Message Design: A Key to Effective Instructional Materials
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INTRODUCTION

What is *message design*?
A *message* is a discrete unit of data transmitted through various sensory abilities: sight, sound, touch, taste, and smell. When data is received accurately, it becomes information. The transaction is called communication. Messages are sent for a variety of purposes: to inform, to entertain, to persuade, to anger, to soothe.

Message *design* is the systematic and purposeful process of making decisions about communication. This involves decisions about both the content ("what") and the delivery ("how") of a message. Most of us make message design decisions either unconsciously or from habit: whether we phone or send a note, whether we sit with our legs crossed or not, whether we speak loudly or softly.

Every decision about the messages we send, whether conscious or unconscious, deliberate or haphazard, contributes either positively or negatively to the quality of communication. While this approach to message design is sufficient in many situations, it is not sufficient when the message in question is instruction.

Why is message design important for instructional materials?
Instruction is a specific type of communication with the intended goal of improving performance. This requires complete and accurate transmission of the message. According to William Deterline (p. 296), "Clarity, completeness, simplicity and other characteristics that facilitate understanding can be designed into a message only at the sender's end." The sender has primary responsibility for message design.

This calls human performance technology (HPT) professionals, and others interested in instruction, to make well-informed and deliberate decisions about every element of the instructional message so that the message is received as intended.

Consider a simple example. In America, the size of the font of printed text sends a strong message about the content of the material. A very large size font is perceived as containing a simple message that is intended for either very young or very old readers. A very small size font, on the other hand, is perceived as containing a complex, technical and difficult message. Without the awareness and ability to control the message, an uninformed decision about the size of text could compromise the final outcome of the instruction by alienating the reader.

Much of the content detail of this paper is familiar to performance technologists. We learn the mechanics of making good handouts, good overheads, good video and perhaps good CBT. However, we don't learn the underlying concepts that drive specific detail decisions, how these concepts change across various media or how to create a coherent, consistent set of instructional materials. As software marketing efforts promote the false notion that elaborate instructional materials are easy and cheap to create, and as instruction itself becomes more media-rich, the concepts of good instructional message design become more and more important.

Purpose of this paper
This paper will provide HPT professionals with a practical tool to help facilitate communication and subsequently improve performance through the development of high quality and effective instructional materials. This paper focuses on the "whats" and "hows" of instructional message design, and provides a link with research from various contributing fields such as graphic design, communication, instruction and learning. These insights will be valuable to any HPT professional who develops, purchases, or manages the development or purchase of instructional materials.

Specifically, this paper will:
- define important concepts of message design.
- provide examples of how each concept applies across various instructional media.
- provide references for more in-depth study of both the concepts of message design and research that underlies these concepts.

This paper focuses on developing instructional materials for formal instruction for adults in a corporate setting. Many of the concepts apply, however, to informal or spontaneous instruction, to other settings and to other forms of communication.

BASIC CONCEPTS OF MESSAGE DESIGN

The concepts of message design draw from a variety of fields: psychology, cognition, communication, applied design, fine arts, instruction, physiology and education. Since most instructional materials are predominantly visual, concepts from the visual arts are most appropriate. According to Gregg Berryman, Gestalt perceptual psychology explains how the human mind understands

visual messages. It dictates seven principles of visual design:
- figure-ground (contrast facilitates perception)
- equilibrium (psychological fields move toward order, balance and efficiency)
- isomorphic correspondence (visual images recall personal experiences)
- closure (closed shapes are more stable)
- proximity (groupings are favored according to the nearness of parts)
- continuation (line of sight continues beyond a line)
- similarity (similar objects are defined by shape, size, color and direction)

Since the purpose of instruction is specific, I have modified the Gestalt principles to make them more useful for instructional message design. The basic concepts of good instructional message design are:
- grid-based design
- perceptibility (physiological and psychological)
- chunking and sequencing content
- spatial relationships (size and placement)
- secondary messages
- color

Excellent publications that present research findings about various aspects of instructional message design include Anglin, Fleming and Levie, Misanchuk, Schneiderman, and Thompson et al. Full reference citations are included in the bibliography.

Grid-Based Design
The concept of grid-based design means that a consistent pattern of organizing the components of the message underlies the presentation of the information. This meets the human need for order and predictability, and allows the learner to focus their energies on making sense of the instruction rather than making sense of the delivery medium.

