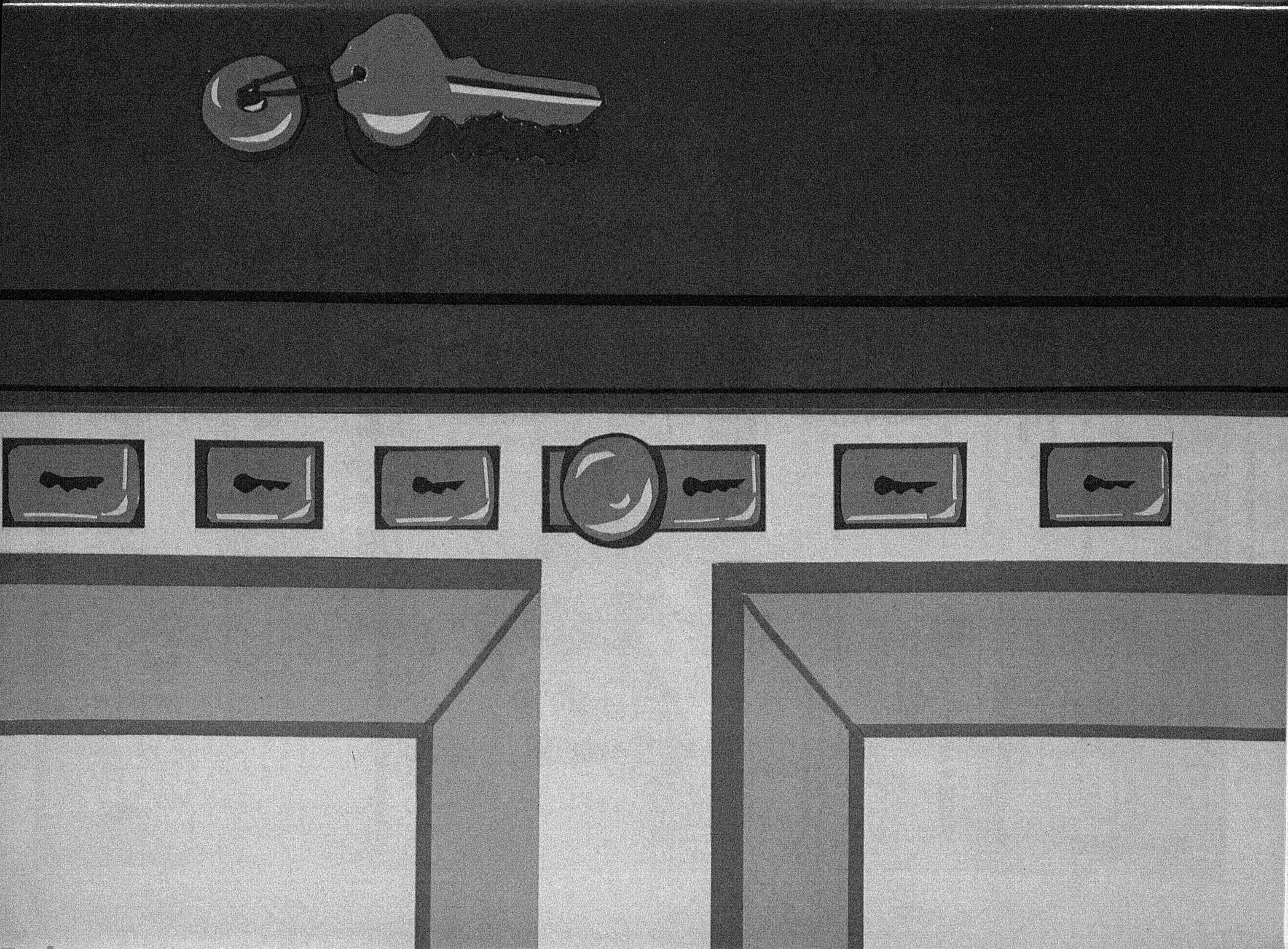

Fitting the Media Key Into Instruction

No matter how attractive media may appear, the only merit that ultimately counts is the merit of fitting the situation, unlocking the imagination and opening the chambers of the human heart.

