in your course.

My syllabus includes the following …

Pitfall 1. Going Overboard Regarding Student Conduct. While many of these items are essential components of a syllabus, there are a few pitfalls regarding administrative information, especially in the area of policies and expectations. We have seen instructors go overboard and try to stop almost all potential forms of student irresponsibility or misconduct through their syllabus. In this case, the syllabus can create a very negative tone and risks starting the semester off in a dictatorial manner. We suggest framing your conduct expectations in a positive way.

Pitfall 2. Giving Students More Information than they need. In many courses, syllabi have become huge documents where faculty resort to giving students quiz credit just for reading it. We acknowledge that on some campuses, the syllabus is considered a contractual arrangment between the instructor and the student. Unfortunately, this places a large emphasis of the syllabus on policies and administrative information. Even when the syllabus has this role, you can avoid the pitfall of providing students with too much information that can be deferred until a later time when the students are more receptive and inquisitive. For example, students

probably don't need to know how the exams are formatted until a few lessons before the first exam. Too much information inevitably leads to a long administrative section in your syllabus, which drives two behaviors. First, students don't actually read it. Second, it may cause you to cover all of it on the first day of class to be sure they hear it. You may fall into the "If I don't say it, they won' learn it" mindset that leads to the first class dominated by administrative details of the course. This causes you to forfeit other opportunities to go further and start meeting learning goals. Students form persistent impressions quickly, so you do not want to use too much valuable time and mental space simply telling them the do's and don'ts of the course. You want the focus to be on student learning. At a minimum, students need to know what they should do for the second class meeting (e.g.,. buy books, register for online component, complete this assignment, read this section, etc.).

Final Step. Examine your syllabus starting template on the website

The accompanying website has gathered all of the information you uploaded in the three workboxes in this chapter to create a syllabus "starting template." This template includes the overall impressions you wish to convey, along with your thoughts regarding the course goals, the learning pathway, the overall impressions you wish to convey, and the administrative information you thought was important. At this step, open up the starting template on the website and review what you have accomplished. Now ask yourself a few questions to consider:

- Have you considered handing out the schedule and/or necessary policies and rules (like ADA compliance and academic integrity policies) in separate documents?
- Is your syllabus designed to be a living document? For instance, is there flexibility built in, in case you find information about student learning and need to slow down or speed up?
- If you have departmental or institutional requirements, have these been discussed recently? Have you used the current research literature?
- Will students read your syllabus and be motivated to understand your course and its design?

Then use this starting template to begin the work of fleshing out and completing your syllabus that will effectively communicate your course design to students.

Conclusion and Transition to the Final Chapter

This chapter has guided you through four communication goals to help you make the decisions necessary to convert your course design into an effective syllabus. In effect, this begins to put your design into action; your design now interacts with the student factors you considered way back in Chapter 3. Will your syllabus accomplish these four goals? Will it telegraph important information and positive attitudes about your course? Will students see your map and your vision for the course? Each instructor will make individual decisions about what to include, the language to use, and the attitudes to convey – it is personal. Through your syllabus, you now show students the learning pathway that you have so carefully designed for them – the goals and the activities that will help them succeed. In doing this you have begun to establish an environment conducive to learning for all students. We give you kudos for the hard work you have done – designing college courses requires courage and openness to change, deep thinking, insights, and a high level of commitment to students. Implementing your design will bring many rewards and challenges ahead – with students, colleagues, and administrators. In the next and final chapter of the book, we use our experience in guiding others like you through this process, to help answer questions and provide some advice on overcoming some of the potential challenges you will face.

Chapter 11

Anticipating the Challenges Ahead

As noted back in Chapter 1, both we and the higher education community at large (Jones et al., 2009; Barr & Tagg, 1995; Huba & Freed, 2000; Tagg, 2003) have learned a great deal in the last 20 years or so about what it means to be an effective college-level instructor. Ultimately, our measure of teaching success is tied to the quality of what our students learn. If they learn and develop in meaningful ways, we are successful. If they don't, we are not. It really is that simple.

Despite the seeming simplicity of the learning-focused approach, faculty members don't spontaneously enact that approach on their own when they design their courses. It doesn't always jibe with "how things are normally done" in their disciplines, among their faculty colleagues, or within their institution. Changing to this approach often requires emotional shifts (giving up on old beliefs) as well as pedagogical shifts (new teaching skills). As such, doing things differently requires courage, as well as a sizeable commitment to improving student learning. Kudos to you for displaying that courage and commitment! By working your way through the entirety of our course design process, you have worked very hard on the design of your course. We sincerely hope that the work you have done has a transformational effect on you, your course, and, ultimately, your students.

One of the things that you have almost certainly noticed about our approach to course design is that it works best when it is both iterative and interactive. No one succeeds in creating a great course the first time, and we have consistently found that faculty members' thinking is improved by having the chance to interact with peers, both in and outside their discipline. The same can be said for the approach we have used at our Course Design Retreat. Over the years, we have learned a great deal about what works and what doesn't, and we are grateful for dozens of faculty colleagues who have worked with us through previous iterations of the retreat. Their hard work and thoughtful feedback have led to the process you have engaged in in this book.

