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EDUCATIONAL ENGINEERING OF TEACHER EDUCATION- AN ASSOCIATION OF HUMANISM AND TECHNOLOGY

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ABSTRACT

Educational engineering of teacher education has not been emphasized over the years. A major objective of Educational engineering is to arm educational practitioners with both the technology competency of essential engineering generalizations, strategies, tools and the professional practice of a successful instructor or educational manager. From this point of View, educational engineering can be symbiotic art-a marriage of humanism and technology. It is this possible symbiosis that makes performance contracting for learning accomplishment attractive.

Key Words- *Educational Engineering, Teacher Education, Association and International Education*

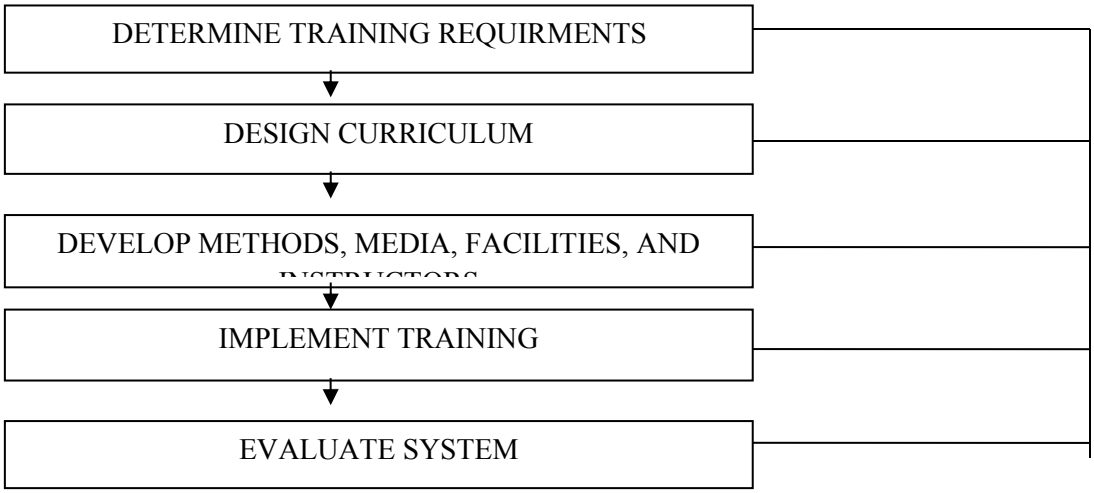
Introduction-

A major objective of this paper educational engineering of teacher education is to arm educational practitioners with both the technological competence of essential engineering generalizations, strategies, tools and the professional practice of a successful instructor or educational manager. From this point of view, educational engineering can be a symbiotic art-a marriage of humanism and technology. It is this possible symbiosis that makes performance contracting for learning a accomplishment attractive. Engineering has traditionally been a problem-solving activity, a profession dedicated to bringing the ideas and resources of technology to the resolution of real-world difficulties. While it is true that the teaching/learning environment differs from the world of business and industry, some comparison of the two subcultures may be beneficial. Here the purpose is to improve teaching through to instructional system.

