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Integrative Learning System

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Integrative Learning System

American students graduate with diplomas and degrees that presume mastery of the disciplines they study. But mounting evidence suggests that these students also graduate with thinking characterized by stereotypes, misconceptions, unexamined assumptions, and rigidly applied algorithms. Although most students can demonstrate an ability to complete assignments and pass examinations in the content, vocabulary, and methodology of the disciplines, they fail to achieve genuine understanding. Such understanding enables individuals to apply knowledge, skills, and dispositions to new situations and to acquire and assess new information and ideas.

Numerous conditions in our schools impede understanding. Uncertainty over essential learning and how students should demonstrate understanding, multiple demands placed on schools, overcrowded curricula, and teaching traditional disciplines as disconnected entities result in a fragmentation of purpose and effort. Restructuring this fragmented academic experience to achieve a more coherent view of knowledge and a more integrated and authentic view of the world requires integrative and holistic approaches to teaching and learning. The goal of building understanding through connections should replace the fragmented purposes and practices which characterize our schools.

Interest In Integrative Approaches

Integrative approaches to teaching and learning have captured the interest of educators for some time. Schools providing integrative programs functioned in the early part of this century in the United States and Eastern Europe, and more recently, in northern Europe. Contemporary educational theorists have advanced theories and models which provide rationale and structure for interdisciplinary curricula. The proponents of integrating curriculum cite a real-world approach to learning, increased student motivation, and a way of addressing overcrowded curriculum and the knowledge explosion as support for curriculum integration. Regardless of the acknowledged purpose, the underlying belief in curriculum restructuring is that the ability to recognize and create connections is the basis for building understanding.

Although there is recurring interest in curriculum integration, few schools achieve a coherent, integrated, and authentic curriculum. Many educators are eager to acquire the knowledge and skills necessary to transform their curricula and their schools. But, as they begin the work of transformation, it becomes clear that necessary processes and structures are lacking to guide the complex decisions regarding curriculum, instruction, and assessment to implement the various theories and models of curriculum integration.

A Commitment To Building Understanding

At the Illinois Mathematics and Science Academy, we have crafted a mission which compels us to face directly the challenge to education for genuine understanding.

The mission of the Illinois Mathematics and Science Academy, a pioneering educational community, is to transform mathematics and science teaching and learning by developing ethical leaders who know the joy of forging connections within and among mathematics, science, the arts, and the humanities by means of an exemplary laboratory environment characterized by research, innovative teaching, and service.

Our mission is to transform mathematics and science teaching and learning. We strive to accomplish this by developing leaders who understand that knowledge is not compartmentalized by disciplines or void of real world implications. The leaders we seek to develop will lead through their manner of thinking, working, and relating to others and the world around them. They will have distinctive ways of knowing the world. We describe this decidedly different kind of thinking as integrative ways of knowing.

We want our students to achieve the deep disciplinary and interdisciplinary understandings and habits of mind that lead to holistic insight. When we speak of students who demonstrate integrative ways of knowing, we are describing thinkers who actively construct meaning, seek connections and interactions that deepen understanding, acquire the base of content knowledge and skills essential to substantive inquiry, and appreciate the value of knowledge from multiple sources and perspectives.

Our commitment to a decidedly different mode of learning necessitates a process for decision-making about curriculum, instruction, and assessment. We developed the *Integrative Learning System* for this purpose.

An Integrative Approach To Teaching And Learning

Figure 1 represents the *Integrative Learning System*. The system is a comprehensive curriculum development process for designing learning experiences which we believe will foster in our students the habits of mind which characterize integrative ways of knowing. The *Integrative Learning System* enables us to develop and refine our course offerings and formal learning experiences outside the classroom.

