Extracting Training Implications from Multi-Component Needs Assessments: Extension of the R-C-D Model

Richard A. Schwier

ABSTRACT: A common data source in training needs assessments is the target audience. The interpretation of these data can augment other front-end analyses to make decisions about the design of training events. This article examines the Relevance-Competence-Desire (RCD) model of training needs assessment to speculate about the instructional design implications of interactions among these components. How can different types of instruction be designed to capitalize on various configurations of perceived relevance, competence and desire exhibited by potential learners?

INTRODUCTION

Models and definitions of needs assessment abound (Witkin, 1984); however, the instructional developer often faces difficulty applying these useful concepts in a training setting. As heartwarming as it may be to developers that the selective focus of our discipline seems to be shifting from "what we teach" to determining "what we *should* teach," we are faced with the problem of using needs data to help guide decisions about the nature or "look" of training intervention.

Needs assessments are typically used to identify gaps (or discrepancies) in results. Kaufman, Stakenas, Wagner and Mayer (1981) usefully distinguished between actual needs (discrepancies in results) and quasi-needs, which are discrepancies in inputs or processes. Within the context of Kaufman's Organizational Elements Model (Kaufman and Stone, 1983), actual needs may include discrepancies in internal organizational results (products and outputs) or external outcomes. Training, on the other hand, is seen as one of several potential processes or inputs available to reduce discrepancies in results.

Once actual needs are identified, decisions are made concerning how to reduce discrepancies. Within the context of formal models of instructional design, training decisions are usually based upon data collected during other front-end analysis and design stages. Since many models of needs assessment include potential trainees, needs assessment data may provide information which goes beyond identifying discrepancies in results. What information can be extracted from needs assessment data to determine whether training is appropriate and, if training is implemented, to influence the design of training intervention?

This article examines the training design implications of needs assessment data within

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the context of one model of needs assessment. Can an instructional designer extract clues from needs data which influence how training should be conducted?

THE R-C-D MODEL

Misanchuk (1984) proposed a model of needs assessment which includes three components: the relevance of an identified task or skill to the performance of an individual's job role; the competence of an individual to perform that task or skill; and the desire of an individual to undertake training in that task or skill. A needs assessment is performed in order to determine whether or not training should be conducted in specific skill areas, and what priority different training needs can be assigned.

It should be noted that this type of needs assessment is conducted within the context of organizational objectives and standard instructional system design approaches. The needs assessment is preceded by a thorough task analysis and, regardless of the outcome of the assessment, the organizational objectives do not change. For example, a uranium mining operation may be interested in determining the perceived relevance, competence and desire for training of employees toward training in emergency radiation treatment procedures, but the objectives of the organization will continue to include the safety of employees, regardless of the outcome of the assessment.

This article will extend the relevance-competence-desire (R-C-D) model of needs beyond the questions of the mechanics of data collection and whether remediation should occur in various skill areas. The collective consideration of needs data derived from an assessment will determine the need for training or other intervention, and procedures for conducting this type of needs assessment are dealt with elsewhere (Misanchuk, 1984). This extension of the R-C-D model will concentrate on the interactions among R-C-D components, given the organizational decision to impose training. As individuals within the organization exhibit different configurations of the R-C-D components, what types of training intervention can reasonably be invoked?

Who Decides?

The R-C-D needs identification model represents an employee-centered approach. One assumption of the model is that individuals being assessed are able to identify which tasks are most relevant to the performance of their job roles, and the organization sponsoring (paying for) training programs values the opinions of respondents.' Certainly, this is a reasonable expectation in most cases, as organizations routinely depend upon individuals to define tasks within a more general job description. The process of natural selection in the working environment (Misanchuk, 1982) also serves to ensure that individuals who understand and perform within organizational expectations are hired and survive, while those who do not are either not hired or do not survive in the organization.

Nevertheless, situations occur in which there is disparity between the organization's perception of "what should be" and the employee's perception of "what should be." For example, upper-level management may anticipate the introduction of word processing in offices on a large scale, and expect division supervisors to be familiar with the operation of the equipment. Supervisors, on the other hand, may realize that word processing is coming,

Typically, respondent anonymity is preserved in needs analyses to encourage objectivity and introduce reliability in the process. Of course, anonymity can limit the application of needs data to the differential assignment of individuals to training events.

but view related skills as secretarial, rather than supervisory, concerns. Resultant needs analysis data would probably imply low job-relevance in an environment where relevance is being defined externally. Should training be imposed?

