

Our Working Knowledge Bases

A knowledge base includes understandings, skills, and judgments that are underpinned by theory, research, and a set of professional values and ethics. Each knowledge base consists of identifiable components that are related to one another and follow a logical sequence.

Change Theory and Processes

Planned change is grounded in theory and practice growing out of the fields of sociology, education, anthropology, and psychology. It deals with the processes by which social, cultural, and technological changes occur within and among social systems in different societies and cultures. The process of successful planned change may be applied to the introduction, acceptance, adoption, and diffusion of philosophies, ideas, policies, processes, and technologies. Change theory and processes may be applied to deliberately speed up, slow down, shift the direction, or prevent the adoption of a particular change.

Learning and Cognition

Learning is a change in behavior as a result of corrected practice or experience. Cognition is a set of mental processes. Learning and cognition as a knowledge base are rooted in psychology, the science of the mind. More specifically, learning and cognition are found within educational psychology, the study of how people learn, the mental processes associated with learning, and development of learners.

Seminal works guides this knowledge base from scholars such as Bandura, Bruner, Dewey, Piaget, Pintrich, and Vygotsky. Our work is encapsulated in a broad group of theories, including cognitive learning, social-cognitive theory, constructivism, experiential learning, cognitive styles (learning styles), motivation, and self-efficacy. Paralleling advances in neuroscience, researchers in this knowledge base seek to advance the knowledge of how people learn and apply the findings to contextual applications.

Planning and Needs Assessment

Planning and needs assessment are functional elements critical for successful education and training programs. Needs assessment is a systematic effort we make to gather opinions and ideas from a variety of sources on performance problems or new systems and technologies. Planning is a deliberate, rational, and continuing sequence of activities through which we acquire a thorough understanding of and commitment to the organization's functions, structure, and processes, and becomes knowledgeable about and committed to a tested conceptual framework for programming, continuous organizational renewal, and linkage of the organization to its publics. The goal of planning and needs assessment is to develop strategies that achieve results, not to develop complex methodologies.

Planning is a continuum essential to organizational success. Planning forces educators and administrators to think through issues and alternatives. Planning is proactive decision-making that includes defining and analyzing projects, forecasting events, sequencing activities, identifying resources, tracking and managing events, and determining the most effective strategies to achieve the objectives. Planning may be organized at three levels: 1) strategic planning that addresses the basic mission over an extended period of time, often five years or more; 2) long-range planning, typically three to five years, that specifically looks at resources, finances, and changing environments to determine ways to accomplish the overall strategic plans of the organization; and 3) tactical planning that involves people who are responsible for achieving the objectives within a specified period of time, often one budgeting period.

Communication Theory and Practice

Communication underlies all knowledge bases. Communication as it applies to the agricultural industry incorporates the study and interaction of theories, audiences, media, and messages. Communication integrates technology, history, science, and economics with writing and editing to disseminate accurate, science-based information – an essential ingredient to agriculture.

Leadership Education Theory and Applications

Leadership education is driven by the desire to educate learners in the theoretical foundations of leadership, organizational development, and organizational change. These foundations are supported by psychology, sociology, and philosophy. The intent of leadership education is to provide learners with tools to be successful in a variety of contexts. The mission of all agricultural leadership education programs is “to discover, teach, and disseminate leadership theory, principles, and practices in Agricultural and Life Sciences contexts to develop leadership for organizations, businesses, governmental agencies and communities” (National Summit for Agricultural Leadership Education, 2004).

Effective leadership education is essential to prepare people to deal with the rapid change and diverse reality present in a pluralistic world. Leaders must be able to communicate effectively – interpersonally and organizationally. This challenge may be accomplished through a purposive curriculum that engages learners at every level. The faculty embrace models of youth leadership education that focus on five conceptual areas: 1) intrapersonal and interpersonal skills, 2) oral and written communication skills, 3) decision-making, reasoning and critical thinking, 4) leadership attitude, will, and desire, and 5) leadership knowledge and information.

Instructional Design and Delivery

Learners and learning communities are dependent on the effective transmission of knowledge through teaching. Teaching is the process of designing instruction and delivering information in meaningful ways.

The knowledge area of instructional design and delivery includes pedagogy (literally, the art and science of educating children; often used as a synonym for teaching; more contemporary, teacher-focused education) and andragogy (literally, the art and science of helping adults learn; more contemporary, learner-focused education for people of all ages). It encompasses a broad group of teaching strategies (problem-based learning, inquiry-based instruction, learner-centered instruction, teacher-centered instruction, experiential learning, etc.), and multiple contexts (formal, informal, and non-formal). Further, delivery may occur face-to-face or mediated through appropriate technologies, both synchronously and asynchronously.

