Commodity, Firmness, and Delight: *Four Modes of Instructional Design Practice*

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How do *you* solve an instructional design problem? Do you attempt to craft a solution based on the unique demands of each problem and the application of well researched instructional strategies? Or do you build upon an existing model, one that has worked many times before, selecting from solutions developed for a range of previous projects?

Your work is directly connected to your conceptualization of your role within the field of instructional design. And that conception includes assumptions and biases about processes, theories, and products. In the course of this chapter we will ask you to reconceptualize your professional practice as an instructional designer and to recognize the roles of instructional manufacturer, instructional engineer, instructional architect, and instructional artist. We will describe how the working ethos of each shapes their practice.

What then, would happen if you were an *instructional artist*? As an instructional artist, you might be encouraged to create fundamentally different designs and work in a completely different manner. You might begin from an idea, engaging and desirable, but unconnected with learning, only later to apply it to instruction. It might work; it might not; but the application would be entirely different. We can see that the perspective through which we view ourselves biases how we understand and address problems.

Your balance in design

The following survey is intended to stimulate personal reflection and discussion of the ideas included in this chapter. Participating in the survey will help you to engage with the article, to stimulate understanding of the concepts presented, and to reflect on your personal practice as an instructional designer. The survey was built from the characteristics which will be explored in this chapter, and will focus on the Vitruvian values of *Commodity*, *Firmness* and *Delight*. We will pose these questions twice in the course of this writing, the second time at the conclusion of the chapter.

To complete each question, select the point on the Likert scale most aligned with your *current* practice. Note that there is no middle point and there are no right or wrong answers. Questions are intended to create difficult choices, encouraging personal reflection. After completing the survey, score each response according to the directions that follow.
<table>
<thead>
<tr>
<th>Question</th>
<th>Response</th>
<th>Table 1: Survey</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1: Are you a teacher or an artist?</td>
<td>Teacher</td>
<td>Artist</td>
</tr>
<tr>
<td>Q2: Which is more important: a functionally useful product or a stable product?</td>
<td>Functionally useful</td>
<td>Stable</td>
</tr>
<tr>
<td>Q3: Should media be used as tools or content providers?</td>
<td>Content providers</td>
<td>Tools</td>
</tr>
<tr>
<td>Q4: Which is more important: pedagogical soundness or innovation?</td>
<td>Pedagogically sound</td>
<td>Innovative</td>
</tr>
<tr>
<td>Q5: Which is more important: software usability or utility?</td>
<td>Usability</td>
<td>Utility</td>
</tr>
<tr>
<td>Q6: Which is more important: software stability or visual richness?</td>
<td>Stability</td>
<td>Visual richness</td>
</tr>
<tr>
<td>Q7: Should designs be easy to use or motivating to the learner?</td>
<td>Easy to use</td>
<td>Motivating</td>
</tr>
<tr>
<td>Q8: Which is more important: functional capability or learner motivation?</td>
<td>Functional capability</td>
<td>Motivation</td>
</tr>
<tr>
<td>Q9: Should people or design experiences be more central in ID?</td>
<td>People</td>
<td>Design Experiences</td>
</tr>
<tr>
<td>Q10: Which is more important: pedagogical soundness or efficiency?</td>
<td>Pedagogical soundness</td>
<td>Efficiency</td>
</tr>
<tr>
<td>Q11: Should products or experiences be more central in ID?</td>
<td>ID Products</td>
<td>ID Experiences</td>
</tr>
<tr>
<td>Q12: Which is more important in media use: content or experience?</td>
<td>Content</td>
<td>Experience</td>
</tr>
<tr>
<td>Q13: Which is more important in media use: usability or aesthetics?</td>
<td>Usability</td>
<td>Aesthetics</td>
</tr>
<tr>
<td>Q14: Are you a teacher or technician?</td>
<td>Teacher</td>
<td>Technician</td>
</tr>
<tr>
<td>Q15: Which is more important: product functionality or visual richness?</td>
<td>Functionality</td>
<td>Visual Richness</td>
</tr>
<tr>
<td>Q16: Do media provide tools for learning or tools to create experiences?</td>
<td>Tools for learning</td>
<td>Tools for experience</td>
</tr>
<tr>
<td>Q17: Which is more important: efficiency or innovation?</td>
<td>Efficiency</td>
<td>Innovation</td>
</tr>
<tr>
<td>Q18: Which is more important in media use: utility or aesthetics?</td>
<td>Utility</td>
<td>Aesthetics</td>
</tr>
<tr>
<td>Q19: Which is more important: ease of use or functional capability?</td>
<td>Ease of use</td>
<td>Functional capability</td>
</tr>
<tr>
<td>Q20: Are you a technician or an artist?</td>
<td>Technician</td>
<td>Artist</td>
</tr>
<tr>
<td>Q21: Should products or people be more central in ID?</td>
<td>People</td>
<td>Products</td>
</tr>
</tbody>
</table>
Scoring of each item in the survey

Each question is given two scores which are entered in the boxes to the left and right of the Likert scale. To determine the score for the left box, count the number of blank spaces from the right margin to your entry (each margin is set at 0). For the right box, count the number of blank spaces from the left margin to your entry. In the illustration below (see Figure 1) the sample entry is three steps from the right margin, scoring 3 points for Pedagogy. Likewise, the check is two steps from the left margin, scoring 2 points for Innovation. Together, the total points awarded for each question must sum to 5. There are 21 questions, with 105 points in total.