At the end of our retreat, we reserve about an hour for a "Town Hall" meeting with all of the faculty members in attendance. Part of the purpose of that meeting is to collect participants' feedback about the course design process. Now that we have reached the final chapter of the book, we would like to gather your feedback about the process as well. As you reflect upon the work you've done, we encourage you to share your thoughts on our supplementary website. You can do this by clicking on the "feedback for authors" link found on the log-in page (Note: We ought to add such a link.). As we continue to evolve in our own understanding of learning-focused course design, your inputs will be invaluable.

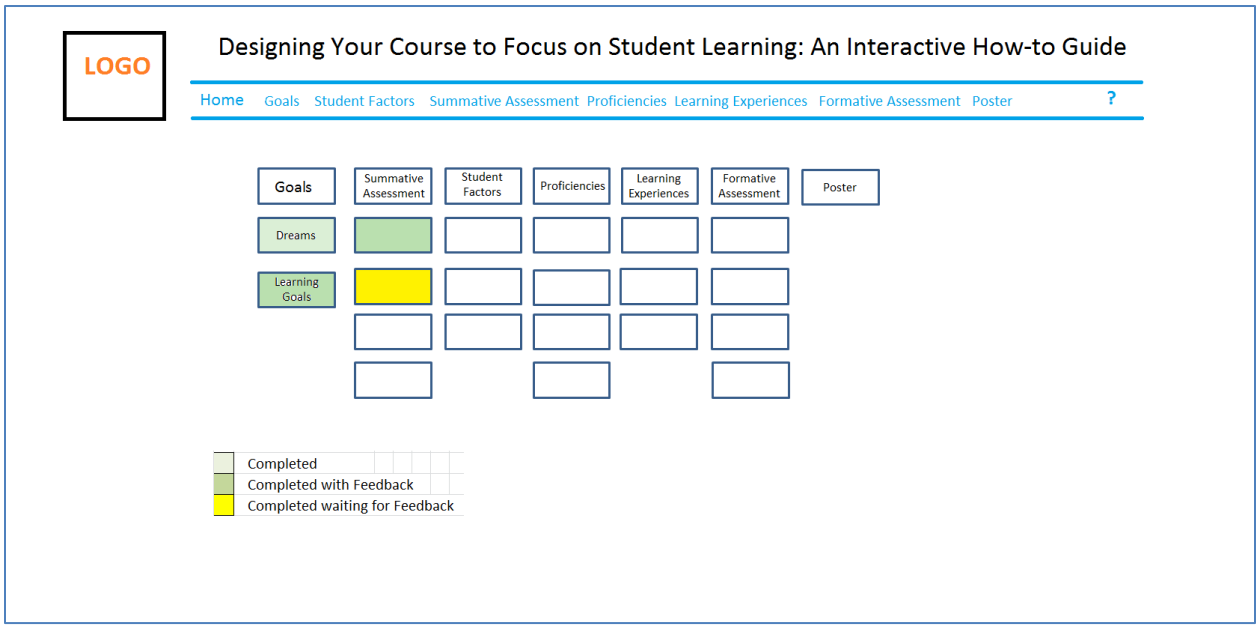


Figure 11.1. This is a placeholder to show readers where they need to go to provide feedback to authors.

A second goal of the Town Hall meeting is to ensure that our faculty colleagues know the importance of their new social network as they begin the implement their course designs. Designing a course is obviously hard work, but it can also be difficult for our faculty colleagues to implement that new design once their semester begins. Both we – as leaders of the retreat – and their fellow faculty participants can provide an important support system as they encounter challenges moving forward.

For you, we hope that our on-line community can serve as an important source of social support. Moving forward, we invite you to stay in touch with that community. Use that community as a sounding board for any questions you encounter, and we hope that you feel comfortable sharing your own insights to other people's questions as well. Whether you know it or not, you now have a rich network of colleagues and friends, all committed to improving student learning just like you are. We urge you to be an active participant in that network.

