

Developments In Business Simulation & Experiential Exercises, Volume 20, 1993

LINKING COGNITIVE STYLES, TEACHING METHODS, EDUCATIONAL OBJECTIVES AND ASSESSMENT: A DECISION TREE APPROACH

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ABSTRACT

This paper examines the justifications for using experiential learning exercises in teaching critical thinking and interpersonal skills to business students. A decision tree framework is used to integrate and depict the relationships between cognitive style, teaching methods, educational objectives and learning measurement. Benefits for students, business managers, and educators are highlighted.

INTRODUCTION AND BACKGROUND

Increasingly, business school education is being evaluated on a variety of interrelated factors. Significant changes in organizations in recent years have made the development of interpersonal skills in business students more critical than ever before. These skills can be strengthened in a number of ways using experiential learning methods and other exercises which require student group interaction (Mason 1990). However, business schools do not effectively teach interpersonal, teamwork, and negotiating skills since their mastery requires practice and most schools are not equipped with practice fields (Leavitt 1991). Also, White (1992) notes that MBA graduates typically do not learn operational effectiveness e.g., how to achieve world-class quality. In study of both west and east coast service and manufacturing firms, twenty-four percent of the employers indicated that interpersonal skills were most important for graduates. Whereas the lack of prior work experience is the most significant shortcoming in recently graduated business students (Raymond, McNabb, and Matthaei 1990).

Another study found conflict resolution and negotiating skills were thought to be most important for business managers (Winer 1990). Carnevale, Gainer and Meltzer (1988) and Porter and McKibbin (1988) also report similar results. They concluded that business students need to develop these critical skills and broaden their business perspective as well as acquiring knowledge in a specific functional area e.g., marketing or finance. Similarly, in a *Business* report on the best business school's, recruiters rated graduates on their abilities to perform as analysts and team players, and to acquire a global perspective towards their role in the business community (Byrne 1990).

Interestingly, students have also realized both a requirement for and a deficiency in acquiring important managerial skills. Over a decade ago two separate yet related studies of recent business school graduates indicated that oral and written communication skills should be taught in more detail and emphasis since they were most important to success in their jobs (Hewing 1980; Reder and Wunsch 1980). More recently, students enrolled in a business policy class identified nine skills which they felt were insufficiently developed during their university educational experience. They included: influencing, negotiating, writing, presenting, and creative problem-solving (Winer 1990).

It seems that a gap exists between the identified needs of business students and the ability of the current curriculum to deliver this education. This paper attempts to present a solution to the dilemma. The paper is developed in three parts. First, selected cognitive styles, management education, and learning objectives and assessment research are briefly reviewed. Second, a new integrated approach to teaching managerial concepts within a course context is then introduced. Last, implications for business students, practitioners, educators and researchers are provided.

COGNITIVE STYLES, MANAGEMENT SKILLS, LEARNING GOALS AND MEASURES

Cognitive styles refers to the preferred manner in which people deal with information about the world around them. Jung (1971) identified two dimensions of human cognition i.e., perception (information gathering) and judgment (information processing). During the information gathering or perceptual phase, humans are likely to utilize either sensing (S) or intuition (N). Whereas, either thinking (T) or feeling (F) judgments are emphasized during the information processing stage. Combinations of these two dimensions result in four basic cognitive styles-sensation/thinking (ST), intuition/thinking (NT), sensation/feeling (SF), and intuition/feeling (NF).

Each of these cognitive styles have a different preferred approach to learning and problem solving: STs use a systematic approach to determining the pertinent facts in a problem. This style prefers impersonal, detached analysis of data in a logical process (Hirsh and Kummerow 1990; Taggart and Robey 1981). NTs consider longer-term perspective and more conceptual relationships among the issues. They prefer to weigh the possible outcomes in addition to the concrete facts. SFs take a more personal focus when dealing with concrete facts. Their approach is guided by a shorter term and interpersonal perspective. NFs tend to rely heavily on personal and nonrational feelings when judging and interpreting facts (McKee 1991).

