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ABSTRACT

Learning in the wholetheme approach is defined as reorganizing one's own intuitive knowledge base, as opposed to storing facts. This presentation discusses several thematic organizers to illustrate their role as a teaching tool in helping learners reorganize their own intuitive knowledge base. Intimately tied to the brain's ground-figure processes is the learner's intuitive knowledge base (IKB). It is possible to create thematic organizers that are particularly suitable for reaching and engaging the IKBs of learners. Two of these are discussed. The first is the wholetheme-piecemeal thematic organizer, a domain launching theme (DLT) organizer that pertains to an entire course as an indefinite source of ideas. A DLT organizer can be a tool for teaching students the role of background knowledge, transfer-appropriateness, and complex problem solving. A second DLT organizer is exemplified by a wholetheme definition of educational psychology that serves as a tool for organizing the student's own IKB into an understanding of what educational psychology is about. A pilot study in an undergraduate class has supported the use of these thematic verbal organizers. Five tables and two figures illustrate the discussion. (Contains 37 references.)

Running head: THEMATIC ORGANIZERS

Thematic Organizers as a Tool for Teaching from a Wholetheme Perspective

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Abstract

Learning in the wholetheme approach is defined as reorganizing one's own intuitive knowledge base, as opposed to storing facts. This presentation discusses several thematic organizers to illustrate their role as a teaching tool in helping learners reorganize their own intuitive knowledge base.

Thematic Organizers as a Tool for Teaching from a Wholetheme Perspective

There is widespread consensus among educational researchers and practitioners that we must teach children how to think for themselves. However, there is little agreement as to what critical thinking is and how it might be taught. Much of the research on teaching thinking has focused on the construction and use of domain-specific structures or schemas (generally known as declarative knowledge) and how-to-learn/think strategies (known as procedural knowledge). The main difficulty with this type of teaching is that it is difficult to integrate these isolated knowledge structures and strategies into the learner's background knowledge. As a result, much of what is learned in schools has taken the form of what Bransford and his colleagues at Vanderbilt University have called inert knowledge, or academic knowledge that does not transfer to contexts other than the context in which it was taught.

Bransford and his colleagues have put their finger on the very root of a monumental problem--much of what is taught in schools is not transfer-appropriate. Whereas locating the roots of the problem is important, it does not by itself point in the direction of the solution. In fact, Bransford's own solution may be seen as little more than a return to the same hard-to-integrate how-to-think strategies. Consequently, the outcome turned out to be as one might expect.

In order to help students to learn to generate transfer-appropriate knowledge, Bransford and Stein (1984) proposed their IDEAL problem-solving model. According to Bransford and colleagues (Bransford et al., 1989), the model was inspired by the work of Dewey (1933) and Wertheimer (1959) in that it encourages a focus on problem solving and higher-order thinking, as opposed to rote memorization of basic-level facts. As a procedural algorithm, however, students can do very little but to memorize and, hopefully, to use the IDEAL problem-solving strategy. Thus, far from being a transfer-appropriate approach, the IDEAL problem-solver is itself an inert

algorithm according to Bransford's own evaluation of the research on the model (see Bransford et al., 1989):

> After several years of teaching from this problem-solving model, it has become clear that there are numerous instances in which the student could profit from the model yet fail to use it. For example, unless explicitly prompted to do so, students may fail to realize how attempts to formulate the topic of a paper relate to discussions of problem identification and definition. (Bransford et al, 1989, p. 471).

Research on brain functioning (see Iran-Nejad, Marsh, & Clements, 1992) suggests that the roots of the problem of transfer are much deeper than implied by Bransford's distinction between inert and transfer-appropriate knowledge. They lie in the evolution-tested biofunctional processes of the brain. It appears that the brain is not optimally-equipped for keeping and using knowledge structures that are isolated by domain. Neither are they equipped to maintain and use decontextualized how-to-learn/think strategies such as the IDEAL problem solver. In other words, there are indications that organisms are what they are today because their nervous systems (and not their minds) solved the fundamental survival problems as they evolved. If this is true, it would follow that only those mind-solutions that are compatible with brain-solutions can serve us successfully in solving the transfer of learning problem. All other mind-solutions to the problem of learning for transfer that we come up with seriously run the risk of being qualitatively NOT very different from superstition. Reasoning along these lines, we have concluded based on the research on brain functioning that the brain's evolution-tested processes are NOT storage-retrieval processes by nature. Rather, they are more akin to what Gestalt psychologists called figure-ground processes (Iran-Nejad, Marsh, Clements, 1992; Iran-Nejad, Hidi, & Wittrock, 1992).