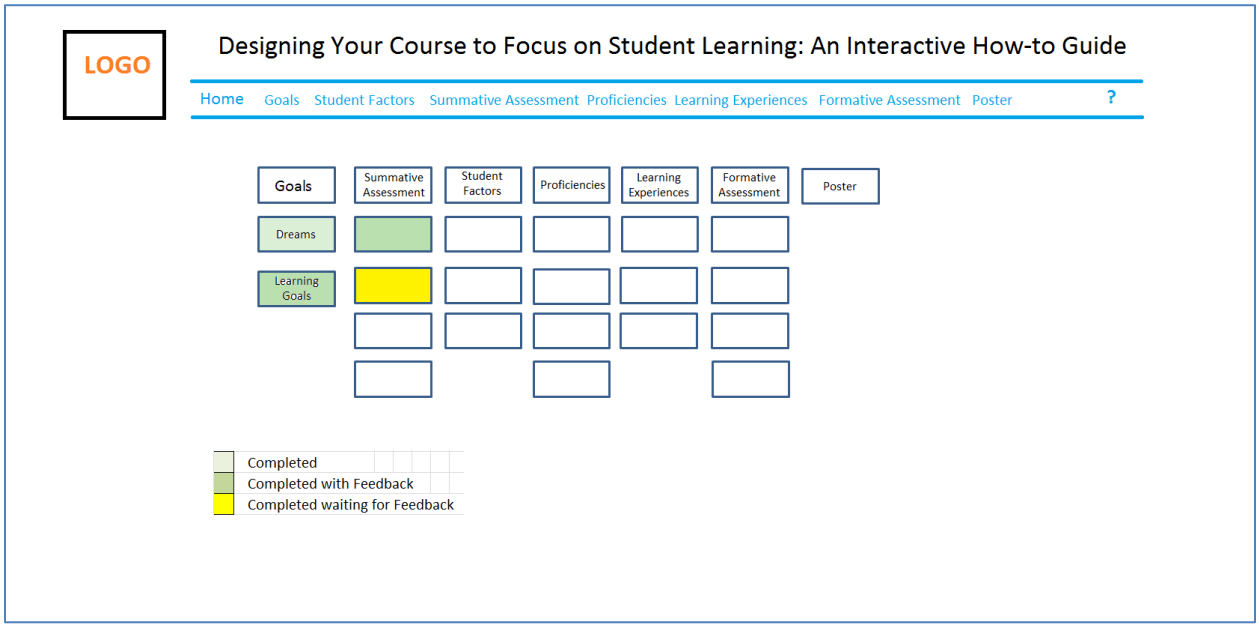


Figure 11.2. This is also a placeholder. Let's be sure to add a forum in which people can ask & answer questions.

Finally, we use the Town Hall meeting to answer questions and anticipate potential challenges they may face back on campus. From year to year, the kinds of issues we discuss remain remarkably similar, and some questions are so common that we thought that we ought to address them in this closing chapter[23]. What follows are 14 questions that you may have, as

[23] Although the FAQ's in this chapter are based largely on our own experience, the same issues have been addressed in the larger higher education community as well. For a terrific discussion of many of these issues, see Weimer (2002).

well as our best attempts to answer each one. For convenience, we have divided these questions into four broad categories:

Category 1: Questions about Commitment to Student Learning

1. Am I really brave enough to commit myself to students' learning? [Or, said another way, the instruction delivery model is easier because you don't have to think outside of your own head. Taking a students' perspective involves uncertainty and risk. Isn't it easier to just teach my class and hope?]

   One faculty member that has participated in our retreat says to us repeatedly that she believes our model of course design is a better way to teach students, but we need to tell people that it is way more work (see also Weimer, 2002). Bluntly, you need to know that, yes, it is easier to provide students with content and give them tests to see if they can remember. It is easier to teach students and hope that they are learning. The way that most of us experienced many of our college classes is easier for the teacher. Therefore, the question that you will really need to answer is about your own commitment. Heath and Heath (2010), the authors referred to in the text with regard to the "curse of knowledge" remind us that change is often hard, especially when something new can challenge the existing ways we do things – even if these ways are not the ideal ways we want them to be.

   Learning-focused teaching is more time consuming and can be more difficult to adapt to than the instruction-centered paradigm. The faculty member we mentioned in the above paragraph is currently working to publish an article on how her course has changed to better promote the kind of student learning she really wanted. It took her five iterations of the same course to recognize that, although she made small changes each time, she was not really going all in for student learning. This means she needed to sometimes pick different material; she had to omit some things that were always there; and she needed to create new and different examples. She also needed to constantly ask questions about

what and how she was doing in terms of student learning – not what she hoped students were learning, but rather what they were actually learning – and she needed to be willing to change in accordance with what she found out. She needed to become somewhat vulnerable and seriously flexible. Such vulnerability and flexibility can be uncomfortable – especially for our own egos. You need to decide for yourself if you want to go all in for student learning (although we highly recommend it).

As the saying goes, "In the making of a bacon and egg breakfast, one animal is involved. The other is committed." Which one will you emulate?

2. At some level, doesn't convenience have to trump quality?

As we approach 20 years since Barr and Tagg wrote their article asking us to change education paradigms, it is this very subtle question of convenience that likely limits us in terms of student learning– especially as faculty lives adapt to fewer colleagues, more institutional service, more student advising, greater scholarship demands, etc. But, as recent publications such as Academically Adrift (Arum and Ropska, 2010) and We're Losing Our Minds (Hersh and Keeling, 2011) continue to come to the surface, questioning if the student learning results are the ones we truly desire, we need to take these questions seriously. That means evaluating whether our teaching practices are really leading to the kind of learning we want. Or are we continuing practices merely because it is easier? Just last week (end of June 2012), an article was written for Faculty Focus stating that 'dead ideas' continue to be proliferated within teaching. The authors specifically mentioned "should convenience trump quality?" Such articles wouldn't be coming out now if this wasn't continuing to be a major challenge we are all facing in higher education. To keep this from continuing, it requires a commitment to make sure that all of our teaching behaviors - creating learning goals and summative assessments, brainstorming learning proficiencies, designing and implementing learning experiences, and formative assessment and

feedback – are aligned toward our students' learning. The alignment of these components is essential. An instructor cannot do what the course we mentioned in the Summative Assessment chapter (chapter 5) did – asking for students to exhibit critical thinking and then giving a multiple choice exam where students could succeed by merely memorizing. If we continue to do this in higher education, all of the great classroom or online experiences have little meaning. We can't allow students to spend more time trying to game our courses rather than learn. We need to actively take that option away from our students and hold them to higher learning standards.

