Appendices

Figure 1

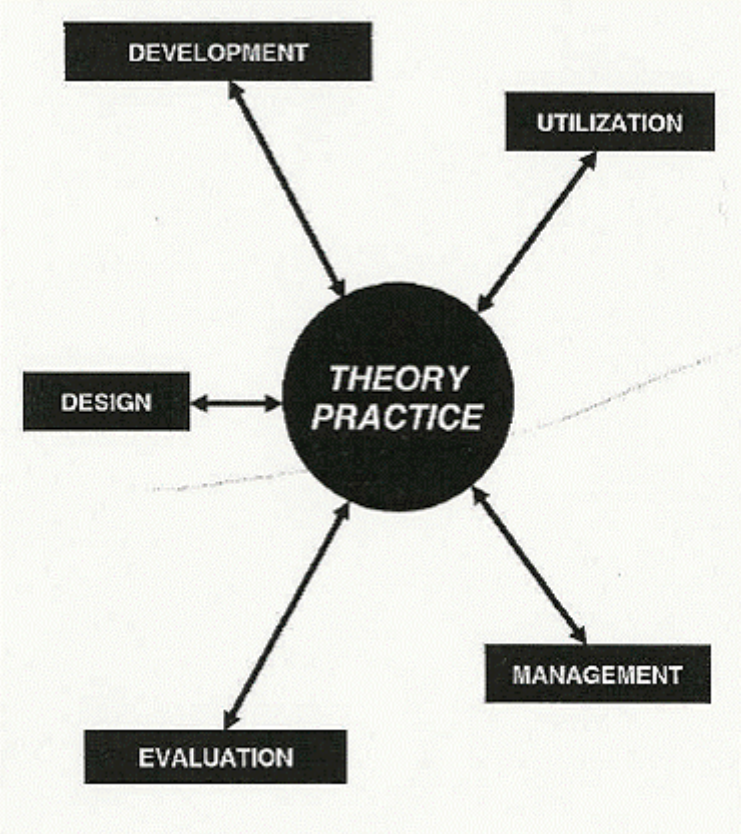


Figure 1. The Definition of Instructional Technology
Adopted from Seels & Richey, 1994, p. 10