Components of an instructional system

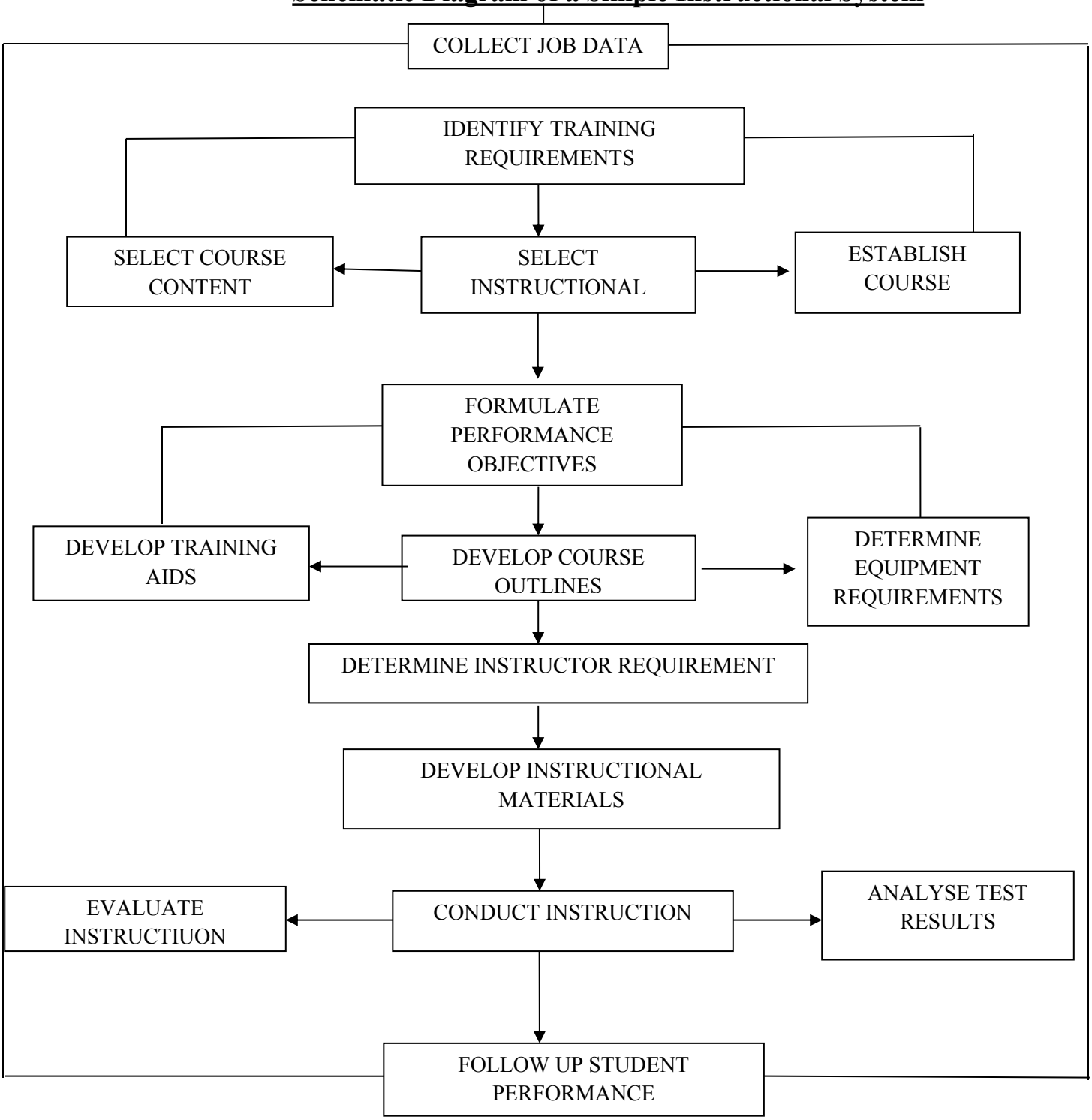
When we put together the contributions of theory and technology, we become aware of an eminent breakthrough in instruction that can only be compared to the replacement of radio by television-the substitution of multisensory stimulation for that of a single sensor. Essentially, in the development of an instructional system we seek to scientifically **determine an arrangement of experiences so sequenced that it makes ideal use of theory and technology to ensure the desired learner outcomes.** The decisions, processes and contingencies are all made explicit, so that failures in the system can be pinpointed and corrected. In a real sense, then, instructional systems are always living; that is, we can continue to manipulate one variable at a time to determine its effect on final learning achievement, and thus seek continuously to enhance the system as a whole.

In below figure we see a representation of a simplified learning system. It consist of the following steps : the determination of training requirements; the design of curriculum to encompass the requirements; the development of an instructional strategy consisting of methods, media, facility, and instructors to carry out the curriculum; the actual implementation of instruction; and the measurement or evaluation of the system's results.



Schematic Diagram of a Refined Instructional System

Schematic Diagram of a Simple Instructional System



This accountability process is engineered as follows-

1. The local education agency employs a management support group whose members have competence to assist it in political, social, economic, managerial and educational matters. The relationship of the management support group to the local school leadership group resembles that of long-term consultants on a retainer account. There are no overriding reasons why such consultants cannot come from the profession.

2. The management support group works with staff, community or other groups as required by a particular local situation to produce a request for proposal (RFP), which is a set of specifications indicating as clearly as possible the service to be performed, the approximate amount of money to invested, the constraints to be observed, the standards acceptable, and related matters. The request for proposal is the local education agency's blueprint for meeting pressing priorities.