No one says, "I don't want better student learning" but it can be difficult to critically examine all of your practices. It always helps to have a good source of social support. Don't forget that the online community is a great place to commiserate with, receive encouragement from, and learn how others have faced similar challenges.

<u>Category 2: Questions about Achieving Buy-In From Others</u>

3. I am team teaching … how do I get my colleagues on board?

In reality, our teaching is most often our own. Unless there are exceptional student ratings or unless something really goes badly, our colleagues usually assume we are doing fine and we do the same for them – which means that we don't talk about how we actually teach. But, when we actually teach alongside our colleagues, the conversation can potentially change quickly. When we begin to discuss these kinds of course designs, what our colleagues can hear is that you are telling them how to teach. Here is the wonderful thing about this model of course design. You can teach any way you want (this is an important part of getting your colleagues on board). Don't start your conversations with your colleagues at this point. Start from the overview – the learning goals. Begin the conversations with, "wouldn't it be great if our students left this class being able to [insert appropriate learning goal here]." Next, partner with your colleagues to

design the summative assessment before you talk about what you or your students will do during your course. Perhaps you can see what we are suggesting here. Help your colleagues see the process you went through and how the connections are made. Be careful not to assume that they will just get it. It likely took you some time to get there. Be patient. Also, consider inviting them to see the online community discussions.

4. How do I get my students on-board?

Just like our approach has the potential to be very different for you or your colleagues, it may lead to a very different experience for your students as well. Nothing will go further than being totally honest and up front with your students and acknowledging this reality. One of the ways we do this with folks as we present at different places is to ask a set of questions that assumes the student role like, "As a student, have you ever studied for a test or an exam only to realize you studied the wrong thing?" or "Have you ever wondered why you had to do an assignment?" Another good question is, "Has anyone ever asked you what a course is about after you have completed it, and you didn't really know how to answer?" In our experience, most of your audience will answer 'yes' to these questions. Consider asking these sorts of questions of your own students to open them up to doing things differently. Use the experiences of your students to explain how your course is different. Show them the intentional connections and how clear the path can be. Next ask your students if they would like to know exactly what they will need to do to be successful and if they want the homework they will do to be useful for them to succeed. Play into these components of motivation by presenting them with an alternative that benefits them. This is different than they may have experienced because it is not a carrot and stick-type of motivator where they have to read because they have a quiz. They have to read because they need the reading to acquire a proficiency to succeed. Often, this may not be clear to them (or it may not even be true!). A transparent course

design will allow for greater student buy-in. Note that you will have to spend time during the course reminding and showing your students of these connections. Take the time to do so. It will serve to remind you of the connections as well. Note the importance and direct attention given to this question in the syllabus chapter (chapter 10).

5. How do I get administrator (supervisor, department head, dean) buy-in?

   Based on our experiences, only a few faculty we have worked with were designing a one-time, purely elective kind of course. Most were tied into the larger curriculum of the institution of their departments or professional organizations. If you are in a similar majority and you have outside criteria – whether they be departmental, college, or institutional outcomes or accreditation criteria – make sure that your course aligns to those outcomes (if you haven't already). When your colleagues are concerned that what you are doing is totally different, you need to acknowledge that it really is different. You are designing a course that is totally transparent, aligned, and integrated to make sure that your students have the best possible chance to meet the curricular outcomes. That means successful graduates and alumni.

   If the conversation morphs into a conversation as to why some traditional things are omitted, rely on the previous steps of the course design model. For instance, if the course you are designing always included a certain learning experience or certain content, rely on your learning proficiencies to begin this conversation. Be welcoming of a conversation about the learning proficiencies and what they add up to. This is typically a new and perhaps different process. Just like the previous part of this chapter in creating buy-in from colleagues, help your administrators understand and 'see' the process.

Also consider acknowledging how higher education tends to think about new things as the latest fad. Some believe that you don't want to stray too far away from how others are doing things. Some believe that learning-focused teaching is what we have always done. Regardless of what camp anyone falls into, at the end of the day, everyone wants to improve student learning. Instead on getting involved in these discussions, rely upon the linkages of this course design process to explain the transparency and alignment. Department chairs that have attended our course design retreats have helped us think about these types of things. One department head was so convinced of the process that he encouraged his own faculty. Another bought in to the process but only for their own course, choosing to not try and influence the other faculty's teaching behaviors. Be clear that you are not trying to say that others should do it this way. You are merely committing yourself and your own course to making sure that all elements of your course fit together and lead to student success. Student success is hard to argue against.

Finally, share the work you have done to get to this point. It is all backed by years of research – books, articles, etc. – that people may be unfamiliar with. You did not just wake up one day and come up with a new way to put a course together. You made intelligent and informed decisions applying the research on teaching and learning. You may need to show folks how you did this.