Interest in this dual cognitive/affective and analytical/intuitive view of human information processing by business managers can be traced to Barnard (1938). He noted that "mental" processes consist of two groups which I shall call 'nonlogical' and 'logical' (p. 302). In his opinion, an effective manager has access to the appropriate approach as dictated by the situation at hand. Moreover, Myers (1976) argues that a successful organization needs a variety of types since each has a particular and unique strength. For example, a sensing type contributes practical realism whereas a feeling type is the most skillful at understanding and communicating with people. The most penetrating analysis is provided by a thinking style while the clearest view of the future and theoretical possibilities comes from an intuitive style approach (cf. Myers and McCaulley (1985).

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Management researchers have discovered that different cognitive styles results in varying preferences for the type of organizations (Mitroff and Kilman 1975; Kilmann and Mitroff 1976) and organizational positions (Williams, Armstrong, and Malcolm 1 985) as well as for diverse ways of conflict resolution (Kilman and Thomas 1975). In addition, information is defined and processed in a distinctive fashion (Mason and Mitroff 1973; Smith and Urban 1 978) e.g., engineers with different cognitive styles focus on dissimilar facets of design (Lowen 1982). Not surprisingly, dissimilarities in decision-making, communicating, and learning processes have been linked to different cognitive styles (e.g., Carlson and Levy 1973; McCaulley and Natter 1974; Levin 1978; Thompson 1984).

According to Leavitt (1991), the process of managing can be divided into three interrelated parts: (1) the inner directed, pathfinding part (i.e., needing intuitive skills), (2) the analytical, planning, problem-solving stage (i.e., using logical thinking), and (3) the active, persuasive, implementing stage (i.e., utilizing sensing and feeling abilities). The majority of MBA program curriculum emphasizes the middle, problem-solving stage, but an orientation towards action and implementation is and will continue to be required of managers. In addition to analytical skills effective implementation requires the ability to influence and collaborate with others.

With respect to analytical problem-solving techniques business students are generally well prepared. They are also introduced to descriptive accounts of banking systems, financial markets, and organizational structures. However, American business students have not been typically taught to consider themselves global citizens, pursue lifelong learning, and develop an orientation towards social' action i.e., interpersonal skills (Leavitt 1 989). Managers who are capable of "integrating wisdom and feeling with analysis... are worth a great deal to an organization" (Leavitt 1975, p. 20). Managers need to overcome a bias towards conscious analysis and cautiously distinguish between intuitive and logical activities in order to apply the appropriate information processing style (Mintzberg 1976).

Gentry, Stoltman, and Mehlhoff (1992) observe that experiential approaches have typically concentrated on the process of teaching versus the process of learning. Consequently, little concern has been given to what is learned. Figure 1 depicts the still widely recognized taxonomy of six cognitive learning objectives along with selected assessment techniques and teaching methods (Bloom et al. 1956). Since this model allows for decision making i.e., logical activities learning, it is especially useful for business learning assessment (Gentry, Stoltman, and Mehlhoff 1992). In addition, the feeling or affective component of a related classification of educational goals can be used to measure the student's attitudes, values, and emotional sets i.e., intuitive elements (Krathwohl, Bloom, and Masia 1964).

EXPERIENTIAL TEACHING METHODS FOR BUSINESS CLASSES

Perhaps underdeveloped interpersonal skills can be attributed to the teaching methods that university teachers have typically utilized e.g., the lecture method as they were taught (Gottko and Osterman 1987). Some business school educators, however, have recognized the value of action-oriented teaching approaches. Malhotra, Tashchian, and Jam (1989) argue that a group project method encourages such managerial skills as communication, problem-solving, critical thinking, and interpersonal skills. Conant and Mokwa (1987) designed a course wherein students act as product managers and use an audit to link theory and practice when investigating market behavior. Moutinho (1988) found that the use of computer simulation games both promotes the student's learning experience and involvement in the marketing educational process (cf. Berman and McNeely 1 990; Perry and Euler 1989 for a comprehensive review of computer-based marketing simulations). Assessment centers require the development of both critical thinking and interpersonal skills e.g., task simulations, in-basket exercises, and oral presentations (Thornton and Byham 1982) and are utilized to evaluate employees for various purposes

(Jaffee and Sefcik 1980). Indeed, assessment centers are currently utilized by 22% of Fortune 500 firms as either selection techniques or management development devices (Keel et al. 1989). The in-basket exercise developed by Castleberry (1990) is "interesting, versatile, and should enhance learning... for sales and sales management courses" (Ingram 1991, p. 89).