Small differences in an established grid are perceived as annoying or sloppy. Large differences are perceived as significant.

Grid-based design applies at every level of design: to a group of materials, to a book, to a page or to a single diagram. *Consistency* is a good synonym for the concept of grid-based design. Without an obvious order to materials, learners spend their time and energy imposing their own sense of order on the content. When HPT professionals provide this order, we make instruction more efficient.

Consider the following examples: Most of us know exactly where to turn in our favorite newspaper or magazine for the feature cartoon (expository information).

We know, without thinking, where to look on our pay stub for our latest salary increase (feedback). Now, imagine how unsettling it would be for the placement of either to change.

Perceptibility
Perception is essential for communication to occur. This means that the receiver actually receives the message as intended. Perception has two components: sensory perception and cognitive perception.

Sensory perception is physiological, and occurs through the senses of sight, sound, touch, taste or smell. The term *legibility*, applied rather loosely here, is a good synonym for sensory perception. It means that the receiver can see individual words or shapes, can hear sounds, or can touch objects. Sensory perception can be distorted or blocked by various factors, primarily problems with transmission, such as insufficient light for an overhead projector, or problems with the receiver, such as color blindness.

Cognitive perception is mental, and occurs when the receiver understands the same meaning that the sender transmitted. The term *understanding* is a good synonym for cognitive perception. Cognitive perception can be blocked by various factors, including different meanings for the same word or object, no prior exposure to a word or object, or inability to discern meaning.

Consider the following example: An electrical engineer for a major computer manufacturer attended a week-long process improvement workshop at an off-site location. He returned to his job frustrated and confused. The engineer, born and raised in the hills of Tennessee, attended a team-focused workshop on Long Island, NY with unfamiliar colleagues who were all eastern-seaboard natives. The differences in accents and expressions was enough to hinder the engineer's full participation and compromise the benefits to him and the rest of the group.

Remember that although *perceptibility* depends on both the receiver and the sender, the sender has a larger degree of control over, and therefore responsibility for, the message.

Chunking and Sequencing Content
Chunking and sequencing of content is one of the fundamental considerations in executing an instructional strategy. Chunking refers to the boundaries around discrete elements of instruction. Sequencing refers to the order of those discrete elements.

The importance of chunking and sequencing continues through to the development of instructional materials. Each discrete element must make sense on its own, and a group of elements must make sense collectively.

Appropriate chunking and sequencing can be hampered by layout or production considerations such as page limits.

Consider the following example: A popular book on instructional development provides job aids for most of the development techniques explained in the text. Of the 87 job aids in the book, 29 are split across pages simply to accommodate the layout of the book. Slight design modifications would re-position necessary page breaks and improve the usability and effectiveness of the remaining 58 job aids.

Spatial Relationships

Spatial relationships refer to the physical size and placement of elements of a message. Two principles explain the perception of spatial relationships: the principle of size and the principle of proximity.

The principle of size means that the relationship of size of various elements of a message correspond to the relationship in meaning (typically importance) of the elements. In other words, "bigger is better."

The principle of proximity means that the relationship in space of various elements of a message corresponds to the relationship in meaning of the elements. In other words, the closer elements are in space, the closer they are in meaning.

Consider the following example: A job aid contained important definitions for a new process. The definitions were printed in a four-column sheet of standard paper. Small line drawings accompanied many of the definitions and provided needed clarification. Some drawings were placed at the beginning of the definition, some in the middle of the definition, and some at the end of the definition. The lack of consistency, coupled with the distortion from the four-column layout, made it all but impossible to discern which illustration accompanied which definition.

Secondary Messages

Secondary messages is a broad term that refers to the "extra added" elements of a message. These secondary messages restate, clarify, strengthen or illustrate the real message. They include graphics, pictures, sounds, models, videotapes, etc. Depending on the nature of the message, we may refer to them as *visual aids*.

Remember that secondary messages should enhance the primary message, rather than replace, dominate or become the primary message. Even statisticians understand the importance of a clear, simple message. Runyon et al. (p. 207) warn against *chartjunk*: "superfluous visual information that is added to a chart that is distracting and reduces the importance of the data."