At the rudimentary level, designing and delivering instruction involves students, teacher(s), content, and technologies that interact in complex learning environments. As a faculty, we recognize and subscribe to four inter-related attributes of learning environments that optimize learning:

- learning environments must be learner-centered.
- attention must be given to what is taught, why it is taught, and what mastery looks like.
- continuous formative assessment is essential.
- context influences learning in fundamental ways.

Evaluation and Performance Measures

Organizations are accountable for monitoring and reporting program accomplishments, particularly progress towards pre-established goals. The tools of program evaluation are used to measure and describe program performance, including activities conducted (process), the direct products and services delivered by a program (outputs), the results of those products and services (outcomes), and/or public benefit of outcomes (impact).

Program evaluation is a systematic study conducted periodically or on an ad hoc basis to assess how well a program is working. The need for accurate and reliable evidence of impact over time requires measurement techniques and evaluation models that are trustworthy. The focus of program evaluation is on achievement of program objectives in the context of other aspects of program performance or in the context of factors that could affect program effectiveness. Some evaluations compare alternative programs or what might happen in the absence of a program. Using measurement techniques and evaluation models that are trustworthy and that have internal validity, external validity, reliability, and objectivity may use advanced evaluation research models to demonstrate affects over time.

Performance measurement (often referred to as accountability) focuses on whether a program has achieved its objectives, expressed as measurable standards. It calls for an ongoing monitoring and reporting of program accomplishments, particularly

progress toward pre-established goals. Information on three types of performance measures normally are collected over a one-year period and reported as:

- Process: type or level of program activities conducted,
- Output: direct products and services delivered by the program, and
- Outcome: results of those products and services.

Research, Measurement, and Analysis

Researchers engage in a systematic and objective search for knowledge through understanding and evaluating the research of others as well as planning and conducting original research through quantitative and qualitative methods. Measurement and analysis are forms of research that involve determining or establishing conditions against a benchmark and then determine or describe causes, implications, and effects.

As a faculty, we ascribe to a working definition of research: an unusually persistent and systematic attempt to answer significant questions. This definition is elegant for its simplicity yet broadness. It encompasses all kinds of scholarly activity in which one pursues *persistently* and *systematically* the answer to significant questions or problems. So, research tools are those attempts at answering questions, using systemacy and persistence. Those attempts may be quantitative (numerical and statistical), qualitative, philosophical, or historical. The tools used to conduct research have arisen from the general concept of science (e.g., the scientific method), to the more specific concept of social sciences (e.g., via the fields of psychology, sociology, anthropology, etc.), and even the *traditions* of the humanities (e.g., philosophy). Often, it is these traditions that might determine or dictate what researchers define as systematic and persistent. Educational research is an even newer tradition, and the faculty members in agricultural education aspire to contribute to that research tradition.

Our Working Contextual Applications

A contextual application is the setting and related conditions, often thought of as a “field,” in which the educator applies the knowledge bases with which he or she is engaged. In this department, faculty members and students engage by forming learning communities (workgroups) around the ways to integrate and apply knowledge.

Agricultural Communications – Agricultural Journalism

Agricultural communications focuses on the exchange of accurate information about the agricultural and natural resources industries through the most effective and efficient channels available using appropriate communication techniques and theories. Agricultural Journalism has been a program at Texas A&M University since 1918. Students in agricultural journalism take a core of courses including writing and editing. Students select from agricultural journalism electives in electronic media, public relations, publishing, and photography.

Graduates are prepared to work in newspapers, magazine, television, radio, World-Wide Web, public relations, advertising, or multimedia. Some will work in fields of digital cable and satellite communication. Texas A&M agricultural journalism graduates include editors and writers for the [*Quarter Horse Journal*](#), the [*Farm Journal*](#), *Progressive Farmer*, and MSNBC. Two agricultural journalism graduates have been elected to the Former Journalism Students Association Hall of Fame: Tom Hargrove, author and freelance agricultural editor, and Leroy Shafer, an assistant general manager at the Houston Livestock Show and Rodeo. Jobs for graduates are available as writers, photographers and designers with agricultural publications and broadcast outlets such as breed and commodity associations and public relations agencies.