These pedagogical techniques are clearly different than the lecture and discussion approach. Svinicki and Dixon (1987) discuss these behavioral based instructional activities suggesting they aid in experiential learning. Cohen (1988) defined experiential learning as "any technique ... whereby the student learns primarily from his or her own experience (p. 1).

A MODEL FOR TEACHING MANAGERIAL SKILLS TO BUSINESS STUDENTS

Based on the research reviewed above, Figure 2 provides a decision-tree perspective that considers the mix among managerial skills, cognitive styles, educational objectives and assessment techniques. Given the recent concerns expressed by educators of both undergraduate and MBA students as documented in the extant literature, managerial skills are divided into two categories i.e., critical thinking or logical thinking and interpersonal or intuitive, affective behaviors (Stage 1). The ranking of ST and SF as mid-level and NT and NF as high-level cognitive style strengths (Stage 2) are drawn from McKee's (1991) taxonomy of skills, curricula, and evaluation. Basic knowledge, comprehension, and application along with the analysis, synthesis, and evaluation learning objectives are assumed to be subsets of respectively mid-level (SF/ST) and high-level (NF/NT) cognitive style strength (Stage 3). Only the higher order learning objectives are highlighted since the literature review demonstrates me need for more experiential or participative teaching methods. Last, choices for learning assessment and experiential teaching methods represent only one among several possibilities. Also, some teaching methods may in fact simultaneously involve several learning objectives or managerial skill. Interested readers should refer to Bloom et al. (1956) for a comprehensive treatment of learning objective and assessment methods.

An integration of the taxonomy of educational objectives, learning assessments, and teaching methods (Figure 1) with managerial skill development and Jungian cognitive styles resulted in the decision tree approach to combining key educational process variables. Utilization of the decision tree model can be demonstrated through discussion of the three cornerstone elements of the marketing concept (required learning for all business school' students) i.e., achieving customer satisfaction, encouraging inter-functional coordination, and accomplishing organization goals. One important caveat to be considered when using this taxonomy and decision tree model is that a certain amount of interaction among the variables is possible. For example, a computer simulation with student teams allows for simultaneous learning of interpersonal' and analytical managerial skills. Also, numerous permutations and combinations of educational process variables are feasible or even desired in order to achieve specific learning objectives within a particular course.

IMPLICATIONS FOR BUSINESS STUDENTS, PRACTITIONERS, AND EDUCATORS

A number of benefits for students, business managers, and educators, can be realized when applying the decision tree framework in designing courses. First, students are provided an educational environment that explicitly considers the complex interaction among learning process variables. Specifically, cognitive styles are matched to the appropriate managerial skill, its level, and a learning objective. Not only are students made aware of their preferred cognitive style but they are afforded the chance to learn and apply different styles that are necessary to deal with interpersonal and/or analytical issues. Moreover, since actual business problems are complex and require both interpersonal and -

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analytical managerial skills, students are acquiring the capability to be more effective employees upon their graduation.

Next, prospective employers of business school graduates recognize the value of workers who can effectively and efficiently offer solutions to questions and challenges facing the organization. Seldom are problems facing the modern day firm simply answered by employees who have learned merely basic knowledge or comprehension of business concepts. Novel approaches to a constantly changing competitive environment require business school graduates to continually move beyond current ways of thinking and provide innovative solutions. Indeed, firms may find that training periods for new managerial hires can be shortened thus resulting in a financial savings to the organization.

All too often, business professors have relied on teaching methods to measure the students' grasp of relatively lower level learning objectives e.g., multiple choice and essay questions to assess basic knowledge and comprehension. This traditional approach asks students to solve problems that are typically too clearly and precisely defined but not realistic.

With the decision tree educational process model, instructors have a vehicle with which to meet both behavioral and cognitive learning objectives. By systematically implementing the decision tree approach in their courses, educators can significantly increase the likelihood that students will develop the suitable managerial skills that are vitally required for success in today's business world.

Finally, educational researchers may find the model a basis upon which to empirically test relationships between managerial skill level, educational objective, learning assessment, and teaching method. In this manner, the boundaries of learning theory and practice will be extended for the benefit of business students, educators, and practicing managers.