This has two implications: careful consideration about what, how and when to enhance the primary message, and caution about not confusing the primary and secondary messages. Frequently, these judgments are clouded by either excitement about a particular media such as the newest presentation software or excitement about a particular secondary message such as an engaging photograph.

Consider the following example: A financial services company instituted a monthly update meeting to encourage interaction among the 80 middle managers at regional headquarters. Each month, various managers would provide a 5-10 minute presentation to their peers, highlighting new developments in their respective areas and answering questions from the audience. The presentations fell prey to "one-ups-manship" that resulted in elaborate computer-generated overhead slide shows with the content presented in a full text format which were printed and distributed as a take-away for each attendee. According to the grapevine, attendance dropped when managers realized that they could skip the meeting but appear to stay current by simply reading the handouts of their colleagues.

Color

Human beings have the ability to distinguish subtle differences in colors which allows them to recognize important differences among otherwise-similar elements. Color is more than a simple and superficial decorative element. It conveys a powerful message about both physical conditions and emotional meaning. Color has two components: the physiological component and the emotional component.

The physiological component refers to the interaction of light rays on the surface of a material. There are two systems of color: light and pigment. Although the mechanics of the two systems are quite different, the resulting colors interact in a similar manner. The standard color wheel depicts the most basic dimension of color, *hue*, and illustrates several relationships, or *color schemes*, among the basic colors.

The emotional component of color is perhaps the stronger component. Colors are perceived as having *temperature*, such as warm or cool, *weight* such as heavy or light, and *perspective*, such as receding or advancing. Color schemes are harmonious, like blue and green or exciting, like yellow and purple. Western culture has assigned relatively standard meanings to many colors: blue ribbon quality, green-back dollars, baby blue. Color is fun and adds interest and excitement to instructional materials.

Color must be evaluated in both its physical context and its emotional context. At either level, color interacts with its surrounding; each influences the other.

Color, however, is rarely necessary for effective instruction. It is necessary only if color is central to the learning objective, such as recognizing diseased tissue or learning labels for hazardous materials. If color is necessary for instruction, the quality of the color is critical. Quality color reproduction is expensive.

If color is not necessary, it becomes simply a device for gaining or keeping attention. Color is difficult to manage, and because it is powerful, can easily overwhelm or distort the message. Remember, also, that color blindness inhibits accurate reception of color in at least 10% of Americans.

Consider the following example: A utility company was developing a computer-based instructional game to teach regulatory compliance standards. During the final pre-pilot review, two business unit managers objected to some of the color choices. The managers were responsible for sign-off on the project and had not seen design sketches or been involved in prior decisions. Almost 30% of the review time was consumed by a discussion about the hair color of the female characters.

Summary
The concepts of instructional message design explain how learners perceive instructional materials, whether we acknowledge them or not. Table 1 summarizes the concepts of instructional message design and provides examples of common, "exemplary" errors.

TABLE 1: SUMMARY OF BASIC CONCEPTS OF MESSAGE DESIGN

CONCEPT	DEFINITION	"EXEMPLARY" ERRORS
Grid-based design provides necessary psychological order.	- a consistent pattern of organizing the components of a message - major differences are perceived as important - minor differences are annoying	- computer-generated presentations with 5 or 6 different backgrounds - different covers for modules in the same course
Perceptibility is essential for communication.	- two components: physiological and cognitive - physiological perception (*sensory stimulus* is received) - cognitive perception (*meaning* is received) - determined by learner (receiver)	- one VCR for a group of 50 people - "7-th generation" handouts - passive voice, negative explanations, jargon
Chunk content into manageable pieces, then **sequence** them in a logical order.	- a chunk is a discrete bit of the message - the sequence is the order of presentation - "manageable" and "logical" are relative to the learner	- a 5-volume Policy and Procedure manual for new hires - printing slide presentation for handout
Spatial relationships are part of the message.	- relationship of size reflects relationship of meaning; "bigger is better" (principle of size) - relationship of space reflects relationship of meaning (principle of proximity)	- squeezing text to "make it fit" - several detailed slides for a relatively unimportant point
Secondary messages should support the primary message.	- secondary messages include metaphors, graphics, models, sounds, illustrations, etc. - must be appropriate to be useful	- "dingbat" decorations - mixed metaphors
Color is emotional and powerful; use it carefully.	- physiological component: how the eye perceives color (contrast, color blindness) - psychological component: general emotional reaction, emotional meaning of colors,	- full-color media icons for leader's guide - pastel screens on zany, interactive computer "game"

APPLYING THE CONCEPTS TO INSTRUCTIONAL MEDIA

Many excellent books are available that describe the specific details of media production. Excellent resources include Berryman, Brandt, Frank, Heinich et al., Misanchuk, Pike, Nielsen, Reynolds and Anderson, Schneiderman, and Vaughan. This paper will not reiterate those details. Instead, I offer broad guidelines about how to apply the concepts of instructional message design to instructional materials in general.