In many, if not most, training contexts the decision to fund training will be in the hands of upper management. Needs assessment data will be helpful in assigning priorities to areas, but will certainly not completely displace the intuition and priorities of those ultimately responsible for financing training. In any event, once training priorities are assigned, target audiences will not be homogenous. Individuals within the target group will exhibit varying R-C-D configurations. ID personnel applying needs assessments consider aggregate information to assign priorities, but may overlook potential design implications for individuals who will undertake training.

The proposed model of needs assessment can be usefully extended into the realm of learner analysis in an industrial training context. It is possible that complete assessments can provide information about potential learners which will shape decisions about the types of training interventions which will enhance learning and performance.

To extend the model requires a fresh examination of the components of the R-C-D model in light of the implications for designing training intervention. It is not a natural marriage. For the purpose of measuring needs, Misanchuk (1982, 1984) suggests possible response scales which range from "absent" to "high" levels on each dimension. 2 For the purpose of learner analysis, it is conceptually useful to introduce "negative" values on the scales, as trainees can possess aptitudes and attitudes which run contrary to the goals of training.

Relevance

TABLE 1
Perceived Competence Scale and Training Implications

Level of Relevance		Training Implications
Relevance	Abstract Experiences	Independent Study and Classroom Training
Irrelevance	Vicarious Experiences	Model Experiences and Simulations
Interference	Concrete Experiences	On-Site Practice and Demonstrations

Conceptually, the perceived relevance scale can include points which range from positive (high relevance to successful performance) to negative (interference with successful performance). If the task analysis was competently performed, most skills will be judged relevant to successful job performance by individuals with similar job roles. But significant

These labels are the author's. Misanchuk's scales ranged from "not required" to "essential" (Relevance), "certain not to take it" to "certain to take it" (Desire), and "no skill" to "a great deal of skill" (Competence) in assessment tools.

exceptions may appear. For example, line supervisors in an auto parts factory might be asked to judge the relevance of interpersonal communication with workers to their performance. Some may feel that such training is "touch-touchy-feely," and that they need to be hard-nosed with their employees to ensure high production. Therefore, training in interpersonal communication might be viewed as counter-productive to their performance and judged negatively. Management, on the other hand, might believe these individuals could benefit the most from training.

The organizational relevance of training is not always task-related. Even in cases where low-relevance consensus is achieved, training may be imposed because of the political context of training. In many contexts, training programs serve an intra-organizational public relations function. Organizations sometimes provide opportunities for employee growth, even occasionally irrelevant growth, because training can foster a sense of participation in, and commitment to the organization. For example, many industries are recommending employee participation in physical fitness programs, not because of job-relevance, but because of indirect, affective benefits which may result. In some cases, training may be introduced because training divisions need to look busy - training for the sake of training. There is considerable pressure on training divisions to be productive, and sometimes this may result in a mentality whereby training becomes the prescribed solution for every performance problem.

How might individuals at different points on the relevance scale be best accommodated in a training event, assuming that a task really is relevant and training is appropriate? As perceived relevance diminishes, it is reasonable to speculate that training experiences should become more directly tied to the working environment, so that relevance can be demonstrated. Low to negative ratings indicate a need to move directly into the working environment and provide experience with the skill in the job context. On-site training and direct demonstrations can be used not only to teach the skill or task, but also to illustrate the relevance of the training to successful performance.

As relevance increases, vicarious experiences can be substituted for direct experiences. Models, exercises and simulations can be introduced, although care should continue to be taken to make specific, logical references to the job role.

In cases where relevance is evident or assumed, training can become more abstract. This is not to suggest training *must* be abstract to be effective. In many cases, the task may require concrete treatment, or a highly concrete treatment may be preferred. Still, high relevance offers the opportunity to treat content more abstractly if appropriate. A classroom setting may be adequate for group training events, and it is possible that independent study approaches can be successfully introduced. The main point is that as perceived relevance fluctuates, training contexts may change beneficially from experience-grounded to relatively abstract in nature. This will, however, be mediated by the nature of the task.