<table>
<thead>
<tr>
<th>Q1</th>
<th>Which is more important: pedagogy or innovation?</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pedagogy</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Innovation</td>
<td></td>
</tr>
</tbody>
</table>

Calculating your score

After scoring each item, use the Table below to assign points to the three categories (i.e. Commodity, Firmness, and Delight). Each question will produce two scores. The short answers for each question are included in the table to help with proper scoring. For example, in the scoring example above, "Pedagogically sound" will be in one box, and "Innovative" in another; the appropriate score should be written in each box. Shaded boxes designate comparisons not included for that question; do not write in scores in those places. Add the points when complete to achieve a total score for Commodity, Firmness, and Delight.

Scores should be interpreted as follows:
0-14 points: low
20-50 points: medium
51 + points: high
<table>
<thead>
<tr>
<th>Q</th>
<th>Commodity</th>
<th>Firmness</th>
<th>Delight</th>
</tr>
</thead>
<tbody>
<tr>
<td>1CD</td>
<td>Teacher</td>
<td></td>
<td>Artist</td>
</tr>
<tr>
<td>2CF</td>
<td>Functionally useful</td>
<td>Stable</td>
<td></td>
</tr>
<tr>
<td>3CF</td>
<td>Content providers</td>
<td>Tools</td>
<td></td>
</tr>
<tr>
<td>4CD</td>
<td>Pedagogically sound</td>
<td></td>
<td>Innovate</td>
</tr>
<tr>
<td>5CF</td>
<td>Usability</td>
<td>Utility</td>
<td></td>
</tr>
<tr>
<td>6FD</td>
<td>Stability</td>
<td></td>
<td>Visual richness</td>
</tr>
<tr>
<td>7CD</td>
<td>Easy to use</td>
<td></td>
<td>Motivating</td>
</tr>
<tr>
<td>8FD</td>
<td>Functional capability</td>
<td>Motivation</td>
<td></td>
</tr>
<tr>
<td>9CD</td>
<td>People</td>
<td></td>
<td>Design experiences</td>
</tr>
<tr>
<td>10CF</td>
<td>Pedagogical soundness</td>
<td>Efficiency</td>
<td></td>
</tr>
<tr>
<td>11FD</td>
<td>ID products</td>
<td>ID experiences</td>
<td></td>
</tr>
<tr>
<td>12CD</td>
<td>Content</td>
<td></td>
<td>Experience</td>
</tr>
<tr>
<td>13CD</td>
<td>Usability</td>
<td></td>
<td>Aesthetics</td>
</tr>
<tr>
<td>14CF</td>
<td>Teacher</td>
<td>Technician</td>
<td></td>
</tr>
<tr>
<td>15CD</td>
<td>Functionality</td>
<td></td>
<td>Visual richness</td>
</tr>
<tr>
<td>16FD</td>
<td>Tools for learning</td>
<td>Tools for experience</td>
<td></td>
</tr>
<tr>
<td>17FD</td>
<td>Efficiency</td>
<td></td>
<td>Innovation</td>
</tr>
<tr>
<td>18FD</td>
<td>Utility</td>
<td></td>
<td>Aesthetics</td>
</tr>
<tr>
<td>19CF</td>
<td>Ease of use</td>
<td>Functional capability</td>
<td></td>
</tr>
<tr>
<td>20FD</td>
<td>Technician</td>
<td></td>
<td>Artist</td>
</tr>
<tr>
<td>21CF</td>
<td>People</td>
<td>Products</td>
<td></td>
</tr>
</tbody>
</table>

**Table 2: Scoring the survey**
We will help you to analyze and interpret your scores later in the chapter.

**Instructional design**

Instructional design is guided by a range of theories and ideas, beliefs and assumptions, not the least of which is a perception of our own practice. Consequently, if we view the process of instructional design as one of production (that is, the manufacture of instructional materials) we will create work limited in conception and execution. Similarly, if we go beyond mere production to engage theories of learning and perception, the scientifically based outcomes are engineered, highly efficient, yet may lack the wholeness needed for the development of knowledge (Wilson, 2005). To be complete, we must extend our self-image and think beyond production or engineering. We must seek a balanced model of professional practice, one which expands our understanding of design itself.

Ultimately, in this chapter, we hope to improve educational practice through the design and development of technology-based products and methods. Achieving such a goal requires an understanding of the relationship between instructional design practice and product. To clarify this relationship, we examine instructional design through the architectural dictum of Vitruvius: Commodity, Firmness and Delight. We will identify four modes of design practice; instructional manufacturer, instructional engineer, instructional architect, and instructional artist; and examine how the Vitruvian values are employed. Finally, we offer tactics to promote a balanced approach to instructional design.