Grid-based design
Because the supporting grid must be consistent for instructional materials, it is one of the first design decisions a performance technologist must make. For ideas about an effective layout, look at a wide variety of other visual materials that positively influence the learner population. It is rarely advisable to copy other materials directly, but they can provide ideas and guidelines about what already works for the audience.

If the instructional materials are part of a larger group of related materials, consider the established grid of the preceding materials. Work toward the highest degree of consistency and harmony possible.

Because every medium has a different surface proportion, the supporting grid must be flexible and able to be modified to work with the specific array of media the instruction requires. Determine the surface proportion (length as compared to width) of each medium you will use, then try several grid designs to determine which is the most adaptable to the media.

Designing a good grid requires a relatively complete sense of the types of media elements that will be included in the materials. Since the sizes of many of these elements cannot be changed, up-front knowledge of their proportions is critical. Screen captures from a laptop computer have different space requirements than do line drawings from a technical manual.

A simple, straight-forward page or screen layout works best for instruction. Two common layouts that work well for most instructional materials are the block layout and the mapped layout. Both can be adapted for all media: handouts, flip charts, overheads, video and computer screens. This article uses a two-column, block layout. A mapped style uses a wide left margin for topic headers and the remaining right portion for content.

It is tempting to use pre-printed papers or fancy computer-generated templates for instructional materials. This is fine as long as the specific choice reflects the message design decisions that the instruction requires. Remember that many "media templates" are generic and frequently target a marketing or advertising audience rather than an instructional audience.

Perceptibility
Physiological perception demands high quality and high contrast, regardless of the specific medium. Quality and contrast are as important for audio or video as they are for print.

For print, use a simple font that is large enough for the audience to read in the specified delivery environment. Black text on a white ground provides the best contrast. Test reproduction equipment to ensure the integrity of shading and images.

For audio, use sounds that the audience will perceive as moderate. A medium pitch with a comfortable accent and a moderate variation in tone and expression is best for the majority of the message. Use loudness, speed, pitch and inflection to enhance the message. If you are in doubt about what to use, err on the conservative side.

Motion requires a relatively large viewing screen. Remember that the mechanics of capturing motion distorts live perception. This is particularly evident in amateur videotaping.

Regardless of the medium, every "generation" of reproduction reduces the quality. The only exception to this is copying computer data files across identical platforms and application versions.

Cognitive perception requires that the message be simple and direct. The following suggestions will improve an instructional message delivered across all media. Use simple, direct language. Use several short sentences rather than one long sentence with dependent clauses. Use a subject-verb-object sentence structure; this is the active voice. Avoid jargon, and define it when you must use it. State instruction in positive terms; tell people what to do rather than what not to do. Repeat main points to reinforce them.

Chunking and sequencing
Chunking and sequencing is primarily dependent on learning objectives and the learner's capabilities. As the sophistication of the delivery medium increases, however, media requirements become increasingly important, particularly with computer-based multi-media instructional components.

At the smallest level, break sentences into "stand-alone" phrases. Protect the meaning of each phrase. This is particularly true for any printed materials, including handouts, flip charts, overheads and video graphics.

Regardless of the medium, each discrete component of a message must make some degree of sense on its own. Reviewed out of the instructional context, hopefully back on the job, the material becomes less valuable if its purpose and main points are anything less than obvious.

Always provide a clear orientation of what the component is, what its purpose is and the context from which it came. Provide titles, instructions, general outcome goals, and the source of the material. This orientation is particularly important for more exploratory types of instruction, including self-study and computer-based instruction.

Spatial relationships
The size of a message is evident in both an absolute sense and in a symbolic sense. The absolute size is the square area of text or graphics or the time duration of an audio or video clip. The symbolic size refers to the perceived power or force of the message.