Competence (See Table 2 on next page)

Similarly, the dimension of competence can range conceptually from positive (high degree of perceived competence on the skill or task) to negative (perceived lack of aptitudes necessary to learn the task or skill). An individual who professes competence may feel that additional training is not necessary to perform his/her job role adequately. If this, in fact, is the case, and continued skill development is not valued by the institution, it would merely be necessary to measure actual competence to verify the accuracy of the individual's perception, and ignore further training.

Sometimes, on the other hand, a competent individual could benefit from additional training. For instance, a public relations official may be a competent public speaker, but the

TABLE 2
Perceived Competence Scale and Training Implications

Level of Competence	Training Implications		
Competence	Challenging Experiences	Lengthy Frames or Segments	Intrinsic Reinforcement
Benign Incompetence	Low Difficulty Experiences	Brief Frames or Segments	Periodic External Reinforcement
Perceived Lack of Aptitude	Guaranteed Success Orientation	Brief Frames or Segments	Continuous External Reinforcement

organization and the individual may benefit if the person participates in additional skill development. Many skills which are not amenable to criterion referenced evaluation (e.g., public speaking, research skills, counselling skills) can never be judged "good enough." In this case the training intervention must demonstrate rewards for excellence or growth. Individuals who consider themselves competent can be challenged by training to pursue excellence, or they may become bored.

When low to negative competence ratings are evident, the trainer must first determine if the negative aptitude actually prevents the acquisition of skills for that individual. If it is determined, however, that an individual is "trainable," then attitudinal issues must be addressed.

When low to negative competence ratings are evident, then training events should adopt a success orientation. Training should incorporate heavy doses of knowledge-of-results and positive reinforcement in order to encourage the trainee to continue and to build self-confidence. Training should not be so challenging as to be discouraging, but neither should it be frivolous. Shorter segments could be used to allow opportunities for periodic feedback.

Desire (See Table 3 on next page)

Desire represents an important consideration in the design of training events. Positive (high desire), zero (apathy) and negative (subversion) values of desire may be exhibited by individuals entering training. Negative (subversion) perceptions may be held by resentful employees who not only do not care to participate in training, but who may subtly or overtly attempt to sabotage training. At the very least, these individuals will be uncooperative, and if possible, should be excluded from the training event. If a decision is made to exclude a participant, the learner must be given full information regarding the consequences of failing to cooperate *a priori*. Problems in identifying these individuals are obvious, and certainly no written assessment is likely to indicate which individuals might be obstructive. But interviews, intuition and cues during training will help isolate "pockets of discontent," and the trainer must determine whether the inclusion of disenchanted individuals will undermine training for others, and take appropriate action.

The higher the desire of individuals to participate in a particular training event, the lower the profile necessary on the part of the sponsoring agency to legitimize the training.

TABLE 3
Desire Scale and Training Implications

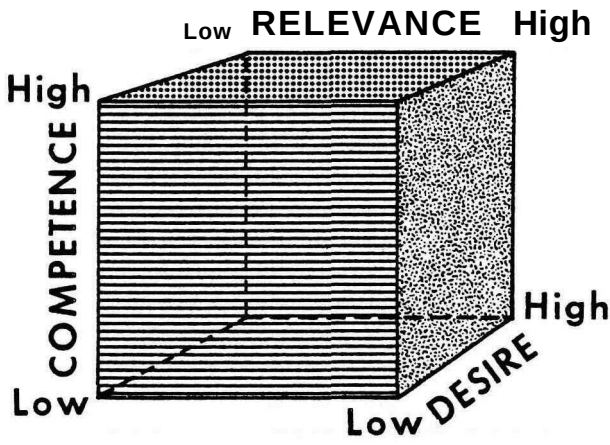
Level of Desire	Training Implications		
Desire	Supportive/Permissive Organizational Posture	Intrinsic-Intangible Rewards	Informal-Facilitative Source (Guided Instruction or Independent Study)
Apathy	Coercive Organizational Sanctions	External-Tangible Reward System	Formal-Directive Training Source (Instructor)
Subversion	Exclude from Training		

In cases of high desire, subtle intervention may be sufficient, giving trainees the opportunity to pursue instruction on their own. Independent study, with the organization providing release time and resources, may be all that is required, and intrinsic rewards may be sufficient.