Intimately tied to the brain's figure-ground processes is the learner's intuitive knowledge base (IKB). When it come to real-world applications, learners appear to receive their most direct instructions from no other source than their IKB. This is why the instructions that come in the

form of declarative or procedural knowledge invariably fall on deaf ears, even the most ingenious ones such as Bransford's IDEAL problem-solving model.

How can we reach a learner's IKB. This is a new area wide open for exploration. However, I have found two assumptions particularly useful in my teaching and research. First, the language of IKB is fundamentally metaphorical, which is probably why the literal language of academic facts and how-to-learn/think strategies makes so little contact with the learner's IKB. Second, it is possible to create thematic organizers that are particularly suitable for reaching and engaging the IKSs of the learners. My students and I have already created a number of these organizers (Cochran, 1994, Figure 2; Iran-Nejad, 1989, Table 2; Iran-Nejad, 1994, Figure 1; Iran-Nejad & Cecil, Table 13.1; Iran-Nejad et al., 1992, Figure 3; Yuhasz, 1993, Figure 1). I will discuss two of these in this paper.

Example 1: The Wholetheme-Piecemeal Thematic Organizer

This thematic organizer was originally created to be used for introducing and organizing a cognitive educational psychology course for graduate students. For this reason, Iran-Nejad (1994) referred to it as a domain-launching theme (DLT) organizer. Several aspects of this DLT organizer are noteworthy. First, it is a whole-course organizer. It can be used not just to introduce cognitive educational psychology, but to organizer learning activities to be used for the duration of the entire semester. Second, it is an indefinite, if not infinite, source of ideas. Using their IKBs, the teacher as well as the students can continue to discover new ideas in it and use them to find solutions to learning/teaching problems. Several of these unanticipated ideas have been brought to my attention by my students. Third, it can be used as a problem-solving context. Table 1 shows one such problem that was posed to cognitive educational psychology students along with their responses. And, finally, it can be used to articulate more sharply and deeply ideas that have remained vague in traditional educational psychology. For instance, the cone-arrow in the organizer implies that learning is accumulation of external knowledge; whereas the

rod-arrow suggests that learning is reorganization of the learner's own IKB. This leads to a much clearer understanding on the part of the students of the two ways of defining learning (see Cochran, 1993). As another example, consider the larger amount of research that has been conducted on the influence of background knowledge on learning. Much of this research has focused on such domain-specific knowledge as how people remember the content of their schemas for restaurant or washing clothes or how introductory knowledge in a subject area such as math or science can serve as a prerequisite for teaching intermediate or advanced domain-specific content. However, as the DLT organizer in Figure 1 shows, the broad background knowledge hypothesis is inadequate at best and completely misleading at worst. It is misleading because it focuses too much on domain-specific knowledge at the expense of the learner's IKB. The contrast between domain-specific knowledge and IKB is shown clearly in Figure 1. For naive learners, the piecemeal approach (represented by the cone-arrow) presupposes zero domain-relevant knowledge and begins with isolated pieces of information that can only be committed to memory (Shuell, 1990). The wholetheme approach, by contrast, originates, more realistically, in the IKB of the naive learner, which is the source of much domain-relevant knowledge.

Insert Table 1 and Figure 1 About Here

The DLT organizer in Figure 1 also enables us to redefine inert and transfer-appropriate knowledge, and sharpens our understanding in the process. Inert is the knowledge that is learned through the piecemeal approach represented by the cone-arrow, which fails to make contact with the learner's IKB. Transfer-appropriate, by contrast, is the knowledge that is gained by means of the reorganization of the learner's IKB, as represented by the rod-arrow. There is anecdotal evidence that transfer may operate precisely as the thematic organizer in Figure 1 implies. First, the most immediate test of transfer-appropriateness of a model is whether or not it can be used in