By IVOR K. DAVIES

Science and technology supply us with newer and sharper tools for training and development. But when misapplied, sharp tools can do the most damage. Such tools are provided by the latest advances in computer technology, both hardware and the new integrated software, as well as by some of the advances in interactive video, teleconferencing and robotics. Recent research in message design, artificial intelligence, perception and visual literacy offer still further tools. Advances in neurobiology and psychology greatly increase our ability to alter people's experiences, as well as our ability to modify their motives and actions. The use of genetic engineering to change human nature, a development of profound significance to education and training, is both exciting and horrifying in its potential for good and evil.

There is, however, a humanizing as well as a dehumanizing side to technology. In order to exploit this humanizing element, it is necessary to better understand the nature of the art of the media process, and the media contribution to instructional design.

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Whether old or new, all tools enhance the repertoire of effects that can be achieved and the means to gain them. However, they will not do the job *for* us. The creative element can be liberated by sharp tools, but it can also be eroded by them. In media design and development, this demands both action and contemplation. It also involves a sensitive understanding of the art of the possible. Only then will there be an imaginative exploitation of science and technology: only then will the technological exploitation of the imagination be avoided. Imagination is paramount, technology serves but should never demand.

These advances challenge HRD professionals and media specialists to reassess our competency strengths and development needs, and reflect upon our successes and failures in meeting instructional and organizational needs. In order to meet these opportunities, media specialists are beginning to:

- *Perceive their contributions within the broad framework of instructional design, development and evaluation.* This framework integrates the various activities undertaken by media specialists, while emphasizing their larger role in the training and development process.
- *Focus their attention on the results obtained, rather than on the high-tech character of the tools they use.* Exploiting opportunities for enhancing human performance will re-energize the media field and ensure that the interactive nature of the new media technologies is fully realized.
- *Recognize that they must go beyond the science of their profession in order to exploit the technology's potential.* This means understanding that behaviorism is not enough, and that there is both an art and a science in instructional technology.

Excellence depends on reinforcing these changes and communicating them to our colleagues.

Efficiency and effectiveness

One mark of a mature profession is consciousness of its own history. Another is dedication to a pervasive ideal that guides and organizes its varied activities. It acts as a great humanizing force. Physicians carry the ideal of relieving suffering, and ministers that of liberating people from themselves. Lawyers are dedicated to the removal of injustice, teachers the elimination of ignorance, and trainers the eradication of barriers to worthy performance. Media specialists? By this criterion, they appear less mature. The role definition in ASTD's *Models for Excellence* of "producing software for and using audio, visual, computer and other hardware-based technologies for training

and development" does not address the issue.

However, two themes run through the media literature. One involves efficiency, and the other effectiveness in communications. These two themes have become the guiding ideals that drive the profession. Yet efficiency and effectiveness are often used without a full appreciation of what the words mean, or what is implied in the distinction between them.

Efficiency means doing things right. As an ideal, it implies a sense of direction and good organization, a sensitivity to details. However, efficiency does not confer, nor even guarantee, effectiveness. Something more is involved. What is unfortunate, is that when there is a preoccupation with tools there is a tendency to overemphasize efficiency at the cost of effectiveness.

Effectiveness means doing the right things. Effectiveness is a function of what media specialists do, and the contributions they make. It is a measure of the extent to which they realize their responsibilities. If media professionals design, produce, integrate or use media in a way that results in human error, then they have been ineffective—no matter how efficient they might have been.

When there is a preoccupation with tools, there is a tendency to overemphasize efficiency at the cost of effectiveness

Effectiveness is judged by what is accomplished. Although efficiency may contribute to effectiveness, it does not guarantee it. Effectiveness is what the media specialist is really about. It involves *both* the needs of the task and the needs of the people involved in that task. Sometimes one set of needs is paramount, sometimes the other. Usually both have to be taken into account and integrated.

Effectiveness is the central issue. It is not a quality that media specialists bring to a situation. It is not something that they do. Effectiveness is the nature and quality of their contributions. As such, effectiveness is almost always rewarding and rewarded.

Required skills

Each instructional problem is an opportunity best taken when media production is seen as an integral part of instructional design, development and evaluation (ID). That experience must lead to worthy performance—the ultimate goal to which media professionals contribute.