REFERENCES

- Barnard, Chester (1938) *The Functions of the Executive* Cambridge, MA: Harvard University Press.
- Berman, Barry and Brian McNeely (1990) "A Comparison of Microcomputer Usage Between Corporate Marketing Personnel and Undergraduate Marketing Students at AACSB-Accredited Schools" in 1990 AMA Educators' Proceedings, A. Parasuraman, W. Bearden, et al., eds. Chicago: American Marketing Association: 163-67.
- Bloom, B. S., M. D. Englehart, E. J. Furst, W. H. Hill and D. R. Krathwohl (1956). *Taxonomy of Educational Objectives, Handbook I: Cognitive Domain*, B. S. Bloom, ed. New York: Longman.
- Byrne, John A. (1990). "The Best B Schools." *Business Week*, (October 29): 52-66.
- Carnevale, Anthony, Leila Gainer and Ann Meltzer (1988) *Workplace Basics: The Skills Employers Want*, Washington, D.C.: The American Society for Training and Development and the United States Department of Labor.
- Carson, Rae and Nissim Levy (1973) "Studies of Jungian Typology: I. Memory, Social Perception, and Social Action." *Journal of Personality*, 41, 559-76
- Castleberry, Stephen B. (1990) "An in-Basket Exercise for Sales Courses." *Marketing Education Review*, 1 (November): 51-55.
- Cohen, William A. (1988) "Enhance Teaching with Experiential Learning." *Marketing Educator*, Vol. 7, No. 1, (Winter), 1,5.
- Conant, Jeffrey and Michael Mokwa (1987) "Confronting Marketing Management Reality: A Design and Instructional Strategy for an Intermediate Course." *Journal of Marketing Education*, (Summer), 45-50.
- Felton, A. (1959) "Making the Marketing Concept Work, *Harvard Business Review*, 37 (July/August), 55-65.
- Gentry, James, Jeffrey Stoltman, and Carol Mehlhoff (1992) How Should We Measure Experiential Learning, in *Developments in Business Simulation & Experiential Exercises*, Jerry Gosenpud and Steven Gold, eds., Stillwater, OK: Oklahoma State University: 54-57.
- Gottko, J. and D. Osterman (1987) "The Feedback Lecture: An Illustration." *Journal of Marketing Education*, Summer: 39-43.
- Hewing, Pernell Hayes (1980) Are Courses in Business Communications Meeting the Needs of Employers? *Journal of Business Education*, 55 (May), 345-47.
- Hirsh, Sandra and Jean Kummerow (1990) *Introduction to Type in Organizations* Palo Alto, CA: Consulting Psychologists Press, Inc.
- Ingram, Thomas (1991). "An In-Basket Exercise for Sales Courses: Commentary." *Marketing Education Review*, 1 (Winter) 2, 88-89.
- Jaffee, C. and J. Sefcik (1980) "What is an Assessment Center?" *Personnel Administrator* February: 40-44.
- Jung, Carl (1971) *Psychological Types* trans., H. G. Baynes, rev., R.F.C. Hull. Princeton, NJ: Princeton University Press.
- Keel, Sue Branscome, Daniel S. Cochran, Kirk Arnett, and Danny R. Arnold (1989). "AC's Are Not Just For the Big Guys." *Personnel Administrator*, 34(May), 98 +.
- Kilman, Ralph and Kenneth Thomas (1975) *Interpersonal Conflict-Handling Behavior as Reflections of Jungian Personality Dimensions.* *Psychological Reports*, 37, 971-80 and Ian Mitroff (1976) "Qualitative Versus Quantitative Versus Analysis for Management Science: Different Forms for Different Psychological Types." *Interfaces* 6,2 (February), 17-27.
- Krathwohl, David, B. Bloom, and B. Masia (1964) *Taxonomy of Educational Objectives, The Classification of Educational Goals, Handbook II: Affective Domain*. New York: David McKay Company, Inc
- Leavitt, Harold (1975) *Beyond the Analytical Manager: Part II*. *California Management Review*. 17 (Summer), 11-21. (1989) *Educating Our MBAs: On Teaching What We Haven't Taught*, *California Management Review*, Spring 31 (3), 38-50. (1991). "Socializing Our MBAs: Total Immersion? Managed Cultures? Brainwashing?" *California Management Review*, 33, 4 (Summer) 127-143.
- Levin, L. (1978) *Jungian Personality Variables of Psychotherapists of Five Different Theoretical Orientations* Dissertation Georgia State University Dissertation Abstracts International, 39, 4042B-4043B
- Lowen, Walter (1982). *Dichotomies of the Mind: A Systems Science Model of the Mind and Personality*. New York: John Wiley and Sons
- Malhotra, Naresh, Armen Tashian, and Arun Jam (1989). "The Project Method: An Integrated Teaching Tool in Marketing Research." *Journal of Marketing Education*, 11 (2): 32-40.
- Mason, Richard and Ian Mitroff (1973). "A Program for Research on Management Information Systems." *Management Science* 19, 5 (January), 475-87.
- Mason, J. Barry (1990). "Improving Marketing Education in the 1990s: A Dean's Perspective." *Marketing Education Review*. November (1) 1, 10-22.
- McKee, Daryl (1991). "A Cognitive Style Framework for Marketing Education Program Development." in *Enhancing Knowledge Development in Marketing* Vol. 2, Mary C. Gilly et al. eds., Chicago, IL: American Marketing Association, 59-61.
- Mintzberg, Henry (1976). *Planning on the Left Side and Managing on the Right.* *Harvard Business Review*, 54 (July/August), 49-58.
- Mitroff, Ian and Ralph Kilman (1975) 'Stories Managers Tell' A New Tool for Organizational Problem Solving. *Management Review* (July), 18-43.