6. This may work at the Air Force Academy, but not here. My institution is different.

   Obviously, this questions is not a FAQ at our course design retreat. Nearly all of our participants are from our own institution. And, while it is true that USAFA is a military academy, faculty are not required to design their courses in any certain way (and will likely never be). This reminds us of a great discussion we had when we brought George Kuh, founding director of the Center for Postsecondary Research and the National Survey of Student Engagement (NSSE) while at

Indiana University, to our campus to speak at our inaugural Faculty Convocation event. Dr. Kuh had arrived a day early and we arranged meetings for him with different constituents to better prepare his address for our audience. In those meetings as he sought to understand us, it seems that folks kept beginning their statements with a phrase like "well, we are a distinct kind of institution." Finally, he told us that every institution is unique in some way – different students, different missions, etc. It is not what makes you different that really matters as long as you are focused on student learning. It was a simple concept that really helped us think about this process not in terms of our own faculty, but in terms of course design that has the best potential to lead to the kind of student learning we desire. One of our authors now runs the Center for Excellence in Teaching and Learning at a Jesuit university. He uses the same process with faculty teaching in face-to-face and online environments. We have tried this process at other places, and it is our experience that it is every bit as useful and effective in all contexts.

<u>Category 3: Questions about What Happens When Students Succeed (Or Not)</u>

7. If I really focus on student learning, more of my students are likely to succeed. Do I need to be concerned that my expectations are too low?

   You are correct that student success is likely to increase if you apply the course design process outlined in this book. Well-articulated goals will give students a clear image of what they are trying to accomplish. Transparent, well-aligned course elements will ensure that students focus their time and energy doing the kinds of things you actually want them to do. Meanwhile, the emphasis on engaging learning experiences, frequent assessment, and meaningful feedback will provide students with the support they need in order to be successful.

   None of this should suggest that your expectations are too low. In fact, we urge you to establish and uphold high expectations. That starts with the learning goals you wrote in Chapter 4 – they serve as the foundation for everything in your course. If you have doubts about what you expect of students, revisit those goals

and make sure that they truly articulate the kind of learning you are ultimately after. If so, it is only appropriate for you to provide students with the support they need in order to succeed in achieving that level of learning.

8. But what do I do if the average grades in my class go up?

   By itself, an increase in students' grades is not a reason for concern – in fact, it may be a cause for celebration! However, we recognize that you may hear outcries of grade inflation[24] from colleagues, departmental leadership, or university administration. As a result, we encourage you to share the details of your course with those who are raising concerns. Show them your course goals, your assignments, and the standards you used to evaluate student success. If you do so, it should be relatively easy to convince them that your course does indeed challenge students appropriately.

   One powerful strategy is to maintain a portfolio of your students' work. This can be especially helpful if you keep artifacts that span the entire range of student performance. That is, be sure to keep examples of some of your students' best work, but also keep artifacts showing examples of work that is somewhat less strong. That way, your portfolio can show how the grades you assign in your course correspond to the work that students actually do. Offering to review this portfolio with your colleagues and/or supervisors will almost certainly alleviate their concerns[25].

   Finally, if you find that your students are consistently succeeding in meeting your existing learning goals, you might consider revisiting those goals to make them

[24] Rising grades, by themselves, are not sufficient evidence to conclude that there is grade inflation. In order to find grade inflation, one would need to show that students' grades are rising even though the overall quality of their work is not changing. If students' work is actually getting better, one would expect that the grades associated with that work should reflect that improvement.

[25] An added benefit of such a portfolio, of course, is that it can be used to show samples of student work to future cohorts of students in the same course. Maintaining such a portfolio will help show those students the pathway to success as well.

more rigorous. Perhaps your students are capable of handling even bigger challenges, and – if that is the case – there is nothing wrong with pushing them to a higher level. The key, of course, will be to modify the rest of your course design as well, to ensure that you are offering students the support they need in order to meet those more ambitious goals.

9. What if my students don't succeed? In particular, what do I do if some of my students fall behind and have trouble catching up?

   While our approach to course design places a clear emphasis on student learning success, there are obviously no guarantees that such learning will take place. If you encounter students who are having difficulty, we would suggest that your first step be to try to figure out the source (or sources) of the problem. Choosing an appropriate corrective action will depend on what is causing the shortcoming in the first place. For instance, you might reconsider any of the following from your perspective:

   - *Have you missed any important student learning factors? That is, is there something about the students who are struggling that you didn't anticipate at the beginning stages of your course design? If so, how might you adjust other aspects of your course design to accommodate any unexpected needs they might have?*
   - *Have you chosen learning goals that are realistic for the students in your course? Sometimes, we find that faculty members set goals that are unattainable for the students enrolled in their courses. In those circumstances, both faculty and students experience failure and frustration that could easily be avoided if only more realistic goals were chosen.*
   - *Have you done a thorough job of outlining the proficiencies needed to accomplish your learning goals (see Chapter 6)? By definition, proficiencies are the knowledge, skills, and attitudes that students need to*

have in order to accomplish your learning goals. If you have overlooked any of those proficiencies in constructing your course, it shouldn't be surprising to encounter students who have trouble succeeding.

- *Are your learning experiences sufficient to help your students acquire the desired proficiencies? In some cases, providing additional learning experiences (either inside or outside of class) may be necessary to assist students who are struggling.*
- *Finally, are you offering adequate support for your students, in the form of frequent formative assessment opportunities and meaningful feedback?*

10. What if I double-check all of the elements of my course, but there are <u>still</u> students who do poorly? Aren't the students ultimately responsible for their success as well?