**Methods**

Instructional design specifically addresses learning through products and contexts that facilitate the development of knowledge (Parrish, 2005). The traditional methodology of the instructional design field encompasses the analysis, design, development, implementation, and evaluation of instructional processes and products (Reiser, 2001). Other professional fields of design, such as interface design, systems engineering, information sciences, industrial design, technical communications, and new media design have similarly strong understandings in psychology, community context, implementation, and social value (Wilson, 2005).

To orient the field toward design work that engages learners more meaningfully and effectively, instructional designers must begin to focus on creating *experiences*, as opposed to simply developing products or processes. To engage and involve the learner, instructional designers must shift their practice. Substantial innovation in the field will occur only when designers surpass the technical and pedagogical issues in their work. (Innovation is messy and difficult in most situations, particularly including education). Beyond utility is the affective domain, the engagement of the learner, the beauty within the eye of the beholder; not the steak but the sizzle. This is the aesthetics of design.

For thousands of years, philosophers and designers have used the term aesthetics, often interchangeably with the word beauty, to illustrate the sensual relationship and dynamic perception of art to culture (Lavie & Tractinsky, 2004; Parrish, 2005). For example, Leone Battista Alberti, the Italian 15th century architect, painter, and philosopher, defined aesthetics as
“a great and holy matter,” essentially the harmony of all design elements in proportional relationship to one another (Johnson, 1994, p. 402).

Formally established as a philosophical means to critique the visual arts, literature, music, performing arts, and even food (Ekuan, 1998), aesthetics is defined by the American Heritage Dictionary of the English Language as “an artistically beautiful or pleasing experience” (Tractinsky, 2004, p. 11). However, the influence of aesthetics and its significance to the instructional design community moves beyond illustrating the relationship of art to culture and simply critiquing the surface level elements (e.g., shape, color, texture, etc.) of objects and environments (Parrish, 2005). Parrish (2005) defines aesthetics as “a quality that exists equally in the experiences of everyday life as in the fine arts, and one that certainly applies to the learning experiences we design as instructional designers” (p. 16). Central to human thought and practice (Lavie & Tractinsky, 2004), aesthetic experiences provide a foundation for the intellectual activities associated with learning (Parrish, 2005). For the purposes of this chapter, we define aesthetics as those elements of interactive design which are focused primarily on enhancing and heightening the learner’s experience, as opposed to elements that merely satisfy the pedagogical or technological needs of the instructional objectives. In other words, aesthetics is design beyond done, the essence of the design process which continues after the completion of operational and technical requirements.

For the most part, aesthetics has been largely overlooked by instructional designers; only a handful of recent articles address the relationship between aesthetics and usability (cf. Aspillagae, 1991; Kirschner, Strijbos, Kreijns, & Beers, 2004; Parizotto-Ribeiro & Hammond, 2004). The instructional design community at present is concerned primarily with performance improvement and systematic instructional design procedures (Reiser, 2001). The field’s reluctance to acknowledge aesthetics as an integral facet of instructional design curriculum, practice, and research will suppress the development of engaging learning media and, ultimately, the effectiveness of instruction (Parrish, 2005; Wilson, 2005).

Parrish (2005) posits that instructional designers often view aesthetics as a superficial quality which encourages passivity by creating an illusion of learning, sidetracking the chief responsibilities of instruction. Yet others suggest aesthetics should exist at the core of design, intertwined with utility and usability, to provide pleasant experiences that enhance and extend the way people work and learn with technology (Kirschner et al., 2004). Frequently viewed as superficial, aesthetic design gets overlooked in lieu of utility and efficiency (Tractinsky, 2004) and is traditionally delegated to graphic designers late in the design process (Parrish, 2005).

Although instructional designers often neglect the potential impact of aesthetics on learning and view emotional design as a superficial task, many disciplines (e.g., architecture, automotive engineering, interior design, etc.) view aesthetics as a principal design element in the problem-solving process (Parrish, 2005). For example, automotive engineers often place the aesthetics of their vehicles at the core of the design process, playing a vital role alongside utility and usability in the development of the final design. Instructional designers, “beholden to the dry, yeastless qualities of their work,” (p. 5) tend to focus on theoretical strategies and levels of efficiency, rather than discussing how their designs emotionally inspire or motivate learners.

Some in the field of instructional design have begun to address a balanced approach which includes aesthetics in their work. For example, Interaction Design is a framework anchored in
utility, usability, and aesthetics focused on creating pleasurable learning experiences that appeal to and benefit the user (Kirschner et al., 2004). While utility is defined as the array of functionalities and features incorporated by a system (i.e. the tools present in the software that satisfy the outlined pedagogical requirements), usability is concerned with the effectiveness, efficiency, and satisfaction with which learners can accomplish a set of tasks. Together, the utility and usability of a design represent the usefulness of the system. For a system to be perceived as useful by its audience, the design of a software environment must balance utility and usability. In addition, interaction design is concerned with aesthetics and emotion, more precisely, how the software may appeal to and benefit learners (Kirschner et al., 2004).

**Balance**

Some design fields have long recognized a value in the balance of the functional, technical, and aesthetic aspects of design. It is implicit that no one aspect should dominate, nor should any be neglected. From intercontinental bridges across the Bering Strait to the elegant simplicity of an orange juicer (Norman, 2004), delight, beauty, and aesthetics are common in the fields of engineering and product design. Historically, architecture has codified this balance as Commodity, Firmness, and Delight.