As desire diminishes, corporate influence must increase. Formal training events sanctioned by the sponsoring agency will be promoted, and perhaps required. Intervention will become more prescriptive, yet include a motivational orientation. It may be necessary to "sell" participants on the worth of the training. External reward systems, including such things as salary incentives and promotion, may be needed to motivate participants.

APPLYING NEEDS TO DESIGN

Figure 1.
The Relevance - Competence - Desire Model of Needs.



Interpreting the R-C-D model in terms of learner information provided by the needs assessment, it is possible to speculate about specific types of training events which might be appropriate for different groups of individuals with varying needs configurations.

For the purpose of the following discussion, each component of the model will be assigned values of "high" and "low," acknowledging that subtlety is being sacrificed for the sake of clarity.3 The result is a delineation of system states within which the model can be interpreted. Interactions among the three components suggest a variety of training designs necessary to successfully conduct training.

Low Desire - Low Competence - Low Relevance

Figure 2.
Low Desire - Low Competence - Low Relevance.

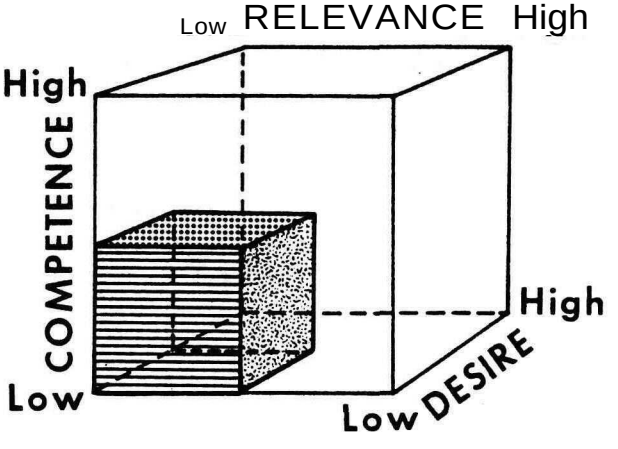


Figure 2 illustrates individuals who exhibit low desire, little competence, and who see little or no relevance to the job role. Seldom would training be provided if the needs analysis reveals this configuration, but if training is imposed, what should the training event be like?

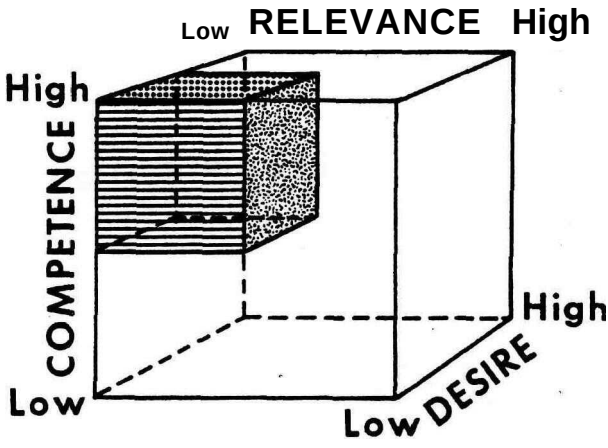
It would probably be necessary to coerce these individuals to participate. Formal, structured events will dominate, with an emphasis on motivational, concrete activities which build confidence in the trainee's ability to perform. Where possible, an actual or simulated job site should be used for training, and instructors should encourage participant involvement and provide frequent positive reinforcement for successes. It is important that abstract lecturing/telling sessions be kept to a minimum, because a reticent group can become subversive if they are not given ownership of the activities. Participant ownership and reinforcement will build desire, active participation and a success-orientation will improve perceived competence, and the job environment and concrete activities will enhance relevance.

Negative to zero values are included in the label "Low," while "High" includes the range of positive values for each component. All values are conceptual, and are not intended to represent interval data points.

Larger skill areas should be broken into brief exercises exploiting frequent opportunities to provide reinforcement. An external reward system including such things as certificates, job ranking or salary incentives may be considered by the sponsoring organization to encourage successful participation.

Low Desire - High Competence - Low Relevance

Figures.
Low *Desire - High Competence - Low Relevance.*



Training which attempts to increase perceived relevance and motivation with competent individuals presents interesting instructional design challenges. Usually training would be avoided if these perceptions were deemed accurate. But if .training is mandated, the content should be moderately difficult to challenging so that interest is maintained.