    Absolutely! This style of course design <u>requires</u> that students to do their work. And, if you've chosen appropriately challenging learning goals, it is likely that students will need to work hard in order to succeed. We just want to ensure that students have the <u>opportunity</u> to be successful if they follow the path you've set out for them.

    If you encounter students who are reluctant to follow the pathway you have created for them, consider spending some time with them explaining how the pieces of your course fit together. Especially important will be the formative assessment element, as this is their time to practice and receive feedback toward their own success. Sure, we may say that is how we usually incorporate tests and quizzes and homework assignments but students have a tendency to view their work based upon the point or relative value in a course, not necessarily about how doing something prepares them for other elements of the course. Showing acquisition of a proficiency – whether it be a knowledge, skill, or responsibility – puts them directly in position to succeed. But, as you have designed your course's learning experiences and formative assessments to develop students'

proficiencies with increasing complexity, the elements are linked in such a way that students will need what has come earlier in the course. This, too, may be different from some of their previous experiences. Be up front with them about how to approach the work and why it is beneficial for them to do so.

Category 4: Questions about Enacting Your Course Design

11. In light of all the intentional planning of goals and assessments, are you advocating that faculty "teach to the test?"

The course design process that we are advocating is based on the idea that a course's learning goals, proficiencies, learning experiences, and assessments should all be carefully aligned. If this is done well, it is understandable that one would think that you'd end up "teaching to the test." However, this is not a bad thing. If "teaching to the test" means helping students learn the knowledge, skills, and attitudes needed to accomplish your course goals and then creating tests that measure the accomplishment of those goals, we would argue that faculty should be "teaching to the test." As Walvoord & Anderson(1998) say in their book Effective Grading (Jossey-Bass), "Why would we test and grade students on skills and subject matter we haven't taught them?" (p. 47)

Taken to an extreme, of course, "teaching to the test" could potentially be misconstrued as "teaching the test," and we suspect that this is what led to this question. "Teaching to the test" strikes us as wholly appropriate – we want faculty to structure their classes such that their learning experiences and assessments are both aligned with the learning goals of the course. "Teaching the test" implies that faculty would be training students how to answer particular questions that they will see on upcoming exams. That is something very different and is obviously poor practice. Teaching the test drives superficial pattern matching on the part of the student whereas teaching to the test would help students develop the deep connective strategies that we desire.

12. The course design I have come up with is a rather dramatic departure from I have done in the past. Is there a way that I can "ease in" to my new course design, such that I only change one course component this term and then change other components in future offerings?

    Changing only one component of your course at a time is generally not a good idea. The reason is that our course design model is based on the idea of you creating an aligned, integrated system. Changing any one component (e.g., your learning goals) will necessarily lead to changes in other aspects of your course design (e.g., your assessments or learning experiences). Ironically, if you change one piece of the system but leave everything else the same, you are likely to end up making your course worse, simply because it will make the course poorly aligned.

    Admittedly, changing multiple aspects of your course all at once can be a difficult thing to do. By now, however, we hope that you are convinced that it is the right thing to do as well. We ask that you trust the hard work you have done throughout this book and commit to enacting the course design you have created. Remember to call upon the members of our on-line community if you need a source of social support.

13. You've sold me on the need to teach my class in a way that focuses on student learning. Is there one specific teaching technique I can use in class that is best?

    As appealing as a "silver bullet" would be, we're afraid that no such thing exists. As you've seen throughout this book, the learning experiences that we provide for our students are part of a larger system that includes multiple course components. As a faculty member, your challenge is to teach your class in a way that is well-aligned with and that has the best potential to get your students to accomplish what you want and need them to. A teaching technique that works

very well in accomplishing one goal (and with one set of students) may not work very well in accomplishing a different goal (or with a different set of students). On the other hand, there may be multiple teaching techniques that would work really well in a given circumstance. Therefore, the answer to the question of what teaching technique works best is "it depends."

In large part, that is why we favor a faculty development approach that emphasizes the thought processes associated with course design more than we favor approaches that emphasize any specific teaching technique. In isolation, it is impossible to say that any given technique is "effective" or "not effective." The effectiveness of a technique is dependent upon who your students are and what you are trying to accomplish. Only by considering the richer context of our overall course design can we begin to make informed decisions about the most appropriate ways to conduct our classes.

Category 5: The Course Design Process and Its Applicability at Other Levels of Student Learning

14. I get how I design my course with this model, but what do I do in each individual lesson?

This course design process outlined in this book is very powerful because the exact same process can be used at all levels of student learning. During each individual lesson, you would recognize where your students are (student learning factors), identify the proficiencies you want students to obtain (often called objectives), plan out learning experiences to help students toward the proficiencies, and figure out the extent to which students are successful (assessment).

At the departmental level, the exact same process can also be used to determine what courses to offer for your majors and what would occur in terms of student learning. Even at the institutional level, the process is applicable. This course design process can be used to systematically identify who your students are and what impact they have on the curriculum. Our process guides you on how to connect this information to and identify the institutional outcomes. It addresses how to assess how successful your

institution is. The process can be used to guide curricular decision making in terms of what students need to know, be able to do, and feel in order to meet the outcomes. The formative assessment and feedback model can even be used to identify what kinds of professional development faculty and staff need to create the kind of student learning the institution desires.