Absolute message size is best controlled with a clear focus on "necessary" content versus "nice" content. A sharp

editing pencil and a simple, concise writing style are tools that allow instructional designers and developers to control the size of the specific messages we create.

For symbolic message size, consider the power of the medium and the power or influence of the other elements of the message, such as color, music or talent. A custom, commercially-produced videotape is "bigger" than an informal in-class taping, and a 60-second videotape message from the CEO is typically "bigger" than a several-minute taped message from one's direct boss.

The most powerful tool for managing spatial relationships in print is white space, or empty, unused surface area. Silence is the equivalent for audio, and fade-outs or blank screens the equivalent for video. White space, whatever the variety, allows learners to see relationships quickly and easily. Even, consistent spacing among all elements of a message is both artificial and confusing. This is true with everything from placement of headers or labels to space between blocks of text to page breaks.

White space also provides a mental transition for learners. It allows them to bring closure to one topic and prepare for the subsequent topic, facilitating a greater degree of focus and attention.

Secondary messages

The media-rich world we live in makes it easy to add a multitude of secondary messages to any form of communication, including instruction. Most performance technologists are skilled at the mechanics of audiotape recording, videotape recording, still photography, photocopy machines, computer scanning, screen captures, word processing software, and page layout software.

Our enthusiasm with technology frequently eclipses our responsibility to a clear and crisp message. Think back to the early 1990s when word processing "dingbats" hit the business world. It seemed that every discretionary piece of written correspondence, from newsletters to memos to classroom handouts, was splattered with pointing fingers, "smiley" faces and whimsical checkmarks.

Design secondary messages with the same care given to the overriding instructional message design. Select a good metaphor that works for the entire instruction, for example building a physical structure or taking a trip. Let the central metaphor dictate the theme of all secondary messages.

Select those content points that deserve or require support. Not every point deserves an illustration or supporting message. This relates to the principle of size.

Take time to match the secondary message to its specific purpose and medium. In most instances, a text handout doesn't work as an overhead transparency, and an overhead transparency doesn't work as a handout. Simplify a diagram for an introductory overhead, but present the detailed version of the diagram as a full-page handout, complete with a legend or labels. If the overhead is color, check the contrast of the gray-scale handout to ensure a clear distinction among the various parts.

Color

When using color, always check the quality of the final reproduction equipment, even though it may limit the options around using color. A realistic sense of normal quality output saves time in the long run, and more importantly, protects the integrity of the instruction. Color photocopy machines reproduce color much differently than color laser printers.

Many instructional designers rely on personal preference to guide selection of color. Some rely on the "recommendations" of the people who developed a specific software application. A friend chooses colors based on the marker he believes will last through the entire project. Color selection should be more deliberate.

First, determine if color is necessary. If it is, list the two or three most important colors, and gather an exact and large sample of each. Use these to build the color scheme. No matter how offensive the combination, these two or three colors dictate all other colors. Lighter tints of the dominant colors are almost always safe coordinating colors.

If color is necessary, be clear about why you are using it. Challenge yourself to eliminate it.

If you still choose to use color, let the emotional tone of the instruction guide color choice. Select a color scheme or two or three discrete colors that reflects this tone. Assign each color a "role" in the instruction: major points, highlights, and backgrounds.

When selecting colors, make sure that the specific colors and the way they are used support the message. More important elements, like content, require "heavier" colors than do subordinate elements, like shading. Serious topics require darker, more subdued colors than upbeat topics. Hideaki Chijiiwa's book *Color Harmony* is an outstanding reference for understanding how to manipulate color.

Color is particularly difficult to manage across media because each medium has its own color palette, or range of colors. This means that a specific shade of red will appear to be different in each medium. Developers need both talent and skill to produce color that appears

consistent across several media. Accurate color reproduction is largely dependent on the technical adjustment of the output device, whether that output device is a printer, a photocopier, a videocassette, a television, or a computer screen.

The most important message about using color is to deliberately select one color scheme and manage its use and application consistently throughout the instruction.