practice by its designer. In other words, how readily a model of complex problem solving, for instance, can be used in new real-life situations by its designer, who presumably knows everything about the model, is the minimum requirement for its transfer-appropriateness. I just mentioned in this paper that the DLT organizer can be used as a tool for teaching students the role of background knowledge, transfer-appropriateness, and complex problem solving. Thus, one way for the reader to try to evaluate the degree of transfer-appropriateness of the organizer in these areas is to reflect on the potential success of the model as a teaching tool. Another indication of the transfer-appropriateness of the organizer to writing became evident spontaneously in my experience with teaching the cognitive educational psychology course mentioned earlier. Spring 1993 was the first time the organizer was used in this course in its current form. During the seventh week of the semester, 8 out of the 12 students enrolled in the course included a thematic organizer in their first essay summarizing the journals that they had been keeping as part of the course requirements. And, finally, at least three of the students used the wholetheme approach in their own teaching in areas as diverse as undergraduate educational psychology (Cochran, 1993), supervision of student teachers (Volkman, 1993), and tests and measurement (Zheng & Iran-Nejad, 1993). Cochran (1993) reports on his teaching experience with the wholetheme approach. He notes that "acceptance of the wholetheme approach to instruction feels liberating and is not simply the acceptance of another paradigm with rigid boundaries set by others for the teacher to follow. Inherent to the approach is the freedom of creativity . . . . As the teacher or learner, I am not conforming to someone else's template" (p. 10).

There is much evidence that theme-like aspects of one's background knowledge--such as perspectives (Anderson & Pichert, 1978; Pichert & Anderson, 1977), viewpoints (Black, Turner, & Bower, 1979), macrostructures (Kintsch & van Dijk, 1978), stereotypes (Snyder & Uranowitz, 1978), topical or contextual knowledge (Beck & Mckeown 1989; Bransford & Johnson, 1972), or schemata-of-the-moment (Bartlett, 1932; Iran-Nejad & Ortony, 1984)--facilitate learning. Even

though research has made the value of these aspects abundantly clear, they have not been used to improve learning in the classroom or the school curricula. A review of the literature on expository readers for young children, for instance, "uncovered instances of headings that served to aggravate a problematic relationship among parts of a text rather than to aid the organization of the information" (Beck & McKeown, 1989, p. 58). The piecemeal approach represented by the cone-arrow in the DLT organizer may have been the main obstacle to exploiting the practical aspects of this area of research.

The model represented by the cone-arrow in our thematic organizer generates transfer-inappropriate knowledge. There is a sense in which the kind of piecemeal learning that the cone-arrow portrays is, like swimming against the current, an uphill battle for the learner. Consider the following example, cited by Bransford et al. (1989), of the so-called insight problems: "Uriah Fuller, a famous Israeli superpsychic, can tell you the score of any baseball game before the game starts. What is his secret?" For many, it is difficult to see the answer: "Before it starts the score to any game is 0 to 0." Our thematic organizer implies that this is because the problem requires one to engage in the unnatural task of isolating the problem situation from one's intuitive knowledge base (e.g., that superpsychics are superior in prediction . . .) and swimming against the force of its current. Yet many high school and university logic courses teach students to do just this. The tacit assumption is that going against the flow of their intuitive knowledge base makes students wiser or more critical thinkers by adding some abstract skill or model to their problem-solving tool kit. Our DLT organizer suggests that the only aspect that is real about doing so is that it is unnatural.

Iran-Nejad and Ortony (1984) discussed in detail how isolating abstract schemas and focusing on them as the primary conceptual tools (Bransford & Stein, 1984) for learning, a practice that was highly fashionable in the late 1970s, is contrary to the natural course of human cognitive and brain functioning. Only in terms of the perspective represented by the cone-arrow

in our DLT organizer is it possible to think of expertise in problem solving as consisting of a large collection of abstract conceptual tools. Bransford and his colleagues have conducted and reviewed (see Bransford et al., 1989) much research indicating that abstract problems such as the Tower of Hanoi (Simon & Hayes, 1977) and abstract problem-solving recipes such as the IDEAL problem solver fail to become transfer-appropriate conceptual tools spontaneously. They described the problem as having to do with accessing knowledge from long-term memory and reported evidence bearing on various methods of overcoming the problem of access. They concluded that wisdom comes from experiencing change in our own beliefs, an idea which is more compatible with the notion of learning as wholetheme reorganization of one's own IKB than with the piecemeal internalization of prescribed external knowledge, such as the knowledge of the IDEAL problem-solver.