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- Moutinho, Luiz (1 988). "Learning/Teaching Effectiveness of Marketing Simulation Games." *Quarterly Review of Marketing*, 13 (Winter): 10-14.
- Myers, Isabel B. (1976) *Introduction to Type*, 2nd ed. Gainesville, FL: CA: Center for Applications of Psychological Type. and Mary McCaulley (1 985). *Manual: A Guide to the Development and Use of the Myers-Briggs Type Indicator* Palo Alto, CA: Consulting Psychologists Press.
- Perry, Chad and Terry Euler (1989) *Marketing Simulations in Tertiary Institutions: A Review and Future Directions.* *European Journal of Marketing*, 23 (4): 40-49.
- Porter, Lyman and Lawrence McKibbin (1988) *Future of Management Education and Development: Drift or Thrust into the 21st Century?* New York: McGraw-Hill.
- Raymond, Mary Anne, David McNabb, and C. Frederick Matthaei (1990) *In Marketing Education: Exploring New Directions*, Jeffrey Douth and Gary McKinnon, eds., Salt Lake City: Brigham Young University Press.
- Reder, Martha and Alan Wunsch (1 980). "A Survey of Communication Practices of Business School Graduates by Job Category and Undergraduate major," *The Journal of Business-s Communications*, 1 7 (Summer), 33-41.
- Rumelhart, D. E. and D. A. Norman (1981) "Analogical Processes in Learning," in *Cognitive Skills and Their Acquisition*, J. R. Anderson, ed., Hillsdale, NJ: Lawrence Erlbaum.
- Smith, August and Thomas Urban (1978). *Myers-Briggs Personality Orientations and Information Processing Styles: Implications for Management Education and Development*, paper presented at the National Academy of Management, MED Session, San Francisco: August 10.
- Svinicki, Marilla D. and Nancy M. Dixon (1987) "The Kolb Model Modified for Classroom Activities." *College Teaching*, 35 (4): 141-146.
- Taggart, William and Daniel Robey (1981) *Minds and Managers: On the Dual Nature of Human Information Processing and Management.* *Academy of Management Review*, April, (6) 2, 187-195
- Thompson, L. (1 984). *An Investigation of the Relationship of the Personality Theory of C. G. Jung and Teachers' Self-Reported Perceptions and Decisions.* Dissertation The Ohio State University
- Thornton III, George and William Byham (1982) *Assessment Centers and Managerial Performance*, NY: Academic Press.
- Waters, James (1980). "Managerial Skill Development." *Academy of Management Review*, July, (5) 3, 449-453.
- White, B. Joseph (1992), "M.B.A. in Reality, *The New York Times*, (May 3) 8.
- Williams, Cecil, David Armstrong, and Clark Malcolm (1 985). *The Negotiable Environment: People, white-collar Work, and the Office.* Ann Arbor, MI: Facility Management Institute.
- Winer, Leon (1990) "Adding Skill Development to Graduate Marketing: A Case History." in *Developments in Marketing Science*, Vol. XIII, B. J. Dunlap, ed., Cullowhee, NC: Academy of Marketing Science, 284-288