REQUIREMENTS OF INSTRUCTIONAL MATERIALS

Most contemporary instructional designers and developers express strong agreement about the need to define instructional outcomes and learner characteristics relatively early in the development process; they also agree on the need to evaluate product quality, through formative evaluation, later in the development process (Dick & Carey; Gentry; Heinich et al., Leshin et al.). Others add that real-world development conditions restrict the development process, and should be considered early in the design and development process (Reynolds & Anderson; Thiagarajan). By combining both the traditional analyses and the more practical development analysis early in the process, product quality increases while development time and costs typically decrease.

Many performance technologists are accustomed to using instructional goals to distinguish "nice" from "necessary" when selecting content, strategy and/or activities. Information from the following analyses provides the same guidance for designing an effective message:
- instructional outcomes
- learner characteristics
- product specifications
- delivery specifications

These analyses define the requirements and limitations for instruction, and therefore define the parameters for making specific decisions about how each basic concept affects the design of a specific message. These requirements and limitations frequently appear to be in conflict. They are not problematic, however, if they are identified early in the development process. If adequate information is provided, these four categories of information simplify the design and development process by limiting options.

Instructional Outcomes
Instructional outcomes may be expressed by a general goal statement, a series of behavioral objectives or specific test items. The instructional outcomes define specific content and guide both strategy and tactics for the intervention.

The instructional outcomes help define parameters around decisions such as:
- media selection
- chunking and sequencing of content
- necessity of color
- emotional tone of the materials
- degree of realism

Questions to ask might include:
- What domain is the content (affective, behavioral, cognitive)?
- What emotional tone will facilitate learning?
- What is the dominant instructional strategy?
- What activities are planned? Optional?
- What media are required? Optional?

It is equally appropriate to ask similar types of questions for each specific piece instructional material. What are the specific purpose and requirements of a handout? A job aid? An overhead?

Learner Characteristics
Learner characteristics frequently include entry skills, personal preferences and/or expectations, job context and organizational culture. Learner characteristics also require a sensitivity to issues of diversity. It is easy to make assumptions and to overgeneralize about learner characteristics.

Learner outcomes help define parameters around decisions such as:
- media selection
- appropriate metaphors
- type size
- size of content chunks
- page layout

Questions to ask might include:
- How homogenous is the learner population? What are important characteristics of both the "norm" and "outliers?"
- What does each expect?
- What is the emotional disposition to the instruction?
- What are the entry skills? Any special needs?
- What visual material is positively influential?
- How does the immediate work environment support the instruction?

Product Specifications
Normally, the design and development of instructional materials is bounded by management expectations about costs, schedules and quality. Design teams have varying degrees of influence about these expectations. Regardless, these specifications influence message design.

Design is always a series of trade-offs. It is a balancing act between time, resources (including subjects, equipment, money and skill) and final output specifications. The scarcer the availability, the tighter the parameters around options and decisions.

Depending on who establishes product specifications, they may be the most inflexible and influential parameters. If this is the case, they will determine a large number of design decisions. Typically, these decisions include
- media selection
- specific activities
- quality standards
- degree of realism of graphical support

Questions to ask might include:
- How much time do we have? Money? Media resources? Skills?
- What is negotiable and what isn't?
- What is the priority of individual specifications?
- What is the design team's strength? (leverage this!)
- What can be re-purposed? How does this restrict other design decisions?

Delivery Specifications
Delivery considerations are similar to product specifications, but are usually outside the control of the designer. Regardless of the quality of overhead transparencies, a dirty projection screen or a burned-out lightbulb diminish the transfer of information.

In general, the more sophisticated the materials, and/or the higher the technology, the more stable the delivery environment must be. Delivery specifications help define parameters around decisions such as:
- media selection
- degree of realism
- type style and size
- graphical elements
- selection of colors

Questions to ask might include:
- Is it more important to design to the norm or to the lowest common denominator?
- How portable must the materials be?
- Who will use them? How skilled are they?
- Where will they be used? How dependable are the facilities and equipment?
- What is the worst that can happen if something goes wrong?
- What are the options if something does go wrong?

Summary
At some point in the design and development of every instructional intervention, each significant factor becomes visible. The more factors we know about up front, the easier it is to design effective instruction. Too often, we discover our ineffectiveness through course evaluation or through less-than-expected outcomes.