Example 2: A Wholetheme Definition of Educational Psychology

Figure 2 presents a second DLT organizer we have used to introduce and teach educational psychology to undergraduate teacher education students. The goal of this thematic organizer is for it to serve as a tool for organizing the student's own IKB into an understanding of what educational psychology is all about. To be used in conjunction with this graphic thematic organizer, a verbal thematic organizer was constructed, which elaborates on the four aspects of the graphic thematic organizer and integrates them. The verbal thematic organizer is a module consisting of content areas, objectives, and learning activities (Iran-Nejad & Smith, 1991). The first content area presents an overview of educational psychology as a discipline. One objective under this content area restates the wholetheme definition of educational psychology as (a) an organized body problems and solutions related to human development, learning, and teaching, (b) a scientific method of problem-solving, (c) a system of communication among researchers, teachers, and other practitioners, and (d) a set of ethical standards for teaching and research.

Insert Figure 2 about Here

The objectives in this verbal thematic organizer are designed to draw upon the student's IKB in various ways. Some objectives elaborate on the wholetheme definition presented in the first content area by encouraging the students to think of a problem as a possible question and of a theory as a possible solution to a problem. Another objective introduces the subtheme of ethical principles for teaching and research, not directly in the form of an expository statement or definition, but by providing the core ideas for thinking about and evaluating ethical principles. And finally, another kind of objectives guides the student to learning activities that evaluate or apply ethical standards of teaching. Thus, the module gives the students the opportunity to engage in all categories of Bloom's taxonomy, to have a whole-experience of what educational psychology is and what educational psychologists actually do, and to work with their own IKB rather than with some detached and privileged set of definitions provided by the instructor.

A Pilot Study

My first attempt at evaluating the effectiveness of the module took the form of an informal pilot study. The study was conducted as a semester-long intervention project in an undergraduate class taught by the author. Early in the semester, the students were randomly divided into experimental and control groups. Both groups started the course with the module, although somewhat more quickly than desirable for a module of this kind--to stay within the three hours that the course schedule permitted for the introductory unit. For the remaining of the semester, the students were taught together with only occasional reference to the wholetheme definition of educational psychology. Both groups also received additional instruction in the form of individual or group discussions outside class or in the form of individualized feedback on their work. For the control group, the additional instruction consisted of discussions of ongoing topics or projects. For the experimental group, these discussions focused on how the ongoing topics or

projects related to (illustrated, elaborated on, etc.) what the students had learned in the introductory module for wholetheme definition of educational psychology. The idea was to keep the wholetheme definition alive in their minds all the time, for the experimental but not specifically for the control group.

The course requirements included four semester tests (consisting of 30 multiple choice and two essay questions), a comprehensive final exam (80 multiple choice questions), two journal article reviews, and one developmental observation project. In addition, there were 25 quizzes given throughout the semester, which counted as 5% of the final course grade. One of the main dependent measure of the study was built into these quizzes. Toward the end of the semester, the students were also administered the Dynamic and Active Learning Inventory (Iran-Nejad & Chissom, 1988).

Each quiz contained between 5 to 10 multiple choice or true/false items (total = 206 items), which came mainly from the study guide and measured students' knowledge of facts and concepts. Each quiz also contained from 0 to 3 bonus multiple choice items (total = 30). These items were constructed so as to require students to make thematic inferences relating the ongoing topic with the thematic definition of educational psychology. Table 2 shows three examples of thematic inference items. Example 1 was assumed to require a wholetheme, as opposed to piecemeal, understanding of Piaget's approach, educational psychology as a discipline, and their relationship. Example 2 requires the wholetheme evaluation of two psychological approaches in how rigorously they provide controls for scientific observation. Similarly, Example 3 deals with wholetheme similarities and differences among major teaching models and learning theories.

Insert Table 2 About Here

There were no significant differences between the experimental and control groups on any

of the course requirements (see Table 3). However, the differences between the two groups reached significance ($p<.05$) for thematic inferences and the dynamic subscale of DALI (Table 4). In its general form, DALI has been constructed based on the learning and control processes shown in Table 5. The items were slightly reworded to refer specifically to the course under investigation.