Figure 2

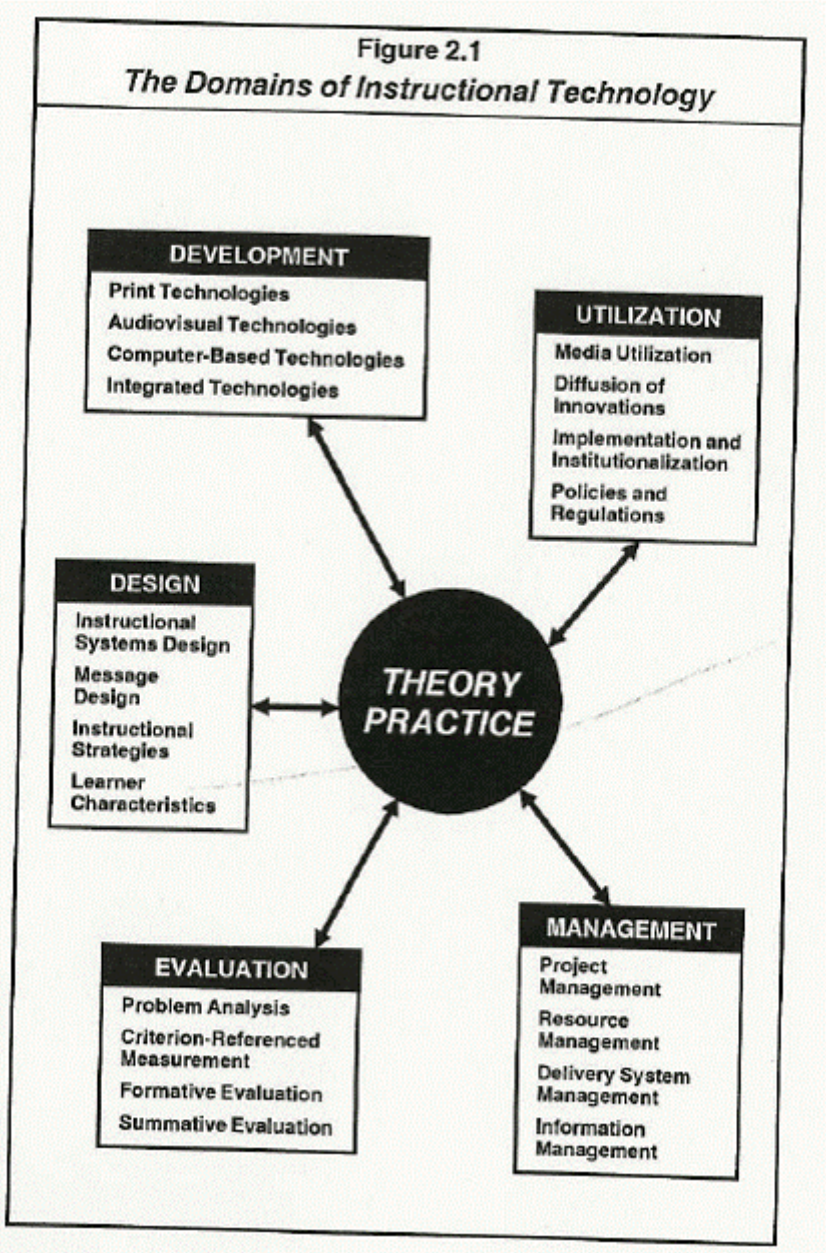


Figure 2. The Domains of Instructional Technology
Adopted from Seels & Richey, 1994, p. 26

Figure 3

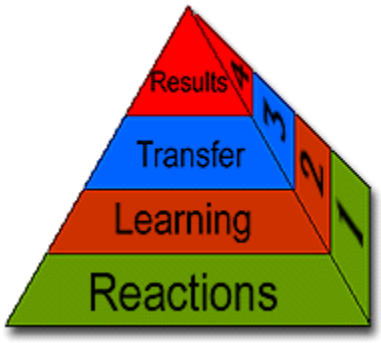


Figure 3. Kirkpatrick's Four Levels of Evaluation (Kirkpatrick, 1994)
Adopted from http://coe.sdsu.edu/eet/Articles/k4levels/index.htm

Figure 4

The ADDIE Model is an iterative instructional design process, where the results of the formative evaluation of each phase may lead the instructional designer back to any previous phase.

The end product of one phase is the starting product of the next phase.

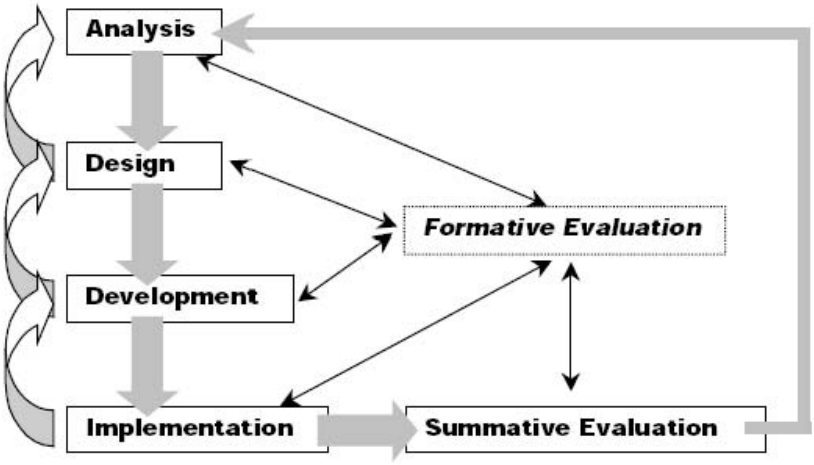


Figure 4. ADDIE Model
Adopted from
http://www.personal.psu.edu/faculty/s/j/sjm256/portfolio/kbase/IDD/ADDIE.pdf