Please note that frequently during the design and development of a project, important criteria change. When this happens, be open to reconsidering the previous message design decisions. Message design is a synergistic process, and results in a subtle balance among many specific considerations. Too often, an isolated criterion changes, yet the design plans go unchallenged. While this doesn't always affect message design decisions, it happens often enough to warrant mention.

PUTTING IT ALL TOGETHER: A CASE EXAMPLE

The following case example illustrates how the concepts of instructional message design might affect a real-world instructional project. The content, instructional outcomes, instructional strategy and learner population remain the same, but the specific message changes slightly depending on project requirements and delivery specifications.

The Challenge
Lowtek is a large electronics manufacturer with plants in the US, Brazil, Mexico, and Thailand. Each year, the Quality Assurance department distributes a manual that outlines the most current Good Manufacturing Practice (GMP) revisions. Because compliance with these changes was sporadic, the HPT group was asked to get involved. At this time, there are no negative consequences for sporadic compliance.

The content is factual, the instructional outcomes are knowledge and application, and the learner population is middle- and front-line managers in assembly plants in four distinct cultural locations. The instructional materials must convey the exact message in every location.

Situation A
Situation A reflects a standard approach to this type of instruction. Because there are no negative consequences, the HPT group could take the simplest route possible to provide consistent instruction on the GMP revisions. The instructional materials might include overhead transparencies, handouts, a 3-minute taped message from the Country VP of Manufacturing, and a photocopy of the full-text revisions.

The results of the four analyses define the parameters within which the message must fit. Content and learning objectives define general content chunking and sequencing. Color is not necessary. The materials must be presented in four languages, so simplicity is important. The page layout must accommodate diagrams of moderate realism. Plant managers, with varying skill and comfort with presentation media, will present the instruction. The tone of the presentation should convey the importance of consistency.

The developers could use a simple block page layout for the overheads. By using left-justified bullet text, they can easily modify the page layout to accommodate text on the left and diagrams on the right.

All materials, including overheads, video, and paper, should reflect a sparse design that uses the company logo as the only graphical element. Since color is not necessary, the dominant color of the company logo, combined with black and white, could nicely dictate the color scheme. This reinforces a message of seriousness and importance, and also translates well from color to black-and-white.

The developers could use a computer presentation software application to develop the overheads. They then have the option of printing out traditional overhead transparencies in black-and-white or color, or they could ship the slide presentation out on diskette.

Situation B
Situation B is identical to Situation A with one small change: the company intranet will be functioning in all locations within 3 months. Senior management, as well as the HPT group, is eager to find out just how well the capital investment will pay off. This year's GMP update was earmarked as a high-priority test project.

The results of the learning objectives and the learner analyses are basically identical to those in Situation A. The changes result from the change in product specifications: self-paced computer-based instruction is the delivery mode rather than facilitator-led instruction with overheads. The changes, although sophisticated, are more technical modifications than complete redesign.

The screen design must be modified to include the larger idea of *interface design*. It could build from the overhead transparency design, with the addition of navigation devices (next, previous, etc.) and orienting devices (location in the body of content). The organization of content in a hypertext environment is a paper unto itself; suffice to say it is quite different from a linear slide presentation.

The proportion and quality of all graphical elements must be redefined, and must be checked on a representative sampling of computer screens. Since this is a high-profile project, the developers must ensure that the instruction looks good and works as planned on the "lowest common denominator" equipment. Particularly with inter- or intranet instruction, the final quality is only as good as the weakest link. Technical specifications (including proportions and quality) must be standardized, since a large number of people will contribute to the final product.

Color is expected with CBT, but this doesn't need to change the basic color scheme. By using the dominant color of the logo, along with black and white, a monochromatic (or one-color) color scheme is relatively safe, regardless of the output computer screen.

The technical requirements of CBT also affect chunking and sequencing of content. The script for the videotape message must be carefully written so that it can be broken into several smaller "sound-bites." Sending three minutes of good-quality video through an intranet requires high-end equipment.

It is essential that the intranet instruction include a paper handout that includes instructions for launching and navigating the instruction, a "map" of the content, ample space for notes, and enough content details to convey the message if any given user is resistant to computer technology. The layout of these materials could follow the guidelines of those described in Situation A.

Summary
Although these two situations reflect more similarities than differences, the details of each specific message design are substantively different. To assume that the same design would work in both situations would result in less-than-optimal instruction in at least one of the situations.

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