In the first century BC, Marcus Vitruvius Pollio, a Roman writer, architect, and engineer, authored a book titled *De architectura*, later known as *The Ten Books of Architecture* (McEwen, 2004). Considered the forefather of systematic architecture theory, Vitruvius advocated that architecture design must satisfy three discrete requirements: *firmitas* (i.e. strength), *utilitas* (i.e. utility), and *venustas* (i.e. beauty) (Tractinsky, 2004). Whereas *firmitas*, or Firmness, refers to the construction and physical soundness of a building, *utilitas*, or Commodity, deals with the functional use and appropriateness of a design. The phrase "Commodity, Firmness, and Delight" is partially attributed to Henry Wotton, who translated Vitruvius' text in 1624.

The third Vitruvian requirement, *Venustas*, or Delight, refers to the aesthetic or beauty of architecture. Vitruvius believed architecture was an imitation of nature (McEwen, 2004). Humans, mirroring techniques employed by birds and animals, construct their homes as shields against nature’s elements. However, in addition to building strong, durable, and useful homes, Vitruvius believed architects must focus on the aesthetic elements, or beauty, in their designs. Beauty, (i.e. Delight), is responsible for making design a uniquely human process: "Is it not strange that sheep's guts should hale souls out of men's bodies?" (Shakespeare, W., Much Ado About Nothing, Act 2)

Vitruvius’ architectural requirements present an illuminating framework for instructional designers to re-align their design methods. The elements of Commodity, Firmness, and Delight can inspire instructional designers to greater innovation and higher quality, and the three aspects of architecture can be used to inform the work of instructional design.

Within instructional design, the Vitruvian ideal of Firmness can be used to describe the technical issues of instructional design, specifically how media are used and how technology is applied in a solution. Technical skill is a requisite for success here. For example, software should not crash; it should run well and be delivered on time. This is the production aspect of instructional design.
Commodity refers to the functional use of a design product. Within the field of instructional
design, Commodity refers to the application of instructional methods, the use of sound
instructional theory, and the structuring of the interface design. Scientifically researched and
proven, this is the domain of the engineering aspect of instructional design.

Delight encompasses the affective aspects of the design, from the surface aesthetic to the
complete experience of the learning adventure. This is the area that is most difficult in which to
succeed, and which will prove most effective and rewarding. As a dominant feature, this would
derscribe the realm of the instructional artist, possibly sacrificing utility for aesthetics and
experience.

**Your values in the design process**

We will now revisit the results of the survey completed at the beginning of the chapter. Your
scores will reflect your perception of your own work, illuminating those areas most central to
your current instructional designs. Any one aspect rating in the high range (i.e. 50 points and
above) indicates a predilection for that area to the detriment of others. Each area scoring in the
medium range (i.e. from 20 to 50 points) indicates a balanced approach to design.

Some designers focus on a single design aspect, others successfully integrate two in their work,
and many have a goal to balance all three. For example, some architects are known to put
buildings together well; others understand the social, functional and programmatic aspects of the
field; and some, the rare few, concentrate on the aesthetic domain of the field. (From an old
anecdote; Frank Lloyd Wright to a patron with a severely leaking roof: "Enjoy. You live in a
Frank Lloyd Wright building.")

Many of the professions that create the designed objects, environments, and experiences we
interact with in society can be described through the Vitruvian descriptors of Commodity,
Firmness, and Delight. For example, one can imagine the results from various cooks and chefs to
the survey. Some would view food as a utilitarian need, as all people need to eat. Sufficient food
is provided in many settings. It is warm, it's cooked, and it's safe to eat. A better diet can be
provided, however, ensuring some variety and essential nutrients needed for a healthy lifestyle
such as fiber, vitamins, and anti-oxidants. It might not taste great, but it's very good for you.
Some meals reach the level, however of *cuisine* where the taste, the smell, the nutrition, the
visual sensation, and the experience of the meal combine to make something exceptional. In that
case, the chef may have achieved the Vitruvian charges of Commodity, Firmness, and Delight.
And so should we in instructional design.

One way to apply the three Vitruvian aspects to instructional design is to use other design
professions as models for our work. Although many definitions of instructional design exist,
models for professional orientation can provide a means to advance the field.

**Instructional modes of practice**

We have identified four modes representing distinct yet common approaches to instructional
design practice: the instructional manufacturer, instructional engineer, instructional architect, and
instructional artist. The modes were developed from our observations of design practice, and are
used as a sorting mechanism, a 'hat' to help understand what is a continuum of practice with
varied characteristics (see, for example, Rowling, 1996). Names were chosen to signify various processes in design. Each mode differs on several dimensions (see Table 1). Most importantly, practitioners in each mode differ in how they go about their work; the difference is reflected in the nature of their products. After reading the modes of practice, we ask the reader to identify their personal primary design approach from within the modes.

The manufacturer is a developer of instructional materials. The manufacturer is often a technician who applies a pre-defined design model or template to solve an educational problem and delivers a product as efficiently as possible. To a large extent, the solution to an educational problem is presented to the manufacturer whose responsibility becomes one of developmental efficiency. Product consistency and stability are of primary importance, leading to results that are predictable and stable.