Figure 5

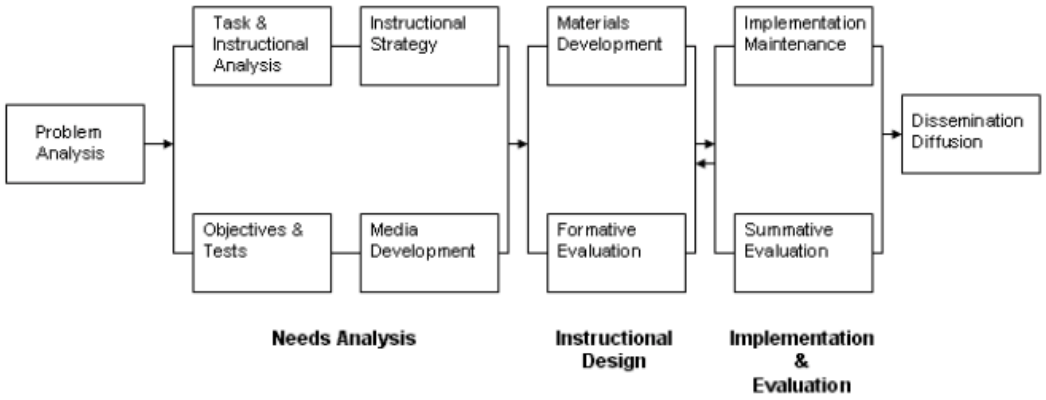


Figure 5. Seels and Glasgow
Adopted from http://www.herridgegroup.com

Figure 6

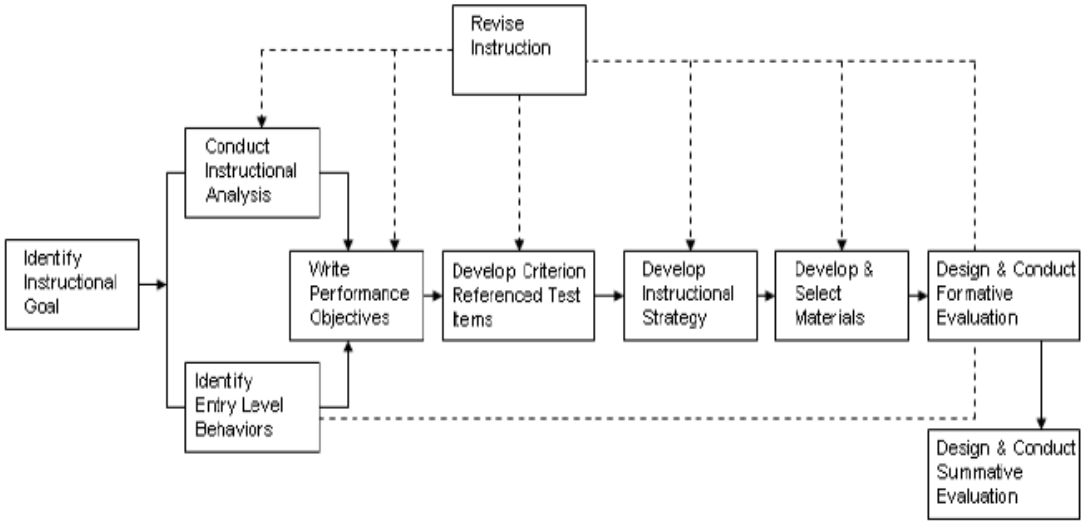


Figure 6. Dick and Carey Model
Adopted from http://www.herridgegroup.com

Figure 7

Figure 7. Morrison Ross Kemp Model
Adopted from http://www.herridgegroup.com

Figure 8

Bloom's taxonomy of learning objectives is used to define how well a skill or competency is learned or mastered. A brief summary of the activities associated with each level is given below.

At Knowledge Level of Learning a student can define terms

At Comprehension Level of Learning a student can work assigned problems and can example what they did

At Application Level of Learning a student recognizes what methods to used and then used the methods to solve problems

At Analysis Level of Learning a student can explain why the solution process works

At Synthesis Level of Learning a student can combine the part of a process in new and useful ways

At Evaluation Level of Learning a student can create a variety of ways to solve the problem and then, based on established criteria, select the solution method best suited for the problem.

