

Professor works on World Bank project in Pakistan

Harold M. Bergsma, Professor, Department of Curriculum and Instruction, has been the Resident Training Consultant to the Ministry of Food and Agriculture, Pakistan, on a Consortium for International Development-World Bank project called "On Farm Water Management." Following is an adaptation from two unpublished articles prepared by Dr. Bergsma in which he proposes the development of systems approaches in training methodology in the "On Farm Water Management" project in Pakistan and in similar technical assistance programs.

Strengthening Technical Training Methodology in On Farm Water Management: the Pakistan Case for a Systems Approach

Training directors from all parts of Pakistan met in a national conference in January 1984 to discuss ways to coordinate training efforts by establishing a nationally coordinated policy for On Farm Water Management Training and Curricular Development. The conference focused strongly on the training of trainers who could become a cadre of well-qualified professionals who would receive up-to-date interdisciplinary training in On Farm Water Management methods.

The establishment of the On Farm Water Management Training Institute in Lahore a decade ago was a tremendous step forward to provide interdisciplinary training, primarily in precision land levelling and in water course construction. Construction achievements to date have been amazing and speak to a real "success story." By 1981, 1083 water courses, 6232 kilometers in length, were constructed. More than 38,804 acres of land of small farmers was levelled. Irrigation projects expanded as the World Bank, the Asian Development Bank, USAID, and other agencies funded irrigation systems to meet an expanding need.



Dr. Harold M. Bergsma (left), professor, curriculum and instruction, looks on as the British Consul-General receives an award from Pakistani officials in Lahore. Bergsma is in Pakistan under the auspices of the World Bank and CID to develop a systems approach for farm water management.

for a technology such as irrigation water management requires alteration to a process which is logical, holistic, and contextual. Systems thought requires a conscious process of reflection, and is systematic in the sense that it is methodical, coherent, designed and analytical. It is relational, that is, it accounts for referents, connections, and directions. It means that the entire On Farm Water Management training program to be established is related to "referents" of tasks to be performed by trainees, their job descriptions, their function in a larger system. Thinking

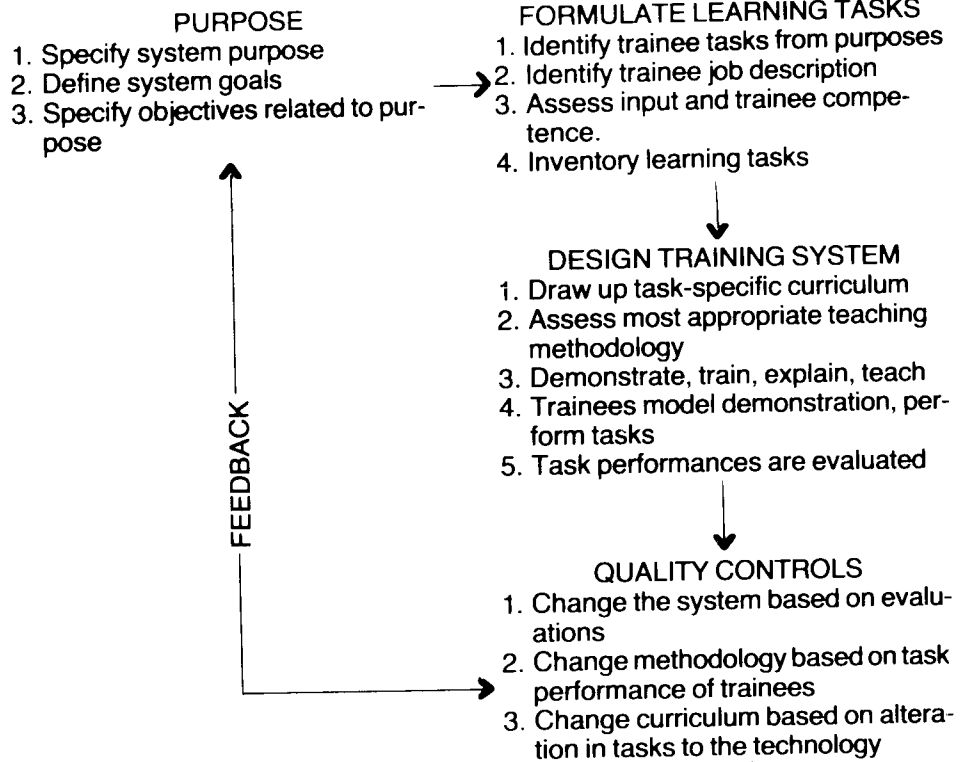
this way reverses the usual curriculum development process which begins with an expert listing what he thinks trainees must know, i.e., the theoretical. Rather, a systems approach requires initial reflection about the entire (holistic) system, its process, its structure, and its intended outcomes. Then it looks at how to carry out the tasks of the system. Finally, it designs training related to these tasks.

Though systems approaches have been around a while, they do not appear to have been institutionalized well in government development pro-

Despite these obvious successes, problems have been identified. The areas of irrigation agronomy, rural sociology related to the establishment of farm water user associations, financial management, human organization, leadership development, and other related areas received less emphasis in the training strategy implemented at the Institute during its development in Lahore. The expanding number of irrigation projects required more field staff to manage them properly. Persons developed as trainers in the 1970's started to turn-over in the 1980's due to retirements, promotions, and transfers to other departments. Finally, the farmers who used the water were also abusing it because they lacked knowledge about improved irrigation practices and the effective use of water in their fields.

It became evident that an expanded, better coordinated, and innovative training effort in On Farm Water Management was vital. The conference discussed new system approaches in technical training and the need for an interdisciplinary training model. What did these discussions mean in regard to the Pakistan On Farm Water Management training focus? The design of a training system

Technical Training Systems Model



The focal point for change in the On Farm Water Management project will be the education and training of a cadre of nationals who are assigned to the technical training process. These agents for change, if provided with an appropriate system model, with interdisciplinary experience in training utilizing the model, will become the hub for progress. The real challenge presents itself to foreign funding agencies to create economic incentive structures in their technical assistance programs which ensure attention will be given to designing systematic technical training for leaders in technological projects in developing nations. It is hoped that the systems approach to improve and coordinate training and curriculum development will enhance the existing success story in On Farm Water Management in Pakistan in future years.

jects abroad, including water management. Rather, in many instances, technical institutes frequently model formal educational systems established in "colonial" days, or model university ways to teaching, lecturing, and testing their trainees.

Various designs have been suggested for institutional systems. With due credit to past systems experts, the model suggested here is a composite of many of these and is modified to relate to technical training.

Though this model appears to be simple, straightforward, and logical, it may be difficult to utilize an actual On Farm Water Management operations. First, existing disciplines (engineering, agriculture, rural sociology, economics) seldom consider the need to apply systematic educational concepts to training within their disciplines. Formal training received by disciplinarians frequently becomes the mode for training technicians, i.e., lecture, recitation, tests, and laboratory work based on theoretically conceived "syllabi." Second, training programs, once established, institutionalize formal training practices, build schedules, list curricula in syllabuses, and get in motion in a traditional system which is difficult to change. Third, the agony of having to look at one's teaching style, methodology, and approach as well as to consider training by objectives is a very real pain for most new trainees. And fourth, change will require leadership. Leadership from abroad is only a temporary measure and fraught with problems inherent in the diffusion of the innovation process. Leadership must emerge from within developing nations to bring about changes in technical training which are rather radical shifts in the process of training technicians. Funding agencies will need to review their priorities related to leadership development (trainees) and the development of physical structures.



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