The engineer is an instructional problem solver. The engineer is generally a highly trained professional who ensures a product achieves its educational goal and is usable by the target audience. The engineer can apply contemporary research-based ideas to develop educational materials. Thus, interface design and pedagogical theory are important components of this mode of instructional design. The engineer’s principal goal is the functional efficiency of the design.

The architect extends the engineer’s functional and usable solution and attempts to incorporate aesthetics at the core of the design process. By doing so, the architect explores divergent solutions that extend and cultivate the affordances of a medium. The architect’s approach to instructional design attempts to balance utility, usability, and aesthetics.

The artist is an instructional explorer. The artist uses instructional problems as stimuli to experiment with media and affordances. The instructional artist may work without client or audience, only later attempting to apply to instructional practice what has been learned through the artistic experience. The artist embraces failure and engages in continuous self-criticism while attempting to understand both the problem and self.

<table>
<thead>
<tr>
<th>Focus</th>
<th>Artist</th>
<th>Architect</th>
<th>Engineer</th>
<th>Manufacturer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Audience</td>
<td>Self</td>
<td>End users</td>
<td>End users</td>
<td>Irrelevant: Audience has been predetermined</td>
</tr>
<tr>
<td>Usability</td>
<td>Irrelevant beyond the artist</td>
<td>Important, but adaptable</td>
<td>Very important</td>
<td>Irrelevant: Usability has been predetermined</td>
</tr>
<tr>
<td>Technical robustness</td>
<td>Will vary according to the problem</td>
<td>Important, but adaptable</td>
<td>Very important</td>
<td>Irrelevant: Structure has been predetermined</td>
</tr>
<tr>
<td>Aesthetics</td>
<td>Critical</td>
<td>Important, but adaptable</td>
<td>Low</td>
<td>Irrelevant: Aesthetics has been predetermined</td>
</tr>
<tr>
<td>Profit</td>
<td>Irrelevant</td>
<td>Less important than for the engineer</td>
<td>Budget driven</td>
<td>Critical</td>
</tr>
<tr>
<td>Solution</td>
<td>Internally driven</td>
<td>Externally driven</td>
<td>Externally driven</td>
<td>Template driven</td>
</tr>
</tbody>
</table>

Table 3: Focus of the design process for the artist, architect, engineer, and manufacturer
What then is your mode of instructional design practice? One’s perception of role indicates one’s general orientation; in other words, how you perceive your professional orientation will affect your processes and methods of working. Most designers have one principal orientation for work. In reality of course, most instructional designers operate in different modes at different times, but for our purposes here, understanding your principal mode of operation will provide a basis for understanding this chapter. The results of your survey can help you locate your own professional practice among these four modes. It is hoped by examining beliefs inherent in the survey questions we can stimulate reflection and encourage balance within the field.

![Figure 1: Commodity-Firmness-Delight - Instructional Architect](image1)

![Figure 2: Commodity-Firmness-Delight - Instructional Artist](image2)
We can examine each of the modes by using hypothetical results from our earlier survey (see Figures 1 – 4). Although we illustrate the performance of each of the four modes across a range of factors, the illustrations are not presented as quantitatively precise graphs. Instead, they are intended to illustrate the changing values among different professional modes.

Manufacturers would have high scores in the Firmness category, indicating a concentration on production, operation, and utility. Instructional engineers would have a high rating in Commodity, with interests in usability, the scientific/research basis of education, and a focus on the human aspects of learning; they would also have a medium rating for Firmness. Artists would have a high rating in the aesthetic area, possibly ignoring or viewing as less valuable other aspects of the design endeavor. Instructional architects would have a balance in the three areas with no one area having dominance in the design process. Actual results would vary among
modes and even within individuals on a day-to-day basis. We now ask you to return to your initial survey scores to compare and reflect on the illustrated modes in Figures 1 – 4.

**Figure 5: Differences in design approaches for the artist, architect, engineer, and manufacturer**

We can compare how each of the four modes of instructional design is differentiated by the Vitruvian aspects (see Figure 5). We believe it is particularly important to understand how different design aspects vary across each mode. Once this pattern has been recognized, we anticipate readers will quickly understand other relationships presented herein and may generate additional relationships of their own.

Artists generally rank highest for aesthetic issues (i.e. Delight), but produce correspondingly low ratings for Firmness and Commodity, reflecting the instructional artist’s interest in the experimental, experiential, and visual as opposed to the utilitarian aspects of design. Instructional architects’ scores generally reflect a balance across the three areas: no single dimension dominates the design process. Instructional engineers score high in Commodity, reflecting interests in usability, the scientific/research basis of education, and a focus on the human aspects of learning. Engineers score medium for Firmness. Manufacturers are concerned with the utilitarian aspects of design (i.e. efficiency, robustness, and completion) and score high in the Firmness category, reflecting an emphasis on production, operation, and utility. However, they score low in Commodity and have little interest in aesthetic design.

These classifications suggest one's attitudes and goals for instructional design. We contend that the field of instructional design emphasizes function and theory, neglecting affective and aesthetic issues to the detriment of education.