Figure 8. Bloom's Taxonomy

Figure 9

Gagne's Nine Events of Instruction

Gagne's book, *The Conditions of Learning*, first published in 1965, identified the mental conditions for learning. These were based on the information processing model of the mental events that occur when adults are presented with various stimuli. Gagne created a nine-step process called the events of instruction, which correlate to and address the conditions of learning. The figure below shows these instructional events in the left column and the associated mental processes in the right column.

Instructional Event	Internal Mental Process
1. Gain attention	Stimuli activates receptors
2. Inform learners of objectives	Creates level of expectation for learning
3. Stimulate recall of prior learning	Retrieval and activation of short-term memory
4. Present the content	Selective perception of content
5. Provide "learning guidance"	Semantic encoding for storage long-term memory
6. Elicit performance (practice)	Responds to questions to enhance encoding and verification
7. Provide feedback	Reinforcement and assessment of correct performance
8. Assess performance	Retrieval and reinforcement of content as final evaluation
9. Enhance retention and transfer to the job	Retrieval and generalization of learned skill to new situation

Figure 9. Gagne's Nine Events of Instruction
Adopted from http://www.e-learningguru.com/articles/art3_3.htm

Figure 10

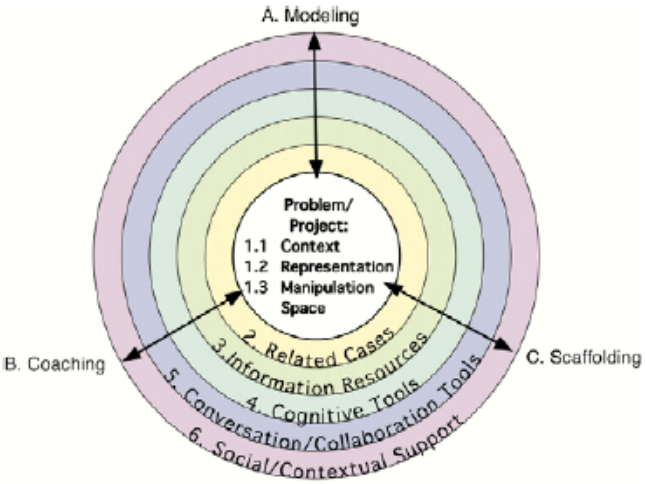
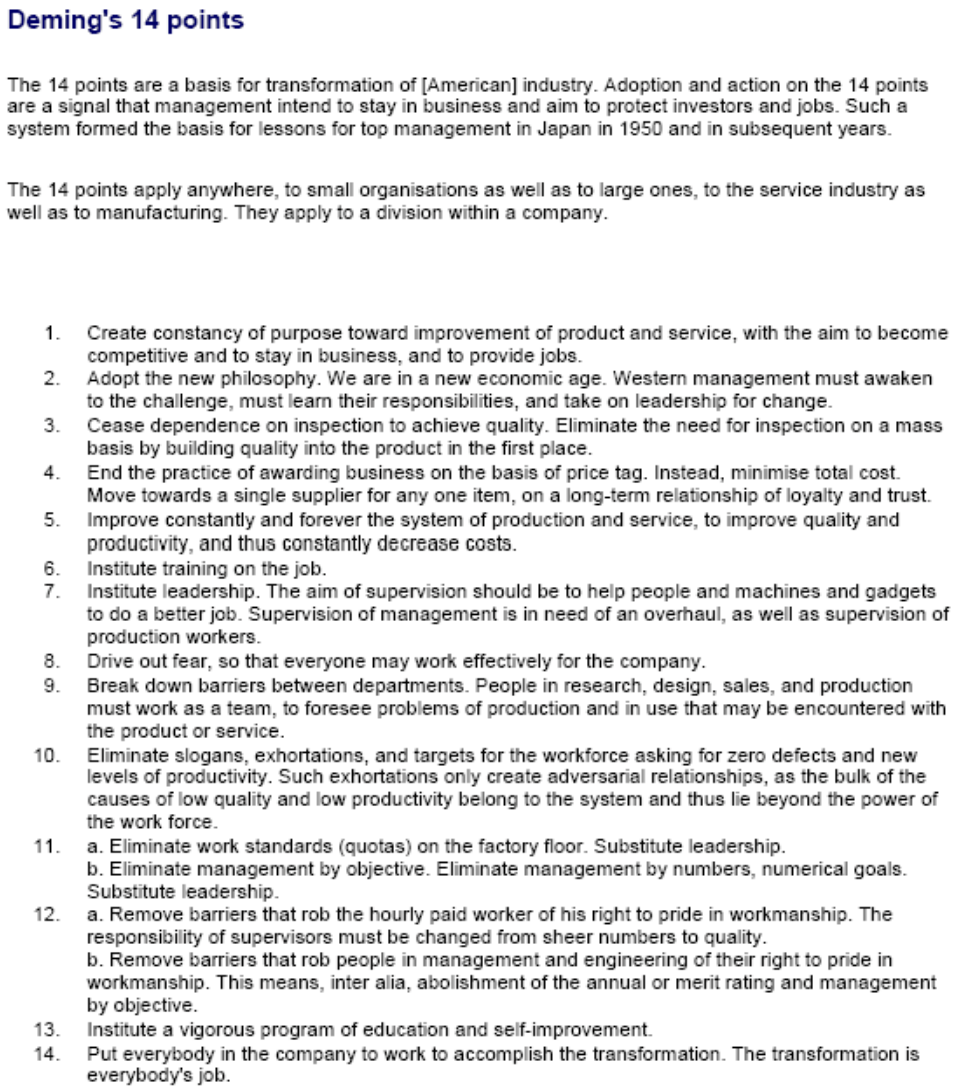