To ensure effective media design, production, integration and use, professionals need to become:

- *Sensitive.* This means becoming sensitive to the needs of the task and needs of the people acquiring mastery of that task. In addition, it is essential to understand the characteristics of the production tools and materials. Since science and technology constantly are bringing about changes in the specifications, properties and capabilities of the materials used in photography, television, graphics, computers and audio-production, this is a never ending challenge.
- *Diagnostic.* This means being able to determine what the situation requires, and what needs to be done if the people involved are to acquire mastery of the task, role or job. The process of making a diagnosis not only deals with the problem at hand, but often leads to new perspectives that help unfreeze the imagination.
- *Decision making.* This means considering all relevant options, and then deciding upon that course of action that best meets the needs of the situation. In the media field, it is easy to develop one particular expertise, and then be trapped into imposing it on all situations. Appropriateness is the prime property of effective decisions.
- *Flexible.* This means implementing what the situation requires, and to vary plans accordingly. In the course of their work, media specialists are asked to be effective in a variety of situations. Success depends upon meeting the challenges and opportunities of every situation by varying one's basic style of response to whatever the situation demands. Rigidity is to be avoided at all costs, for there is never one best way. The latter is the path of the amateur, not that of the professional.

All of this requires dedication and discipline. Above all, it involves a clear understanding of where time goes. Effort must be geared to results, rather than to the busy work that often fills the working day.

Action skills are important, indeed they are prerequisites to professional endeavor. Any weakness in them will erode our effectiveness, but their possession does not, by itself, confer effectiveness.

Many of the most recent advances in computer-aided design and manufacturing (CAD/CAM), and computer-generated graphics are seen by some as deskilling the role of media specialist. Married to skills of effectiveness, however, they extend rather than replace skills of hand, eye and ear. Technology simplifies the challenges of the job for the amateur. It challenges the professional and extends the opportunities available for creative solutions to instructional problems.

An example from music illustrates the point. Recent advances in electronics have transformed the electric organ into a device allowing the novice, instantly and effortless, to organize sound. The product is often music's lowest common denominator. A performer's decisions are limited to forced choices, thus inhibiting a unique expression of the emotions. At the same time, the application of the computer to musical composition can free a composer from a whole set of constraints, and so open up a new world of opportunities for the creative spark. So it is with the technological advances in the media field. Advances in science and technology offer us two menus: one table *d'hote* and the other *à la carte*.

Within a larger framework

The twin ideals of efficiency and effectiveness in communications make particular sense in instructional technology. Education and training contribute both to the acquisition of human performance and to its improvement once it has been obtained. Job competence acquired; morale and satisfaction are improved. Productivity is increased, safety enhanced and the environment protected. Human performance, in other words, is central in education and training programs.

Eroding human competence, however, are errors of all kinds. Recent research indicates that 30 to 50 percent of interruptions in the process industries are due to human unreliability. It is also estimated that 40 to 60 percent of interruptions result from either design problems or from operating equipment beyond its capabilities. Only 10 percent of production interruptions are due to normal wear and tear of equipment. In other words, most down-time in manufacturing is avoidable. There is no reason to believe that the figures for other industries and

businesses are very different. In this way, resources are wasted, opportunities lost and human potential shortchanged.

It follows that productivity can be increased by systematically reducing interruptions due to the human factor. Not only will this increase the availability of all human and non-human assets, but also help to eliminate work necessary to restore conditions to a productive mode. The reliability approach, in other words, offers managers an opportunity to obtain the effects of capital investment without the actual outlays. Furthermore, a significant proportion of this opportunity can be contributed by people in instructional technology.

This reliability approach to training and development offers a fresh focus to those roles for analysis, design and evaluation. It offers trainers an opportunity to contribute to human reliability by helping to reduce, in a planned and systematic manner, the probability of error in work situations.

Such a responsibility includes errors of both commission and omission. It concerns errors made in the acquisition of human performance, as well as errors made during its execution. Fitting the person to the task (by selection, instruction and guidance) is one strategy; fitting the task to the person (by developing alternative methods of work, equipment design, feedback and arranging working conditions) is another.

Such a perspective places training and development in a position central to organization health. Improving human performance becomes a goal shared with other managers. The human reliability framework ensures that the concerns of training and development mesh comfortably with the concerns of other managers in the enterprise.