A Concluding Thought: The list of questions contained in this chapter represents those that we encounter most frequently, but it is certainly not exhaustive. In fact, you may have questions of your own that you would like to discuss. If that is the case, we invite you to submit your questions to our on-line website. On that site, we will post questions that we receive, as well as our responses. We look forward to your participation in that on-line forum.

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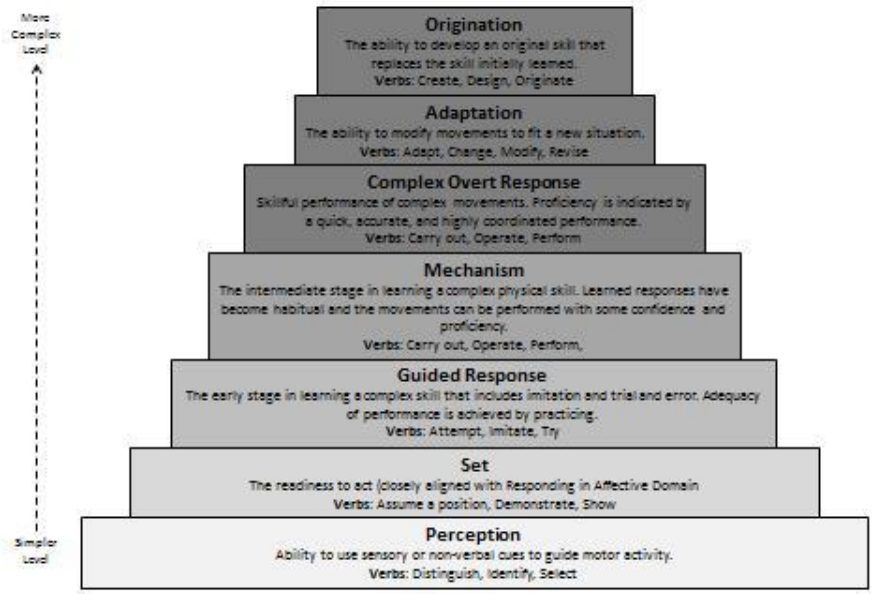
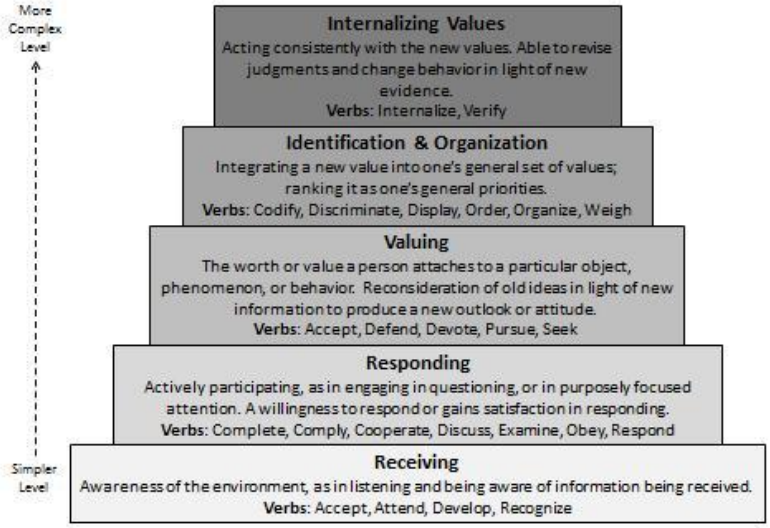
APPENDICES

Appendix A: Taxonomy of the Psychomotor and Affective Domains

Psychomotor



Affective



Appendix B: RUBRIC FOR EVALUATING COURSE POSTERS

Course Designer / Course: _____ Reviewer: _____

Instructions: The quality of your course design will depend on the quality of your work with each element (i.e., student factors, learning goals, etc.), as well as with how well those elements work together in your course. Each of these dimensions of quality is described in a lightly-shaded row in the rubric below. To use the rubric, circle the one column (i.e., "exceptional," "good," or "needs work") in each row that most closely describes your judgment of that area. In addition, please use the white space in each row to add comments or suggestions for improvement.

	Exceptional – No improvements needed.	**Good – Only minor improvements needed.**	**Needs Work – Major improvements needed.**
STUDENT FACTORS	***All the most impactful student factors*** – those factors that have the greatest potential to impact learning success in the course – are identified and accurately described.	Most of the ***most important student factors*** -- those factors that have the greatest potential to impact learning success in the course – are identified and accurately described.	Several of the ***most important student factors*** – those factors that have the greatest potential to impact learning success in the course – appear to be ***ignored or inaccurately described***.
Student factors refer distinctive characteristics of your students that will impact what and how they will learn. Refer to Chapter 3 for information about generating student learning factors.	Use this space to write any comments / questions you have for the course designer:		

	Exceptional – No improvements needed.	Good – Only minor improvements needed.	Needs Work – Major improvements needed.
LEARNING GOALS	The stated learning goal is written in a way that is ***entirely consistent*** with the characteristics of effective goals.	The stated learning goal is written in a way that is ***mostly consistent*** with the characteristics of effective goals.	The stated learning goal is written in a way that is substantially ***inconsistent*** with the characteristics of effective goals.
Course goals refer to what you want your students to know, feel or be able to do as a result of taking your course. Refer to Chapter 4 for information on constructing well-written learning goals.	Use this space to write any comments / questions you have for the course designer:		