Distance Education and Technology-Enhanced Instruction

Distance education is defined as the separation of instructor and learner by time, place, resources, or all three. A professional in this field should be competent in the foundations of teaching and learning at a distance, including adult learning theory, communication and facilitation techniques, knowledge and skills of technology interfaces and interactions, and administrative policies and procedures to support faculty and students. Designing and creating instructional materials that may be distributed via interactive video, Internet, world-wide web, CD-ROM, and using Web course tools such as WebCT is important for providing access to education and professional development. A Master of Agriculture in Agricultural Development is available online and a Joint Ed.D with Texas Tech University (Doc@Distance) is available in a distance education format to cohort groups. The materials developed for distance delivery may be used to provide content and flexibility to on-campus learners. Technology-enhanced instruction may

include visualization tools such as streaming media, animation, simulation, and Web-based materials.

Graduates with expertise in this area work primarily as teachers, consultants, instructional designers, and media experts in a variety of applications including school districts, universities, Extension, government, international, and business/industry settings.

Extension Education

To be successful in change efforts, Extension educators must consider the whole educational process. Effective Extension education is based on clear understanding of potential program situations and clientele needs, strategic and tactical planning and goal setting, implementation of plans through appropriate methods and delivery techniques, and evaluation and interpretation of progress and outcomes. A longstanding Extension approach has been to involve local stakeholders, both key leaders and potential learners, in deciding the priority areas of Extension education and how Extension educators carry these out.

Students graduating with expertise in this area may seek several career options including Extension agents, 4-H supervisors, state government officials, environmental specialists, and international trainers. All new TCE faculty members in Texas are required to earn a master's degree within seven years of their employment. Extension is a constantly changing field, so it is imperative that the individual continue to learn and devote time to personal and professional development.

Organizational and Community Leadership

In studying leadership theory, one must realize that there is a difference between socialization of a leader and leadership theory education. Many successful leaders obtain their leadership skills from practice; in other words, they are socialized into leadership as they have learned from their experiences. The conceptual applications for leadership and community education include collegiate leadership education theory courses, student organizations, laboratory practice situations, and practical employment situations. In each of these leadership and community education contexts, students learn leadership process theories and they use analysis and evaluation techniques to synthesize theories into practice. This contextual application is applicable to any field in which the individual works with or affects people.

Students graduating with expertise in this area are marketable in the work force. They have careers that include attorneys, community service agents, sales persons, teachers, county Extension faculty, international development specialists, and communication-oriented representatives.

Teacher Education

The context of teacher education focuses on classroom applications or other formal education applications that require certification or licensing. Professional practitioners focus on curriculum development and program planning as related to classroom and teaching situations, educational technologies used to enhance instruction, and research related to teacher effectiveness and learner success. In the United States, there are more than 12,000 teachers of agricultural education in public and private schools. Additionally, the context includes professionals employed as teachers of agriculture in community colleges, junior colleges, and technical schools.

Though professional preparation for this context is aimed specifically at creating the finest agricultural science teachers, other career areas often benefit from the educational preparation in scientific *agriculture* and *people*. Students prepared in this context typically accept positions in a variety of areas including agricultural science and technology teaching, but there are many opportunities as training, development, communications, or educational specialists that are related to agriculture and human performance.

International Agricultural Development Education

This contextual application focuses on developing knowledge, experience, and scholarly competence among faculty and students, providing service, and fostering involvement in activities that enhance agricultural development and education internationally. This includes developing in students, especially those with limited knowledge of or experience in programs of international agricultural development, an understanding of the extent of, constraints on, nature of, settings for, approaches used, institutions involved, and consequences of efforts to facilitate agricultural development, particularly in developing nations. It involves preparing people who want to work in their field of specialization in the international arena to become familiar with settings, trends, tasks, roles, responsibilities, preparations needed for, and critical incidents affecting their success in such work.

Interwoven throughout this contextual area is helping people develop and exhibit cross-cultural understanding and cultural sensitivity while working with or teaching people who have diverse backgrounds and educations. This contextual application also involves preparing people in both formal and informal agricultural and natural resource programming, including participatory programming that values indigenous knowledge. The purpose is to improve social, economic, or environmental conditions, while being particularly cognizant of social-cultural consequences. It includes making comparisons among programs and functions, strengths and weaknesses, and the organization of and relationships among institutions and agencies in national, international, private, and public sectors designed to serve agriculture in developing nations. It involves learning the processes by which development projects originate, are carried out and managed, and are evaluated.