To increase relevance, training should be conducted on an actual or simulated job site, and activities should stress application of skills in the job role through actual or simulated performance. Perhaps the most influential source of training information would be a peer who can demonstrate the application of skills.

Increasing desire is another problem. Within the organizational context, sanctions for participation may need to be coercive, or heavily encouraged, and external, tangible rewards must be clearly evident. The information source should be highly motivating and fairly dominant, especially during the early stages of training.

High Desire - Low Competence - Low Relevance (See Figure 4 on next page).

In this situation, the trainee wants to learn, but feels inadequate and is not aware of benefits to job performance. In order to compensate for deficient components, highly structured instruction, broken into brief segments which exhibit low difficulty and provide an opportunity for frequent positive reinforcement, can be provided on-site. For example, training in heavy equipment repair could be provided by a fellow worker, taking the trainee step-by-step through the training by first demonstrating a minor operation, then allowing the trainee to perform it. This type of instruction may be more expensive than conventional

Figure 4.
High Desire - High Competence - Low Relevance.
(Discussion on previous page)

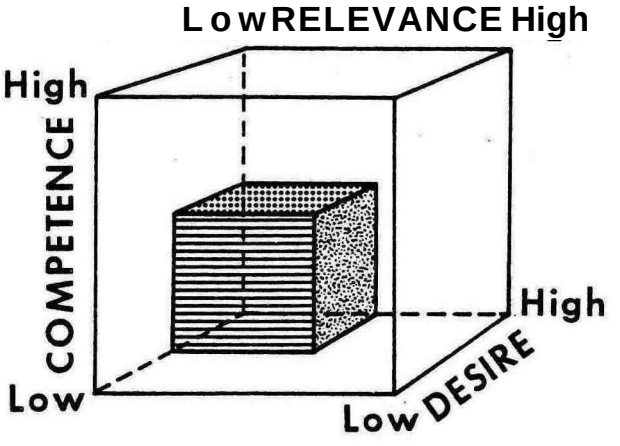
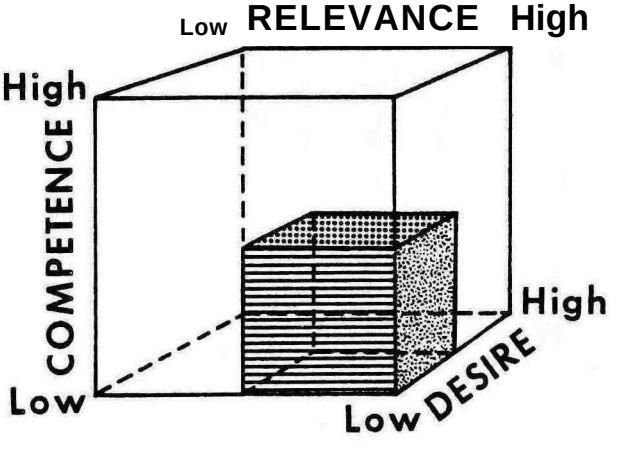


Figure 5.
Low Desire - Low Competence - High Relevance.
(Discussion on next page)



training modes, but it couples immediate relevance with methodical competence development. On-site coaching, which adopts many of the characteristics of paper and pencil programmed instruction, requires no transfer of learning.

As the trainee is motivated to learn, the organization can adopt a more supportive and permissive posture toward training, rather than coercive. The instruction need not be flashy or overtly motivating, as the participant is more likely to be intrinsically motivated to perform. It should be noted that although rewards for participation will also be intrinsic for someone who desires instruction, external rewards should not be denied if they are provided for less-motivated individuals. Denial of extrinsic rewards may serve as a punishment, and thereby diminish the desire to participate.