Insert Tables 3, 4, and 5 About Here

The Dynamic Control subscale measures the degree of involvement in learning of alertful attention, curiosity (suspense, etc.), postdiction, simultaneous functioning, thematic knowledge creation, and reflective metacognition. An example of an item that measures postdiction (or learning with the benefit of hind sight) is that During this course, discovering new ideas about educational psychology caused excitement in me. The Active Control subscale measured deliberate attention, self-questioning, making predictions, sequential functioning, propositional knowledge creation, and procedural metacognition. An example of an item measuring self-questioning was I made a list of possible exam questions and memorized the answers to them.

The fact that the two groups showed no differences on semester and final exams was not surprising, given that these exams consisted mainly of traditional multiple choice questions measuring knowledge of facts and concepts. The facts and concept component of the quizzes did not show any differences perhaps for the same reason. However, we were expecting difference between the two groups on the three written project. As Table 8 shows, both groups performed better than expected and ceiling effects may have played a role. It is possible, however, that the experimental manipulation had no effect on the quality of these papers.

Discussion and Conclusions

This paper discussed how thematic organizers, along with the wholetheme approach, can

be used as a tool for teaching for transfer. The main thesis was that thematic organizers are an important tool for reaching and reorganizing the learner's own intuitive knowledge base (IKB). Following this reasoning, it was possible to show, even in an area as complex as (cognitive) educational psychology, how learners may begin a new domain with a whole-experience, elaborate on it, keep it alive in their minds in the course of an entire semester, and use it as a context for their subsequent part experiences (theme-relevant elaborations).

It is difficult to elaborate with confidence on the findings of the study cited here. What is quite clear is the methodological significance of the results. The subjects were asked to report on their experiences with educational psychology in the course of their first semester. Learning processes were not directly the focus of investigation. Nevertheless, the results suggested that the approach influenced the learning processes (e.g., attention) in their dynamic form (e.g., alertful attention) but not in their active form (e.g., deliberate attention), a finding that is compatible with other research we have conducted (Iran-Nejad & Chissom, 1992). The results also reflected differential gains in thematic inferences but not in facts and concepts. It is in the larger context rather than specific conclusions, therefore, that the findings are of interest.

Both cognition and brain research (Clancey, 1989; Iran-Nejad & Ortony, 1984; Languis & Wittrock, 1986; Wittrock, 1980) have been the source of inspiration and stimulation over the years for the ideas presented in this paper. Basic empirical work on various aspect of the approach described has also been ongoing for some time (Blanchard & Iran-Nejad, 1987; Diener & Iran-Nejad, 1986; Iran-Nejad, 1986, 1986, 1987; 1989). However, much more research and experience with the wholetheme approach and thematic organizers is required to make firm empirical conclusions.

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Table 1

Solutions by Two Cognitive Educational Psychology to the Problem: Should Piecemeal and Wholetheme Approaches be Treated as Completely Mutually Exclusive or Is It Better to Use Them Together in Teaching?

C. S. Lewis: I like the idea of a wholetheme approach. However, I am still having problems completely separating the two. At some point, every learner must give attention to the minute detail and learn what it is. Before wholetheme approach to most any subject can be effective, some isolation of parts must occur. Even in your illustration of learning one's native language, the parents of the child attend to some isolated parts of teaching their child what some things are. E.g., "Ball, this is a ball. Can you say ball?" However, I also see at some point that the multisource/multimodal kicks into overdrive of the language explosion period of the older toddler. **Now to specifically address your question, I have difficulty, completely separating the two.**

Lisa Baker: I believe the piecemeal approach versus the whole them approach are mutually exclusive and that the two are considered opposites in every sense. It would be very difficult to use the approaches together, because the assumptions of each approach do not coincide. To break concepts into separate entitles is totally different than treating all components as a wh le, based on a multisource nature of learning. **The difference between the two can be compared to black and white. Although it is difficult for many educators to comprehend because for them to understand this whole theme approach would mean that they would have to have a complete change in their way of teaching--a reorganization of insights. I would like to see the whole theme approach to become mor: than a theory, but to be actually integrated in the entire educational system in order to fulfill the insights of individuals according to relevant real-life situations.**

Note 1: Students composed their solutions to the mutual exclusion problem after a class discussion of the two approaches using the DLT organizer. Note 2: All the names in this Table are self-chosen pseudonyms. Adopted from "The global coherence context in educational practice: A comparison of wholetheme and piecemeal approaches to educational practice," by A. Iran-Nejad, 1994, Research in the Schools, 1(1), 63-76. Copyright 1994 by the Mid-South Educational Research Association.