Figure 10. Jonassen Model for Constructivist Learning Environments
Adopted from
http://www.personal.psu.edu/sjm256/portfolio/kbase/Theories&Models/Constructivism/constructivism.html

Figure 11



Deming's 14 points

The 14 points are a basis for transformation of [American] industry. Adoption and action on the 14 points are a signal that management intend to stay in business and aim to protect investors and jobs. Such a system formed the basis for lessons for top management in Japan in 1950 and in subsequent years.

The 14 points apply anywhere, to small organisations as well as to large ones, to the service industry as well as to manufacturing. They apply to a division within a company.

1. Create constancy of purpose toward improvement of product and service, with the aim to become competitive and to stay in business, and to provide jobs.
2. Adopt the new philosophy. We are in a new economic age. Western management must awaken to the challenge, must learn their responsibilities, and take on leadership for change.
3. Cease dependence on inspection to achieve quality. Eliminate the need for inspection on a mass basis by building quality into the product in the first place.
4. End the practice of awarding business on the basis of price tag. Instead, minimise total cost. Move towards a single supplier for any one item, on a long-term relationship of loyalty and trust.
5. Improve constantly and forever the system of production and service, to improve quality and productivity, and thus constantly decrease costs.
6. Institute training on the job.
7. Institute leadership. The aim of supervision should be to help people and machines and gadgets to do a better job. Supervision of management is in need of an overhaul, as well as supervision of production workers.
8. Drive out fear, so that everyone may work effectively for the company.
9. Break down barriers between departments. People in research, design, sales, and production must work as a team, to foresee problems of production and in use that may be encountered with the product or service.
10. Eliminate slogans, exhortations, and targets for the workforce asking for zero defects and new levels of productivity. Such exhortations only create adversarial relationships, as the bulk of the causes of low quality and low productivity belong to the system and thus lie beyond the power of the work force.
11. a. Eliminate work standards (quotas) on the factory floor. Substitute leadership.
    b. Eliminate management by objective. Eliminate management by numbers, numerical goals. Substitute leadership.
12. a. Remove barriers that rob the hourly paid worker of his right to pride in workmanship. The responsibility of supervisors must be changed from sheer numbers to quality.
    b. Remove barriers that rob people in management and engineering of their right to pride in workmanship. This means, inter alia, abolishment of the annual or merit rating and management by objective.
13. Institute a vigorous program of education and self-improvement.
14. Put everybody in the company to work to accomplish the transformation. The transformation is everybody's job.