	Exceptional – No improvements needed.	Good – Only minor improvements needed.	Needs Work – Major improvements needed.
SUMMATIVE ASSESSMENT	The summative assessment is ***well-aligned*** with the learning goal.	The summative assessment is ***partially aligned*** with the learning goal.	The summative assessment is ***poorly aligned*** with the learning goal.
A summative assessment is a tool (or set of tools) you will use to determine the extent to which your students have achieved your learning goals by the end of the course. This will often take the form of a final exam, a final project, or a final presentation. Refer to Chapter 5 for information about constructing an effective summative assessment.	Use this space to write any comments / questions you have for the course designer:		

	Exceptional – No improvements needed.	Good – Only minor improvements needed.	Needs Work – Major improvements needed.
PROFICIENCIES	***All of the relevant proficiencies*** are identified. These proficiencies are both necessary and sufficient for achieving the learning goal (and therefore to succeed on the summative assessment).	The ***most important proficiencies*** are identified. However, these proficiencies are not completely necessary and sufficient for achieving the learning goal (and therefore to succeed on the summative assessment).	One or more of the ***most important proficiencies*** are ***left out***. These proficiencies are not sufficient for achieving the learning goal (and therefore to succeed on the summative assessment).
Proficiencies refer to the specific knowledge, skills, and attitudes that cadets need to have in order to accomplish your learning goal (and therefore to succeed on the summative assessment of the goal). Refer to Chapter 6 for information on generating a good list of proficiencies.	Use this space to write any comments / questions you have for the course designer:		

	Exceptional – No improvements needed.	Good – Only minor improvements needed.	Needs Work – Major improvements needed.
LEARNING EXPERIENCES	Learning experiences are ***likely to be highly effective*** in developing the learning proficiencies.	Learning experiences are ***likely to be somewhat effective*** in developing the learning proficiencies. They may generally be helpful to students, but they could be supplemented by more or better ones.	Learning experiences are ***unlikely to be effective*** in developing the learning proficiencies.
Learning experiences refer to any experiences that students have that helps them learn the desired proficiencies. These can include experiences inside the classroom, but can also include out-of-class experiences. Refer to Chapter 7 for information on choosing effective learning experiences.	Use this space to write any comments / questions you have for the course designer:		

	Exceptional – No improvements needed.	Good – Only minor improvements needed.	Needs Work – Major improvements needed.
FORMATIVE ASSESSMENT	Formative assessment provides you and your students with ***meaningful information*** about students' acquisition of learning proficiencies, ***to include information about what you and/or they need to do to improve***.	Formative assessment provides you and your students with ***some information*** about students' acquisition of learning proficiencies. However, data are incomplete and may not provide sufficient information about what you and/or they need to do to improve.	Formative assessments are either missing or provide ***inadequate information*** about students' acquisition of learning proficiencies.
Formative assessment refers to the gathering of information about student learning in a way that can be used to improve the quality of that learning. It is the assessment that is performed during the course, rather than at the end. Refer to Chapter 8 for information on incorporating formative assessment opportunities you're your course.	Use this space to write any comments / questions you have for the course designer:		

	Exceptional – No improvements needed.	Good – Only minor improvements needed.	Needs Work – Major improvements needed.
TRANSPARENCY	The course's design is ***highly transparent***. The course structure can be understood with minimal additional explanation from the course designer.	The course's design is ***somewhat transparent***. The course structure can be understood, but only with clarification from the course designer.	The course's design is ***opaque***. The course structure cannot be understood unless there is a detailed explanation from the course designer.
A course design is transparent when it is clear to all participants, to include the course designer, peers, and students.	Use this space to write any comments / questions you have for the course designer:		
OVERALL ALIGNMENT	This is a well-aligned course. ***All elements*** of the course point you and your students in the same direction … toward the desired learning goal.	This is a partially-aligned course. ***Most elements*** of the course point you and your students in the same direction … toward the desired learning goal.	This is a poorly-aligned course. ***Few elements of the course*** point you and your students in the same direction … toward the desired learning goal.
A course design is aligned when all of the course elements (summative assessment, proficiencies, learning experiences, and formative assessments) point you and your students in the same direction … toward the desired learning goal.	Use this space to write any comments / questions you have for the course designer:		

	Exceptional – No improvements needed.	Good – Only minor improvements needed.	Needs Work – Major improvements needed.
OVERALL INTEGRATION	This is a ***well-integrated*** course. There are areas of clear overlap between the summative assessment, proficiencies, learning experiences, and/or formative assessments associated with different course goals.	This is a ***partially-integrated*** course. There may be areas of some overlap between the summative assessment, proficiencies, learning experiences, and/or formative assessments associated with different course goals, but they may seem somewhat artificial or forced.	This is a ***poorly-integrated*** course. There is no apparent overlap between the summative assessment, proficiencies, learning experiences, and/or formative assessments associated with different course goals.
A course design is well integrated when the various goals of the course design "work together" to form a coherent whole. In other words, there are areas of clear overlap between the summative assessment, proficiencies, learning experiences, and/or formative assessments associated with different course goals.	Use this space to write any comments / questions you have for the course designer:		