3. The next stage of the educational engineering process occurs when the request for proposal is set out to bid. This is accomplished by sending the specifications to potential contractors who have demonstrated competent and creative activity in the specific and related fields. The request for proposal does not prescribe how the job must be done but does establish the performance, financial, administrative and legal parameters of the operation. The request for proposal requires that the bidder guarantee specific results for specific cost. The confidence that the bidder has in his approach is reflected in the level of the guarantee, social practicability, the time, and the cost indicated in the bid he presents. Bidders may well come from within the profession. Indeed, teacher groups are now beginning to compete with private enterprise.

4. The program to be bid is described, including the specified number of students. Incentives are provided for the contractor to bring each child up to specified levels of performance, at the lowest cost. Provision is made in the performance contract to develop a program for which the contractor will guarantee results.

5. A pre bidding conference is held. The pre bidding conference becomes the forum-for educational exchange. Here a rich and varied communication through competition occurs between elements of the private and public sector, if the private sector has been

involved. A bidding process is flexible to the extent that allowance is made by local education agency officials for new insights and better elements to be incorporated into a revised request for proposal.

6. Following the bidding conference, a revised request for proposal is issued and actual bids are entertained. The management support group assists the local education agency (LEA) in operating the conference and reviewing the bids. The local board hears the top bids in a manner similar to the process used in the employment of an architect.

7. Local school board selects what it considers to be the best bid and enters into negotiation for a performance contract with the successful bidders. The contract requires that after the demonstration period is completed and is relevant costs, procedures, achievements and performance data have been validated, the contractor will guarantee to produce and equally affected fiscally attractive pro-grams in the school system on a **'turnkey'** basis. The local education agency can then incorporate the instructional programme into the school after it has been proven feasible. Thus, performance contracting is a capability-creating resource for public education.

8. Concurrently, with the singing of the performance contract, an independent educational accomplishment audit team is employed by the local education agency both to monitor execution of the performance contract and to certify results to the local agency for the purposes of payment.

Implications for teacher training

Accountability will promote the design and implementation of a teacher training programme that will measure the effective teacher by his effects upon students. Considering the theoretical importance of product criteria in the assessment of teacher effectiveness, it is surprising that so few studies have used some measure of student growth or actual student accomplishment as an operational definition, and that so little research has been done in this area.

Lacking criteria showing student gains in knowledge, skills, attitudes, appreciations, it was quite logical in the past to concentrate on process criteria. For this standpoint, researchers have measured how students and teachers relate and interact one another in

such matters as discipline, the gaining of report, the pro-viding of invidivalized instruction, and so on. But even here there are not adequately trained observers or participants. This is curious, because some per-sons have claimed greater significance for process than for product criteria. Certainly if some educational means are clearly better than others, the effect should be discoverable is measured educational ends.

With student achievement as the focus, it is clear that the teacher training process will be as-

1. Augment classroom with experience in the community;

2. Incorporate a variety of educational workers, including paraprofessionals and adults in the community;

3. Trained candidates in the skill of observing and collecting data on student performance in a systematic and objective way;

4. Develop skill in the correlation of teaching performance and student competency; and

5. Provide training in planning instructional events around performance objectives.

The teacher training programme of the future, in pursuit of accountability, will be based on three as yet untested assumptions.

A. A teacher candidates involvement in the design, development and evaluation of his training and educational programme will increase his commitment to his responsibility for his own demonstrative learning.

B. The award of credit for attaining criterion performances and honors for out-standing performances on established criterion-referenced behaviors is preferable to the award of traditional **'A', 'B' & 'C'** marks or credit for time spent.

C. Coursers will continue to be required only when there is a known relationship between the course and successful performance of the candidate in influencing student growth.

From these assumptions, it follows that the number of required course may drastically reduced, and orientation programmes will be developed to enable candidates for teaching to become competent in designing and carrying out their own individual pains.

Such an orientation programme would be-

a) Enable qualified persons to develop an educational plan and negotiate a performance contract with the faculty;

b) Encourage diversified means of achieving agreed-upon educational objectives;

c) Allow student to challenge courses and time requirements, subject to agreed-upon evaluate criteria;

d) Increase the chances of students' engaging in active learning as a satisfying and life-long pursuit.

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