Figure 11. Deming's 14 Points
Adopted from http://www.ifm.eng.cam.ac.uk/dstools/process/Deming.html

Figure 12

Douglas McGregor

Theory X and Theory Y

Douglas McGregor in his book, "The Human Side of Enterprise" published in 1960 has examined theories on behavior of individuals at work, and he has formulated two models which he calls Theory X and Theory Y.

Theory X Assumptions

The average human being has an inherent dislike of work and will avoid it if he can.

- Because of their dislike for work, most people must be controlled and threatened before they will work hard enough.
- The average human prefers to be directed, dislikes responsibility, is unambiguous, and desires security above everything.
- These assumptions lie behind most organizational principles today, and give rise both to "tough" management with punishments and tight controls, and "soft" management which aims at harmony at work.
- Both these are "wrong" because man needs more than financial rewards at work, he also needs some deeper higher order motivation - the opportunity to fulfill himself.
- Theory X managers do not give their staff this opportunity so that the employees behave in the expected fashion.

Theory Y Assumptions

- The expenditure of physical and mental effort in work is as natural as play or rest.
- Control and punishment are not the only ways to make people work, man will direct himself if he is committed to the aims of the organization.
- If a job is satisfying, then the result will be commitment to the organization.
- The average man learns, under proper conditions, not only to accept but to seek responsibility.
- Imagination, creativity, and ingenuity can be used to solve work problems by a large number of employees.
- Under the conditions of modern industrial life, the intellectual potentialities of the average man are only partially utilized.

Figure 12. McGregor's Theory X and Theory Y
Adopted from http://www.accel-team.com/human_relations/hrels_03_mcgregor.html

Figure 13

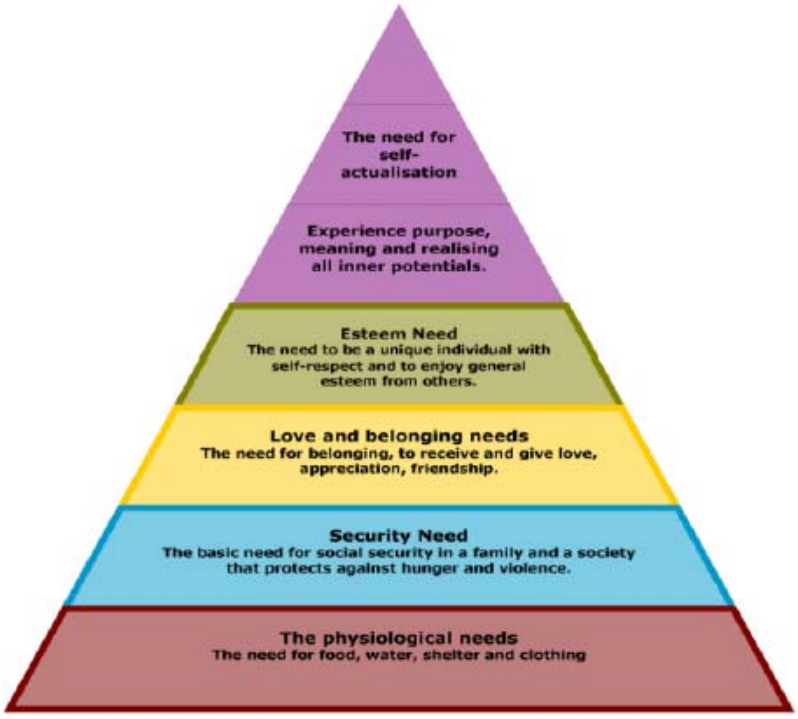


Figure 13. Maslow's Hierarchy of Needs
Adopted from http://two.not2.org/psychosynthesis/articles/maslow.gif