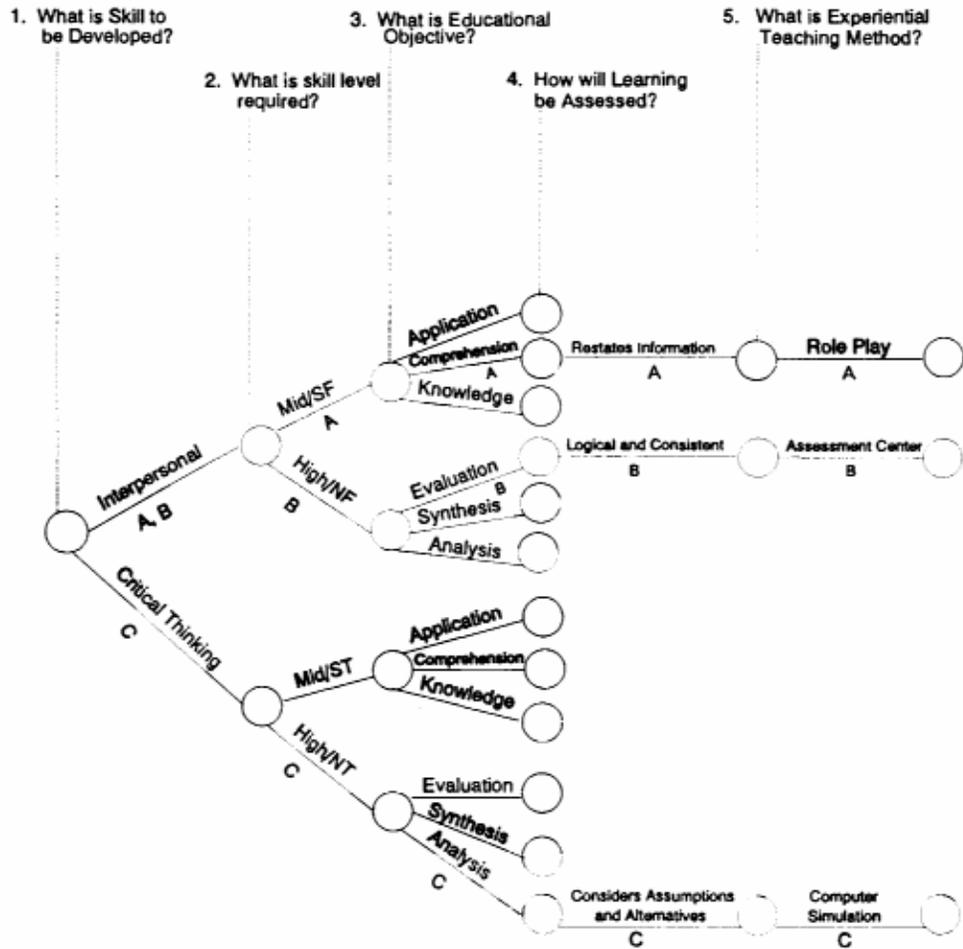
Figure 1. Taxonomy of Bloom's Learning Objectives,
Selected Assessments, and Experiential Teaching Methods

<u>Learning Objective & Description</u>	<u>Assessment</u>	<u>Teaching Method</u>
Evaluation-ability to create standards to judge & measure	Demonstrates consistent logic	Assessment Center
Synthesis-moving beyond existing knowledge and providing new insights	Solution to questions that necessitate novel approaches	Behavioral Simulation
Analysis-problems solved by understanding relationship among element of model	Operates within Critical Assumptions & Identifies Possible Alternatives	In-basket Exercise or Computer-based Simulation
Application-discovery of association among concepts	Connection of concepts to fabricated problem sets	Role Play
Comprehension-transformation of data into different symbols	Process information by restating into other words	Oral Presentation
Basic Knowledge-retention of facts and definitions	Responds to Objective Questions	Repetitive Multiple Choice Exercises

Adapted from Gentry, Stoltman, and Mehlhoff (1992)

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figure 4
Stages in Decision-Tree Framework for Matching Key Educational Process Variables



Letter A - depicts the selected path to accomplish a customer satisfaction learning objective

Letter B - depicts the selected path to accomplish an interfunctional coordination learning objective

Letter C - depicts the selected path to accomplish an organizational goal learning objective