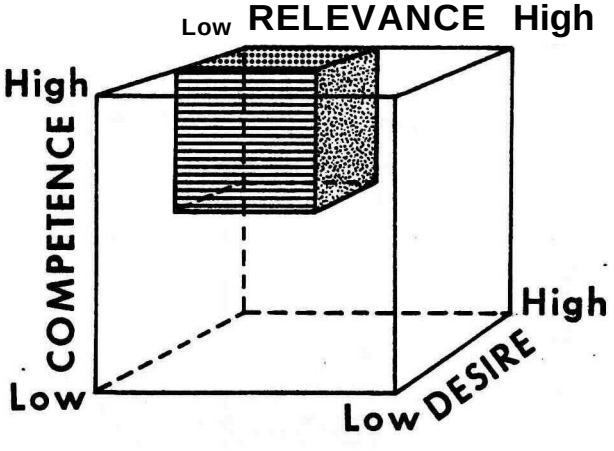
Low Desire - Low Competence - High Relevance (See Figure 5 on previous page)

This configuration may describe an individual who realizes the importance of a particular skill or task, but who does not want to participate in training despite a perceived need to improve the skill. This may be the result of negative affect. The task or skill may be a particularly unpalatable part of the job role. Because relevance is evident, instruction can be provided in most any location, and can include topics which range from the concrete to the abstract — again, depending upon the nature of the task.

Organizational sanctions can be imposed to encourage participation, and tangible incentives should be offered. Instruction, whether provided by instructors or materials, should be motivational, provide a high probability for success, and utilize frequent positive reinforcement and knowledge of results so that participants realize their improvement.

High Desire - High Competence - Low Relevance

Figure 6.
High Desire - High Competence - Low Relevance.



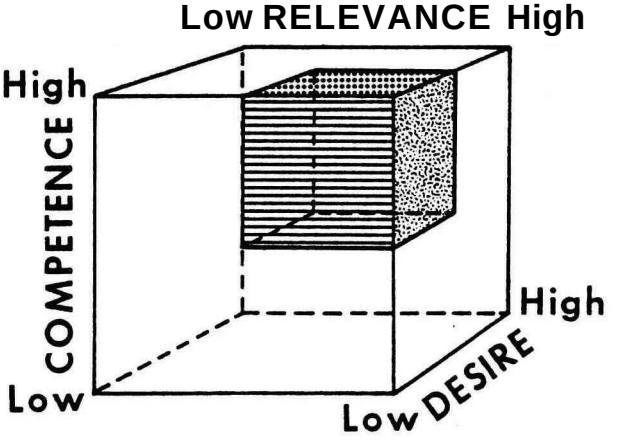
Strictly speaking, this is not a training problem. The employee is already competent, and if further skill development is not useful to the organization, then training is unneces-

sary. It may merely be necessary to measure actual competence in order to confirm the employee's perceptions.

If the organization decides to provide events which will increase perceived relevance, then brief awareness-raising sessions can be imposed to demonstrate relevance. Sessions on the job site can demonstrate the direct application of competencies and can illustrate benefits to the employee for successful performance of skills. Brief intervention, carried out periodically, rather than an extensive single event will be useful to reinforce relevance.

Low Desire - High Competence - High Relevance

Figure 7.
Low Desire - High Competence - High Relevance.



If perceived competence is accurate, then this configuration does not represent a training need. This could be labelled the "know-it-all syndrome." Introducing external, tangible incentives may build enthusiasm for further improving the skill. If the individual is able, it may be useful to use this employee to train others, and provide salary incentives for participation as a trainer. This may also result in increased status, and motivate the individual to refine skills.

High Desire - Low Competence - High Relevance (See Figure 8 on next page)

This configuration represents the instructional developer's dream. The trainee realizes the importance of the skill or task, is highly motivated to participate in training, and perceives a need for improvement. This person will probably be a "quick study." Most any delivery approach (assuming that content is related to objectives, relevant job tasks, audience characteristics, etc.), in any reasonable setting, is appropriate and the organization can adopt a causal, supportive posture. Instruction can take a facilitative orientation, and rewards for participation need not be tangible incentives. The caution about reward systems expressed earlier should be reemphasized, however. If other individuals who are less motivated receive tangible rewards for participation in training, then these should also be pro-

Figures.
High Desire - High Competence - High Relevance.
(Discussion on previous page).