Table 2

Examples of Thematic Inference Multiple Choice Questions

Direct Inference Item

Piaget's research has contributed to which of the following aspects of educational psychology most definitely?

A. An organized body of problems and solutions.
B. A scientific method of inquiry.
C. A set of Ethical standards.
D. A system of communication.
E. All of the above.
F. None of the above.

Less Direct Inference Item

Skinner's approach may be viewed as being superior to Piaget's in that it

A. deals with learning which is more important in education than development.
B. permits more rigorously controlled scientific observation.
C. avoids the ethical problems inherent in the use of human subjects.
D. holds that learning occurs gradually rather than in stages.

Least Direct Item

_____'s model of teaching is most compatible with associationism and the information processing model, _____'s model of teaching is most compatible with Gestalt psychology, and _____'s model of teaching uses concepts from both behavioral and cognitive theories of learning.

A. Bruner; Ausubel; Gagne
B. Ausubel; Gagne; Bruner
C. Gagne; Ausubel; Bruner
D. Ausubel; Bruner; Gagne

Table 3

Mean Scores (and Standard Deviations) on Regular Course Requirements for Experimental and Control Subjects

		Exams					Papers		
Group	N	1	2	3	4	Final	1	2	3
Experimental	11	27.55	29.18	31.18	30.00	59.45	18.09	18.64	92.45
		(6.96)	(5.46)	(4.62)	(5.22)	(9.92)	(1.58)	(1.92)	(6.36)
Control	10	29.20	31.10	32.20	29.70	55.30	18.40	18.60	91.10
		(4.13)	(3.64)	(3.16)	(4.00)	(8.17)	(1.77)	(1.84)	(7.19)

Note: There were no significant differences between the Experimental and Control groups on any of the measure.

Table 4

Mean Scores (and Standard Deviations) on Thematic Inferences, Facts and Concepts, and Dynamic and Active Control Subscales of DALI.

Group	N	Thematic Inferences	Facts & Concepts	Dynamic Control	Active Control
Experimental	11	20.91[a]	128.72	4.68[a]	3.82
		(3.42)	(31.15)	(0.67)	(0.36)
Control	10	17.00	118.10	4.11	3.70
		(3.92)	(21.70)	(0.46)	(0.44)

Note: The highest possible score on Thematic Inferences was 30 and on Facts and Concepts was 206. The scale for each of the Dynamic or Active Control items ranged from Never (1) to Always (7) with Sometimes (3) and Often (5) in between. For each subject, the Dynamic Control score was the mean over 20 items and the Active Control score was the mean over 10 items.

[a]Different from the mean for the control group ($p<.05$).

Table 5

How External, Active Internal, and Dynamic Internal Sources of Control Relate to Learning Processes.

Learning Processes	Sources of Control		
	External	Active	Dynamic
Attention			
Reactive	High		
Deliberate		High	
Alertful			High
Inquiry			
Startle	High		
Self-questioning		High	
Curiosity			High
Closure			
Orientation	High		
Prediction		High	
Postdiction			High
Combination			
Independent (Isolated)	High		
Sequential		High	
Simultaneous			High
Knowledge Creation			
Categorical	High		
Propositional		High	
Thematic			High
Metacognition			
Piecemeal	High		
Procedural		High	
Reflective			High

From "Interest and learning: A biofunctional perspective," by A. Iran-Nejad & C. Cecil, 1992, in K. A. Renninger, S. Hidi, & A Krapp (Eds.), The role of interest in learning and development (pp. 297-331). Hillsdale, NJ: Lawrence Erlbaum Associates. Copyright 1992 by Lawrence Erlbaum and Associates. Reprinted by permission.

Figure Captions

Figure 1. A thematic organizer for a comparison of the piecemeal and wholetheme approaches to learning and teaching. Each ring on the diagonal from upper left to lower right is meant to be in a different color (red, blue, green, purple, orange, respectively) representing a different theme. From "The global coherence context in educational practice: A comparison of wholetheme and piecemeal approaches to educational practice," by A. Iran-Nejad, 1994, Research in the Schools, 1(1), 63-76. Copyright 1994 by the Mid-South Educational Research Association.