**Instructional design education and innovation**

While our observations of the field and subsequent description of modes of practice can shed light on the field of instructional design, comparisons with other aspects of professional practice
can also be valuable. In this graph we illustrate two separate areas, innovation and instructional design education. Each is discussed separately, and in combination below.

**Figure 6: Differences in instructional design education and innovation for the artist, architect, engineer, and manufacturer**

Within instructional design education, the focus of learning is principally on the manufacturing and engineering modes. Indeed, we suspect many instructional designers would be happy to complete an instructional design program armed with the ability to select and apply one or more of the most frequently used design models and a foundation in using the most visible software applications in the field (Jonassen, 2006). For those most interested in manufacturing approaches, the focus on software tools becomes paramount. Many instructional design students learn how to use software to produce instructional materials, which are often based on applying existing models of learning.

More advanced students may approach the engineering mode, employing educational and pedagogical theories in their design work. Few students of instructional design reach the level of instructional architect balancing aesthetic concerns with functional and theoretical concerns. Occasionally, students (and practitioners) assume the mantle of instructional artist, but given the radical and experimental nature of their products, their efforts tend not to be well supported.

Innovation, the ability of the field to develop and implement new methods of instructional design, varies greatly across instructional design modes. Innovation is least evident in manufacturing, where accepted production methods are maintained and applied to instructional design problems, but no new directions are used or sought. Change is incremental and craft based; improvements in efficiency are sought, but are generally modest. Instructional engineers are more likely to innovate through research-based concepts and directions, but change remains moderate. Instructional architects specifically seek new directions for their work, and hence, innovation is increased. Instructional artists, perhaps seeking the "shock of the new" (Hughes, 1991), rate highest in innovation and change.
A hypothetical comparison can be made between the educational system for instructional designers and the value placed on innovation in instructional design. While we often contend creativity and diversity are valuable, in our own students, in instructional design education, those qualities are "messy." Quite often, our goals, like those in mainstream education, are the transmission of content and the development of proper students, graduates, and subsequently instructional designers. We are pleased to produce instructional engineers, and often fail to recognize the value of the instructional artist. A **culture of innovation has not developed within instructional design education.**

**Media focus**

Many instructional design students have an intense engagement with technology; many others develop skills in this area as they practice. Media can be the stepchildren of instructional design: a chore to some, but a pleasure to others. How we emphasize or avoid media is an interesting measure of our instructional design practice (see Figure 3).

Media is an important component of instructional design, and our emphasis or lack thereof is instructive in understanding our modes of instructional design practice. As practitioners vary across the landscape of instructional design, there is a close connection between the focus on the media and our component, Delight.

As with practice as an artist, increased skill in media increases the potential for innovation and aesthetic reward. This connection follows with electronic media as well; high levels of skill are often more engaging and more enriching. The instructional architect, however, realizes both the value of a focus on the media and a balanced approach to function and utility. The artist may overstate the instructional experience, whereas the engineer or manufacturer may overemphasize production and function and undervalue aesthetics.

![Figure 7: Differences in media focus and Delight for the artist, architect, engineer, and manufacturer](image)

**Instructional modes in practice**
We anticipate the design approaches for each mode could be examined across diverse instructional design problems. To illustrate, we will explore the use of distance learning and how it is addressed by practitioners of each of the four modes of instructional design. Afterwards, we will ask you, the reader to imagine your own hypothetical instructional design problem and to conceive how you could, as an instructional manufacturer, engineer, architect, and artist, address the problem.

Although each solution approach will embody the designer’s theoretical conjectures about how people learn and interact with media (i.e. expectations about how designs should function in unique instructional settings) (Sandoval & Bell, 2004), the divergent characteristics of each mode ultimately guide the exploration and solution of the problem.

When asked to develop educational materials for use through distance education, the instructional manufacturer might employ traditional instructional design methods to develop instructional materials emphasizing content presentation and application. Such materials are commonly delivered to learners via the most efficient technologies (e.g., online quizzes, Blackboard/WebCT templates, PowerPoint presentations, etc.). Most of these technologies are stable and, at the core, are based on educational theories such as constructivism, collaboration, or cognitive science, but such theories are remote from the manufacturer. Models for the design process would focus on the functional (i.e. "form follows function"). As with the architecture in the 1960's, an aesthetic could develop based on making the technology work, on utility.

Following a more innovative and media-driven approach than the manufacturer, the instructional engineer could design materials that promote higher-level learning (i.e. both near- and far-transfer) of the content. For example, the engineer could use the linear interactive affordances of a development environment such as Macromedia Authorware to design animations to highlight key steps in worked examples, simulated models of complex phenomena, and develop interactive exercises adaptive to the prior history of each learner.

The instructional architect, fueled by a balanced approach that includes aesthetics and innovative design, would approach the problem by designing new solutions that promote high-level learning (i.e. generation and challenge), followed by a critical examination of the solution to improve user engagement, motivation, and interaction. By scrutinizing the design and questioning the solution, instructional architects are unique in that they are not satisfied by simply solving the problem. The architect is motivated by extending the boundaries of the available media affordances to explore solutions that enhance the learner experience, moving beyond the pedagogical and technological specifications of the instructional problem (i.e. design beyond done).