INTEGRATIVE LEARNING SYSTEM

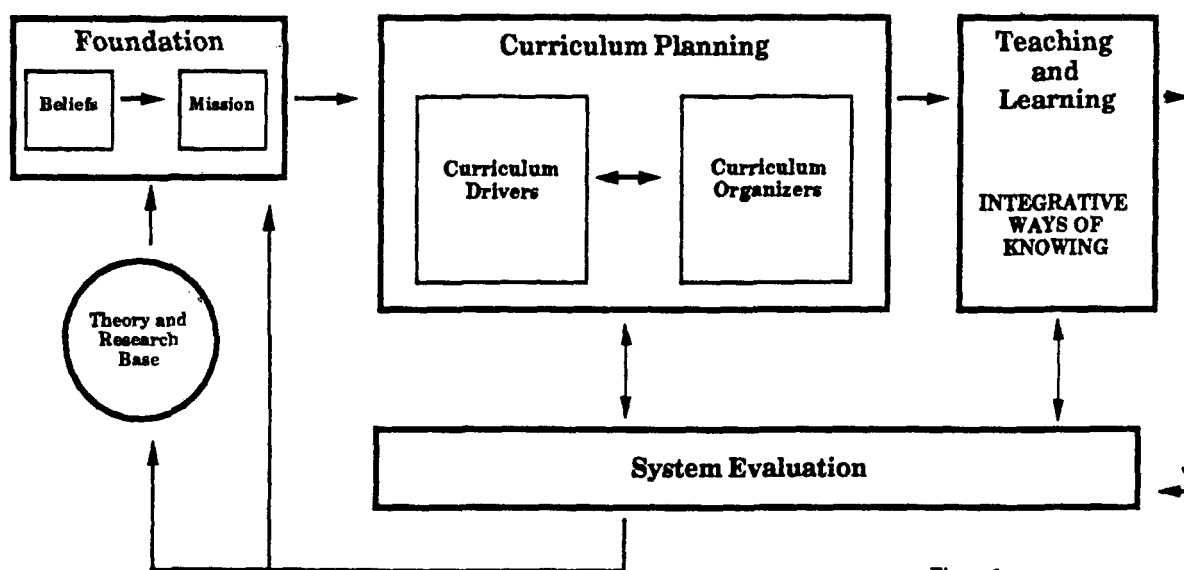


Figure 1

The *Integrative Learning System* decision-making process requires curriculum developers to redesign curriculum by choosing content, methods of instruction, and assessment strategies which are consistent with the overarching curriculum goal of fostering integrative ways of knowing. Through the system, both the curriculum planning process and the goal of the curriculum are integrative and

holistic. Decisions made at any point in the system are recursively informing and enhancing.

Four interrelated components of decision-making comprise the *Integrative Learning System*. In the *Foundation* Component, decisions emanate from the values and commitments of the school and are grounded in an understanding of theory and research. *Curriculum Planning* decisions require distinguishing between the elements which drive, or give direction to curriculum, and those elements which provide organization and means for achieving curriculum goals. *Teaching and Learning* decisions in the system focus on structuring the learning environment and planning the interactions of teachers and students in a manner consistent with constructivist thinking. *System Evaluation* decisions relate to student achievement of integrative ways of knowing as well as the products and process of curriculum development. What is learned through System Evaluation may contribute to the knowledge base thereby informing future curriculum planning, practice, and research.

The process of curriculum development structured by the *Integrative Learning System* requires developers to answer five critical questions:

- What serves as the foundation for curriculum development decisions?
- What drives curriculum development?
- What are the organizing elements of curriculum?
- How does teaching and learning lead to the system's goal for students?
- How are students and the process of curriculum development evaluated?

References:

ASCD. (1992). Integrating the curriculum. *Educational Leadership*. 49(2).

The focus for this issue is interdisciplinary teaching and learning. Articles discuss rationale, issues, and models of interdisciplinary curriculum and instruction.

Gardner, H. (1991). The unschooled mind: How children think and how schools should teach. New York: Basic Books, Inc.

Gardner's definition of understanding, and his notion of education as a process of building understanding, are essential tenets of the *Integrative Learning System*. Gardner describes critical elements for building under-

standing, obstacles to understanding and guidance for constructing a K-12 curriculum.

Klein, J. T. (1990). Interdisciplinarity: history, theory, and practice. Detroit: Wayne State University Press.

Klein's work provides an in-depth historical perspective on interdisciplinary teaching and learning. Scholarly interest in integrative ways of knowing, primarily at the university level, is traced to its roots in the 1920's in Europe. Interdisciplinarity is presented as a continuum ranging from juxtaposition of disciplines without explicit focus on connecting elements to a level of discourse where all aspects of reality are interconnected.

Palmisano, M. (1993). Curriculum integration: Building understanding through interconnections. Illinois ASCD Hot Topics, 11 (Spring, 1993). Normal, Illinois, Illinois ASCD.

Palmisano provides a brief rationale for adopting *connections* as a perspective for both interdisciplinary learning, and the practices of curriculum decision-making, instruction, and assessment.

Tyler, R. (1950). Basic principles of curriculum and instruction. Chicago: University of Chicago Press.

Tyler's seminal work in curriculum design has influenced the practice of curriculum planners for decades. The reader will find strong parallels in Tyler's four questions of curriculum development and the five questions of curriculum development addressed in the *Integrative Learning System*. Tyler's model depicts a *linear* process of planning that begins with behavioral objectives, moves to determining alternative approaches to fulfilling the objectives, and culminates in selecting among them. As a systems approach to curriculum planning, the *Integrative Learning System* represents a holistic, interconnected, and interdependent curriculum planning process guiding curriculum planning toward integrative teaching and learning.

Wiggins, G. (1989). The futility of trying to teach everything of importance. Educational Leadership, 47(3), 44-59.

In a powerful article Wiggins argues for total curricular redesign that enables an authentic education. This authentic education will "consist of developing the habits of mind and the high standards of craftsmanship necessary in the face of one's ignorance." This ignorance, is the inescapable realization that we can not know everything. Our students must understand that they do not know and take the responsibility to find out what they need to know. As educators, our responsibility is to ensure that they are aware of and know how

fill that void. Questioning and a love of discovery lie at the heart of authentic curricula.

Willis, S. (1992). Interdisciplinary learning. ASCD Curriculum Update. November, 1992.

Monograph addresses rationale, issues, approaches, and obstacles to be considered in interdisciplinary curriculum. References include Heidi Hayes Jacobs, David Perkins, and Susan Kovalik who have written extensively on curriculum integration.