Figure 2. A thematic organizer for a wholetheme definition of Educational Psychology as a Discipline.

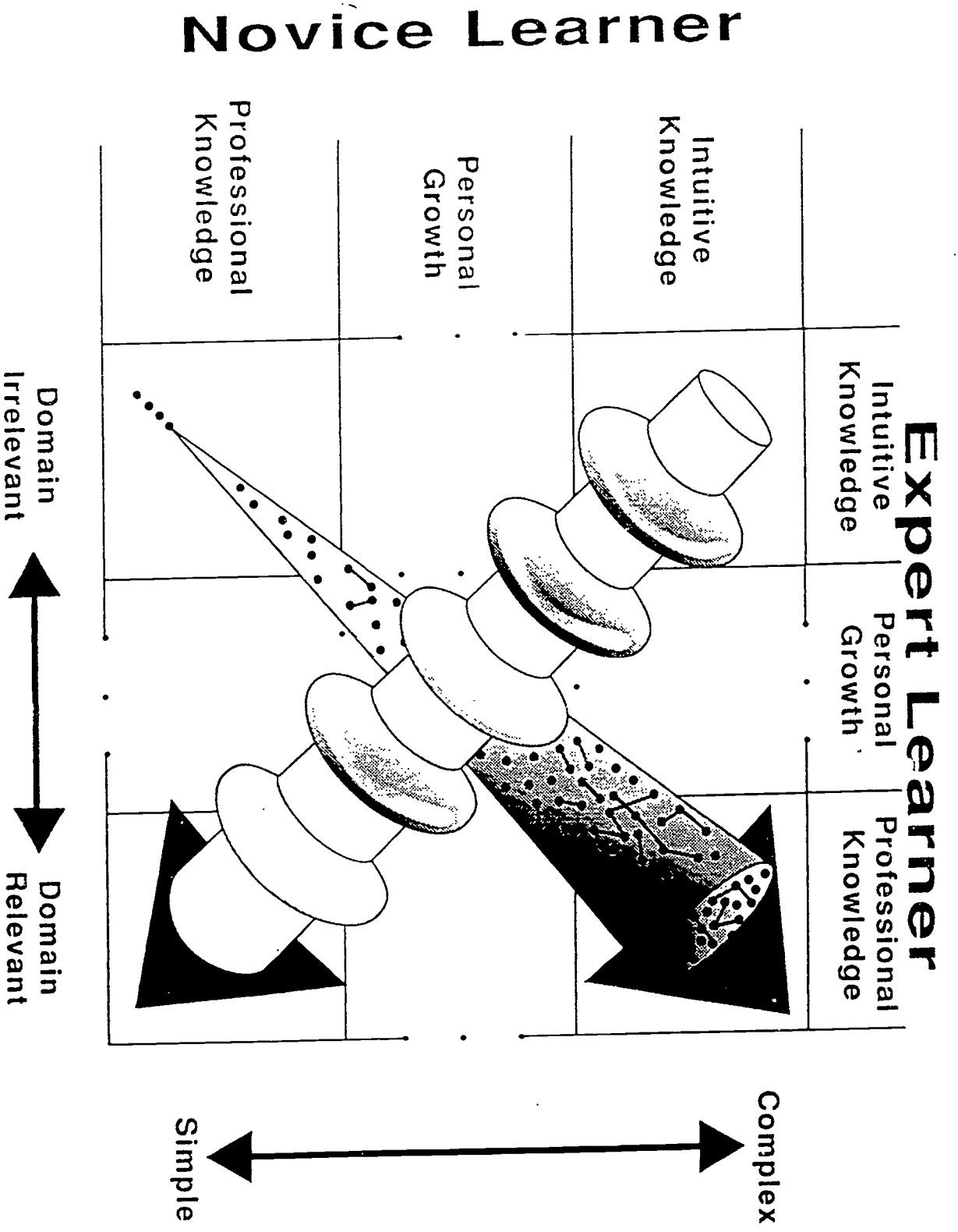

Figure 1. A thematic organizer for a comparison of the piecemeal and whole-theme approaches to learning and teaching. Each ring on the diagonal from upper left to lower right is meant to be in a different color (red, blue, green, purple, orange, respectively) representing a different theme.

A Whole-Theme
Definition of Educational Psychology