The instructional artist, operating with a high expectation of failure, would approach the scenario with little concern for the problem specifications and simply experiment with the available design media and content. For example, the artist could use the graphical capabilities of Macromedia Flash to create interactive visualizations or sonic interpretations. Most importantly, although the initial goal may have been pure experimentation with experience, an instructional artist might discover techniques that promote learning. (Note that the term "might" is critical to the nature of the artist; results that are unsuccessful in generating added learning remain valuable.)
We ask now that you, the reader, imagine an instructional design problem of your own. It might be one of your current practice or one that is imaginary. How would this problem be addressed as a manufacturer, as an architect, as an engineer, and as an artist? Which is closer to your own practice or learning? And from which can you draw further inspiration?

It is important to note that most instructional designers are not purists: They do not restrict themselves to a single design mode. Instead, they often shift between modes, borrowing from each mode’s approaches and processes. For example, an instructional architect may choose to shift responsibilities toward a manufacturer to construct rapid-prototypes for transient use and experimentation with learners early in the development process. Alternatively, an instructional engineer may shift towards an architectural or artistic practice mode to enhance the aesthetic design and user engagement of their solution, essentially working “beyond done.”

The modes are dynamic: Any individual designer at times may work in each of the modes. The goal of a balanced approach to instructional design is paramount, encouraging activity across the modes as necessary.

Retaking the survey

In reading any article or experiencing any lecture, one measure of success in communication is in changes affected on the reader or audience. We now invite you to revisit the survey from the beginning of the chapter, and this time, answer the questions as to how you would like to perform as an instructional designer. An additional copy is provided after the bibliography.

Reflection on possible changes and alternative directions is valuable for most professionals, including instructional designers. Have your ratings changed? How will this change your outlook on your current position? How should this change the nature of your future design work?

We hope to continue the research surrounding this survey which is available through http://hokanson.cdes.umn.edu/CFD/

Moving to the left: Tactics to infuse aesthetics in your instructional design

So how should you solve an instructional design problem? We contend that to do it well, you need to step outside of your comfortable answers and ideas. To do it well you need to embrace failure through experimentation. And to do it well, you need to be more of the instructional artist.

How then will you become an instructional artist? You might begin by making semantic and conceptual steps, in other words, thinking of yourself as an instructional artist and describing your work to others in that way. Extend that to your work procedures: redefine not only your work, but the next project you begin. Assume that the work has hidden meaning, and that you bring to it a completely new vision.

Much of the work in instructional design is done in modes displayed on the right of Table 1, or Figures 5-7 working as an instructional manufacturer or an instructional engineer. Moving to the left (i.e. becoming more balanced in one's approach to instructional design, and working more like an instructional architect or artist) is a philosophy contingent on how you value the aesthetic
and affectual components of your designs. A number of tactics can be employed to engage and infuse Delight in your practice of instructional design; they follow below. Examples of tactics and strategies are described for individuals, professional firms, and schools of instructional design, each encouraging a "move to the left".

Each of these approaches attempts to develop skills of the architect and artist, to help create work that is more engaging, experiential, and delightful. These approaches may be contrary to many aspects of practice in instructional design, and of course, should not become dominating in one's practice. They are meant to re-orient one's practice. We have based this on a series of observations about those actions which would encourage more innovative and diverse work.

- **Technological immersion leads to insight.** We believe that the instructional medium drives the selection of the method. Limiting design work to a single medium limits the ability to conceptualize those procedures possible with that medium. Similarly, having a range of different media for use allows for a cross-pollination of ideas; what you learn in Flash can help you understand audio software technology. "Intelligence is skill in multiple media" (Hokanson, 2001).

- **Diversity in background leads to innovative practice.** Expertise in a different field provides inspiration and metaphors for novel and innovative work. Pragmatically, alternative expertise stimulates divergent thought, provides varied examples of work, and attracts a wealth of contacts, discussants, and diverse experts to engage.

- **Understanding how to think, communicate, and behave as one's audience, clients, and colleagues is valuable to any practice.** Good instructional design cannot be created in a vacuum; it needs engagement before, after, and during the design process. Understanding one's audience is a constant in the field. We all pay lip service to the idea. However, actively engaging the audience in the design process and seeing their responses is less frequently part of the process.

- **Improve design ideas through learning to criticize and critique the work of others and yourself.** Develop a filtering system that helps you to identify what is valuable, good, and wasteful. Then use it.

- **Finding new ideas and using them is the center of design work.** Develop practices that encourage divergent uses of media. Creativity, application, and innovation are critical to advancing the field. Creativity, as a skill, can be developed through conscious practice.

- **Strive for continuous innovation and advancement in design; nothing is ever perfect.** The instructional designer should develop dissatisfaction with the status quo striving to be better with a reach exceeding one's grasp striving for flow; seeking failure. There needs to be a constant questioning of the ideas, values, assumptions, and procedures of the designer. Self evaluation and critical thinking need to be integrated into the instructional design process.