Values are central

Improving human reliability through the reduction of error is a demanding goal for instructional technology. Art, craft and science all have a role to play. There are many ways to go, and instructional designers and developers have to make appropriate decisions at every turn. Inevitably, efficient and effective instructional technology involves a subtle and sensitive blend of all three, depending on the needs of the total situation.

However, instructional technology is not in itself an art or a science or even a craft. The principles of behavioral science have their place, but so do the principles of design. Art, craft and science run deep in the very idea of instruction, just as they do in the design, production, integration and evaluation of media for instruction. Imagination, creativity, cunning and wit have their place, but so does hard work, disappointment and ceaseless questioning of results. Instructional technology demands both a rigorous act of analysis and a creative act of design, one complementing the other. Values lie at the heart of the matter.

Truth, honesty and originality, as well as tolerance, flexibility and independence are among the values of civilized people. They are also the values of art and science. Jacob Bronowski wrote, "To listen to everyone; to silence no one; to honor and promote those who are right—these have given science its power in our world, and its humanity. . . . Science has filled our world because it has been tolerant and flexible and endlessly open to new ideas."

Science, like art, cannot be value-free. As processes, neither are neutral. While the products of art and science should describe rather than exhort, the processes involved must necessarily reflect a concern for truth, tolerance and originality. The science of instruction and the art of media have similar values, as do the art of instruction and the science of media.

The aesthetic nuance attached to the word "art" is of recent origin. From ancient times to the 17th century, art meant one thing. It implied a specialized skill or craft, like the craft of printing or the craft of tanning. Poetry, music, painting and instruction were also seen as crafts, each with its own guild. The craft, in each case, comes from the learning and experience that are involved, not from the mechanical routines of everyday practice.

The reliability approach offers managers an opportunity to obtain the effects of capital investment without the actual outlays

Basic characteristics

R.G. Collingwood distinguished art from craft on the basis of the following criteria:

- *Means and ends.* Ends involve the objectives to be realized, and means the things that have to be done in order to achieve them.
- *Planning and implementation.* Planning involves decisions about the future; implementation involves putting those plans into action to obtain a particular effect.
- *Material and product.* Material or content involves the ideas, knowledge and skill designers and developers work with; product is the final result that leads to a worthwhile experience.
- *Form and matter.* Matter refers to what is common to both material and final product. The same content is found in each, but the form has changed.

Collingwood argues that if the distinctions between means and ends are maintained, a craft is involved. If the distinctions are absent, or are at least blurred, art is at work.

In the design, production, integration and evaluation of media, the distinctions are largely absent. Art, at least from the perspective of Collingwood's criteria, best characterizes the processes at work. Science and technology are also involved, contributing the fruits of research and invention, but art rather than craft is uppermost. Instructional technology, on the other hand, has maintained many of the distinctions. Although they are currently blurred, the craft element still seems to be more important. The art contribution needs strengthening.

All too often instructional technology has been represented by diagrams in which boxes and arrows predominate. The process is described as a series of steps or activities carried out in some predetermined sequence. Such a systematic set of procedures captures the essence of a craft, but not the art which is necessarily involved. As a portrayal of the techniques involved, and perhaps of their sequencing, boxes and arrows serve a purpose. It is much easier to talk about ends and means separately than to describe them as coexisting. It is simpler to distinguish planning from execution, materials from product, and form from matter than to portray them as a whole.

Systematic and systemic are not synonyms. The former refers to order or interval, the latter to an organized whole. Systematic emphasizes craft; systemic emphasizes art. Both have their place in instructional technology, but the current craft orientation overemphasizes the

systematic perspective. Media specialists beginning to perceive their contributions within the broad framework of instructional design, development and evaluation are well placed to make a larger contribution. Professionals skilled in the media process can strengthen the art side of instructional technology, and so enlarge their contribution to training and development as a whole.

Dimensions of knowing

In considering the contributions of media specialists to training and development, it is useful to draw a distinction between two dimensions of knowing:

- *An explicit dimension*. The objective is clarity or good communication. Explicitness is used to teach, to make everything crystal clear.
- *A tacit dimension*. The objective is to go beyond words, to communciate more than can be told. Tacitness is used to move the heart, so that everything is understood in a personal and unique way.

In the explicit dimension, knowledge is the vehicle of communication. In the tacit dimension, values, emotions and feelings are involved. Thomas De Quincey long ago argued that explicitness is a rudder for knowing, and tacitness an oar or sail.