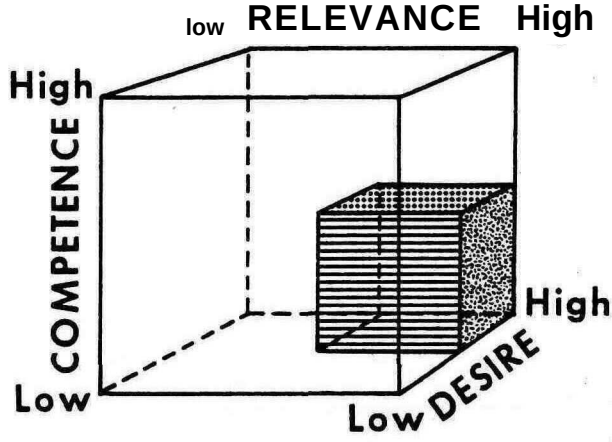
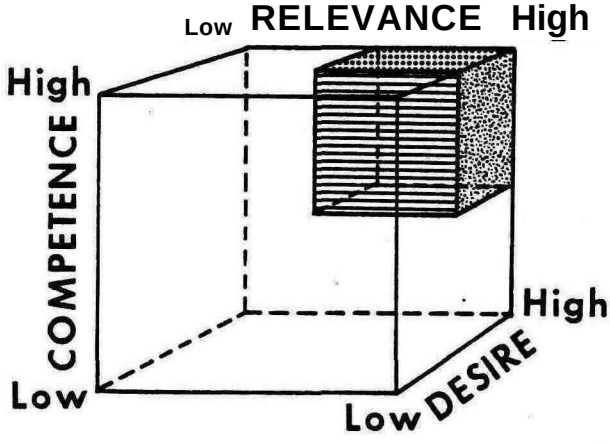


Figure 9.
High Desire - High Competence - High Relevance.
(Discussion on next page).



vided for more motivated individuals. Withholding such rewards may result in lower desire, as the trainee may feel exploited by the organization.

Instruction should be highly structured and employ a success orientation, not only to compensate for low perceived competence, but also to maintain existing desire to participate. Self-instructional materials may be used profitably in this context, if appropriate to the task. They provide a format which will offer necessary structure, and which will make the development of competency apparent to the trainee through continuous feedback. Regardless of the instructional method employed, it is important that the organization make resources and time available to the employee to pursue training.

High Desire - High Competence - High Relevance (See Figure 9 on previous page)

Again, if this person is already sufficiently competent, then training is unnecessary. But if further development of skills is deemed important by the sponsoring organization, then intervention need only be minimal and informal. It may only be necessary to make resources available and get out of the learner's way. Thus, institutional gains can be realized with a minimal investment, such as stocking a resource centre with appropriate materials. This type of individual may be an excellent prospect for participation as a peer trainer, delivering instruction to other employees.

It should be noted that developing excellence in competent individuals can backfire. The organization may find itself in the position of financing the development of individuals who will leave the organization to accept greater responsibility elsewhere. For example, if a computer programmer, as a result of in-house training, learns three new languages and develops a marketable artificial intelligence system, the likelihood of his or her leaving the organization to start a new company increases.

LIMITATIONS

There has been no attempt in this paper to describe a prescriptive framework for making design decisions for training. Rather, the intention was to re-examine the components of this model of needs analysis, and speculate about the nature of training events which would complement different component configurations. If you subscribe to a definition of needs which emphasizes one or two of the components (Misanchuk, 1982) then it will be necessary to attend only to the design implications for those components, ignoring irrelevant components.

Other considerations also intervene. Full exploitation of the model would require parallel development of training modes to capitalize on the needs of individuals. This has serious budgetary implications, as the costs associated with training development will certainly be inflated. This would only be feasible in cases where there are sufficiently large subgroups of individuals to warrant parallel development. This must be accompanied by a high level of confidence that different training modes will be cost-effective — that matching learner needs and compensatory training modes will produce significant performance differences. Research is needed to examine the speculations offered in this article.

SUMMARY

This article extended the R-C-D model of needs assessment into the realm of learner analysis. It examined the instructional implications of each of the model's components, and

how varying configurations of R-C-D components could influence the differential design of instruction to complement learner perceptions of relevance, competence and desire.

The perceived relevance scale was examined in terms of its influence on the level of abstraction possible in instruction and the location of training. It was speculated that perceived competence could influence the level of difficulty, structure, segment length and type of reinforcement appropriate in training. Desire was reconsidered in terms of organizational posture, reward systems and formality of source.

The major hypothesis in this article is that a needs assessment provides information about potential learners which carries design implications. Considering potential interactions among R-C-D components may lead training designers toward reasonable development decisions, and provide fodder for research into the design of training.

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