- **Involvement with others, particularly peers, is valuable to professional work.** Meet, present, publish, engage, and share – discussing and critiquing one’s work in a public setting helps people to think divergently.
• **Delaying functional perfection allows aesthetic aspects to evolve.** It is important to experiment with technology and ask questions such as, "What can be done with this medium?" Relevant instructional applications need not be immediately apparent, as the artist creates learning artifacts without consideration for an intended audience or use. Instructional designers, indeed all creative professionals, would be well served by following the model of the 3M Corporation, where it is expected that 15% of budgets will be used for research and experimental development (Kao, 1997).

The following table summarizes these topics, and both the table and the listing above are merely beginnings; we ask that you complete the last column in each row, outlining a set of tasks, strategies, or even daily goals to help improve your work as an instructional designer by *moving to the left.*

<table>
<thead>
<tr>
<th>Tactic</th>
<th>Short-hand strategy</th>
<th>Individual tasks/actions</th>
<th>Firm tasks/actions</th>
<th>Curriculum tasks/actions</th>
<th>Outline your tasks/actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technological immersion leads to insight</td>
<td>Get your hands dirty</td>
<td>Develop a strong expertise in at least one ID media or technology</td>
<td>Expand divergent skills; encourage cross-team communication of technological advancement</td>
<td>Provide opportunities for technical skills development: include a studio component as part of ID program</td>
<td></td>
</tr>
<tr>
<td>Diversity of background leads to better practice</td>
<td>Become an expert at something else</td>
<td>Develop skills in another domain; enrich your 'day job' by expanding your skill set</td>
<td>Support professional development and cultural activity among employees</td>
<td>Provide flexibility and encouragement for non-ID course work</td>
<td></td>
</tr>
<tr>
<td>Understand one’s audience, colleagues, and clients</td>
<td>Understand people</td>
<td>Ask questions and listen; invite others to use your designs during the design process</td>
<td>Employ active user testing, prototyping, and other public engagement</td>
<td>Include psychology and user-testing courses in curriculum</td>
<td></td>
</tr>
<tr>
<td>Improve design ideas throughout the development process</td>
<td>Learn to criticize and critique</td>
<td>Seek feedback on design work; develop a habit/process of self reflection; put your work on display when possible</td>
<td>Celebrate design work with open critiques; publish work through peer review</td>
<td>Model and include active critiques in courses and studios</td>
<td></td>
</tr>
<tr>
<td>Finding and using new ideas is the essence of design</td>
<td>Learn to be creative</td>
<td>Choose the other path, the one less taken; destroy your routine; be receptive to new inspirations in any environment</td>
<td>Develop as a creative organization; support and develop creative ideas by all</td>
<td>Add creativity courses; require multiple concepts in problem solving across curriculum</td>
<td></td>
</tr>
<tr>
<td>Strive for continuous innovation and advancement in design</td>
<td>Never finish</td>
<td>Integrate self evaluation and critical thinking into the design process; develop dissatisfaction</td>
<td>Always strive for new products; reward exploration and failure; 3M's 15% rule (Kao, 1997)</td>
<td>Develop skills in critical thinking and design critique; encourage and model self-reflection and improvement</td>
<td></td>
</tr>
<tr>
<td>Interaction with peers improves critiquing skills</td>
<td>Connect</td>
<td>Talk to someone else; present at conferences in ID and</td>
<td>Support employees in attending</td>
<td>Encourage participation, within ID and with other</td>
<td></td>
</tr>
</tbody>
</table>
ideas, and the design process | other fields; become active in the design community | conferences, courses, and community events | disciplines; encourage projects with other majors
---|---|---|---
Delaying functional perfection allows aesthetic aspects to emerge | **Work as an instructional artist** | Create experimental instructional projects; build instructional experiences; do something wrong; value failure | Use competitions and ‘what-if’ sketches to investigate ideas; become less utilitarian | Reorient priorities of the design process; support “way out” projects; embrace the experimental failures of students

**Table 4: Moving to the left: Steps toward becoming an instructional architect or artist**

**Application**

How one describes one’s work deeply affects the procedures, ideas, and quality of the work itself. We hold that instructional design has long focused on the productive and technical aspects of instructional design, the pedagogical issues or the software delivery system, and has for a long time, ignored the aesthetic and affective domains. Instructional design generally remains a craft based system, with modest theoretical direction. Adherence to traditional procedures, even perfecting the means of production, will continue to produce projects and designs that only have the same capabilities.

Now, as we close, we return to the original questions of the chapter: How *should* you solve an instructional design problem? How could you solve your most common design problem in a different way? How has this changed in reading this chapter?

Instructional designers are not engineers, or artisans, or craftspeople, or manufacturers. Their work must go beyond each of these appellations. Instructional design should include all of the aspects reviewed here: Commodity, Firmness, and Delight. Each of these qualities is essential to good design and must be addressed in the design process.

Designers begin each project without knowing the nature or quality of their ultimate solutions. We are not designing if we already know the answer. We are not designing if we follow a cookbook of theories and pedagogy. Yet, we know that the design process, of creating without a net, is engaging, challenging, and leads to superior solutions. To truly design is to extend understanding, to create something new and innovative. To design is a *goal*.

To change education you need to change your perception of your profession. To change your work, you will need to change your mind.
References