The distinctions are found in media. Many so-called visuals are not visuals at all. They are *visible* aids. Projected words on a screen do not tap the power or the potential of the media process, and neither do talking heads. All too often, they merely make visible the presenters' script or lesson plan, or the presenters themselves. The same distinction can be drawn between audios, and *audible* aids. Efficiency in seeing and hearing involves explicitness; effectiveness involves the tacit dimension. Visuals and audios, alone or combined, can tap the roots of understanding and free the imagination. Their design, production and integration demand more than hi-tech.

Marketing the media contribution

The importance of marketing increasingly is becoming understood in business and industry. Indeed, marketing is now seen as central to success. "It is going to make the difference between the winners and the losers," says Stephen Greysor of the Harvard Business School. More than half of the executives polled in America's largest companies ranked marketing as the most important strategy of the decade. If the media contribution is to be understood fully by all, media specialists must also learn to market both the tangible and intangible value of media. The media contribution to organizational health and effectiveness has to be sold.

In order to better market the media contribution, a unifying perspective is essential. This means:

- *Focusing attention on results, rather than on the tools used to achieve those effects.* Tools have a craft or technical orientation. They project an image of media specialists that is far removed from reality.
- *Perceiving the media contribution within the broader framework of instructional technology.* Such a framework integrates the varied activities undertaken by media specialists and emphasizes their larger role in the training and development process.
- *Recognizing that their ultimate contribution is to enhance human reliability at work.* Reducing the probability of human error so that productivity can be increased without significant capital expenditure raises media, and training and development in general, to a central role in business, industry, government, military and service sectors.

Clients do not buy media. They buy creative and imaginative solutions to matters that deeply concern them

In order to be successful, a reaffirmation of the importance of the client needs to be added.

Marketers find out what customers want, how they want it, when they want it, and then provide it on time. The temptation to produce new products based on the latest technology, ignoring customer needs and then imposing them on a situation, must be resisted. A good marketer works with colleagues and with customers to anticipate future needs and cater better to current needs—no matter how specialized they may be.

Effectiveness demands a similar partnership between media specialists, instructional technologists and clients. Clients in training and development want much more than a media product. They want to be consulted about the design and production, as appropriate, and supported in the implementation and even beyond. In hi-tech media production, where technological advances result in products that differ only slightly from one another, media specialists increasingly need to advise clients on the less tangible properties of the various media alternatives.

In marketing the media contribution imaginatively, media specialists need to meet two separate but related challenges. First, in order to be effective they have to attract clients and take steps to keep them. Media clients usually are people attempting to prevent or resolve problems. Second, clients are bombarded with options and are constantly looking for solutions. Whether the client is a manager in training and development or elsewhere in the organization, media specialists usually can help. The challenge is to decide creatively what needs to be done from a media point of view, to do it with imagination and high spirits and then help the client implement it.

Marketing the media contribution is not difficult, but it is becoming essential as technology takes over routine and mundane aspects of media production. The job for media specialists is to use knowledge, experience, skills and imagination to prevent problems and to solve them when they occur. It is not to create more of them. From a marketing point of view, clients will be created and held by media personnel who are professional enough to understand what they are selling and what people buy. Clients do not buy media. They buy creative and imaginative solutions to matters that deeply concern them. And those matters in one way or another usually involve ensuring that human performance is both productive and reliable. Putting thoughts into action is the most difficult thing in the world. Yet excellence in media depends upon making good ideas a practical reality.

Science is an intellectual attempt to understand nature. Technology, on the other hand, is an attempt to use nature for human purposes. But this distinction has been largely lost in our society, and technology is increasingly prized as a goal. Hi-tech has become an end in itself for many media specialists. It cannot be overstated that what is important is less the tool and more the contribution. How we market ourselves and our contributions affects not only our credibility, but also the range of opportunities open to us.

The metaphor of a key is useful when

thinking of media. Like a key, media is useless unless it fits the wards of the lock. In order to make an efficient and effective contribution, media, like a key, must be shaped, cut, chipped, designed so that it exactly fits the situation. Even though a key be made of gold, it is useless unless it opens the lock. No matter how attractive media and the tools of media may appear, the only merit that ultimately counts is the merit of fitting the situation, unlocking the imagination and opening the chambers of the human heart.

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