

University of Nebraska - Lincoln

DigitalCommons@University of Nebraska - Lincoln

---

To Improve the Academy

Professional and Organizational Development  
Network in Higher Education

---

1985

## Learning in a Clinical Setting

LuAnn Wilkerson

Follow this and additional works at: <https://digitalcommons.unl.edu/podimproveacad>



Part of the [Higher Education Administration Commons](#)

---

Wilkerson, LuAnn, "Learning in a Clinical Setting" (1985). *To Improve the Academy*. 95.  
<https://digitalcommons.unl.edu/podimproveacad/95>

This Article is brought to you for free and open access by the Professional and Organizational Development Network in Higher Education at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in To Improve the Academy by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.

# Learning in a Clinical Setting

**LuAnn Wilkerson**

Harvard Medical School

In 1975, Ludwig W. Eichna, M.D., former chairman of the Department of Medicine, State University of New York, Downstate Medical Center, returned to medical school as a full time student because he was troubled by the problems that he perceived in medical education. He hoped that by assuming the role of a student he would be better able to understand the nature of the problems and to assist in their solution. The conclusions drawn from his experience were published in the *New England Journal of Medicine* in 1980. His description of learning as it occurs in a clinical setting may be somewhat overdrawn, but the substance of his observations should be familiar to most faculty who teach in clinical settings. It prompted my re-consideration of what the literature on student learning could offer as guidelines for the development of optimal clinical experiences for students.

Learning is a thinking, problem-solving process that requires time. Medical-school education today involves too little thinking and problem solving. It consists largely of too much fact in too little time, which is maldistributed to

boot. The emphasis is on the accumulation of facts. Fact is king. Students come to medical school inculcated with this concept by previous education, especially by college, where facts and examinations are a way of life. The gobs of facts delivered during the science years leave little time for thinking. Students detest it, yet by habit they gobble the facts. Disillusionment results. Cramming does not stimulate students to question, to appreciate the beauty of biological science, the orderliness, the organization, the wonderful integrations and homeostases of the glorious biological machine that is life. There is no time to think, to wonder—just time to memorize facts. The clinical years perpetuate nonthinking. Inordinate amounts of time are spent in mechanical “doing”. Operating-room work, repetitive ward rounds, and nights and weekends on duty leave little time for thinking. Fatigue, somatic and cerebral, dulls the will and the edge of thought. It is a mistake to hold that bedside teaching is necessarily equated with thinking and problem solving. Some undoubtedly is, but so much of it is mini-lecturing, noneducational chores, and the reflexive ordering of test after test.

The faculty is not solely at fault. Students are also at fault, and the faculty does little to correct them. Ingrained by previous schooling with the habit of setting the facts to pass the examination, students stay away from thinking activities.

Clinical years continue this nonthinking, requiring only a superficial history, a perfunctory physical examination, a scant analysis, a reflexive listing of all differential possibilities, and then the process of writing for multiple tests for each differential diagnosis. Textbooks are a problem: 2000-page tomes weighing 10 pounds, they glorify the myriad facts. Note that textbooks do not present problems to be solved.

Let me be clear and not misunderstood. Facts are essential. Problems cannot be solved without the sequential arrangement of facts. But in medicine, the answer may not be there even after the facts are arranged. Students must learn to handle uncertainty: that too is medicine. Emphasis on facts does not teach this aspect of medicine any more than it teaches problem solving, and every patient presents a problem to be solved. It is vital to replace the concept of learning as fact gathering to pass examinations with the concept of education as inquisitiveness, sequential thought, problem solving, and the satisfactions that result. (Eichna, 1980, p. 729)

Principles derived from research in behaviorism,

cognitive psychology, and social learning theory illuminate under what conditions students learn best. I have extracted from many such principles those that I have found most applicable in my work over the last several years with clinical education. As you consider the five principles, you will need to understand those assumptions that underlie my description of clinical learning. First, clinical learning occurs in numerous settings. It is not restricted to systematic, planned sessions. It is often impromptu. It can occur in the hallway, at the bedside, at the nurses' station, during rounds, in quiet times alone. Everyone in the clinical setting is a potential learner and a potential teacher. Second, I agree with Eichna that the goal or purpose of clinical education is to help students to learn how to collect data, interpret and synthesize their findings, formulate alternative plans, and evaluate the effect of actions taken. The acquisition of knowledge is an essential aspect of this purpose, but to what end? To use in solving problems. In short, the goal of clinical education is the teaching and learning of clinical problem solving.

The following principles may seem no more than good old common sense. And they are. They do, however, have a base in research on learning.

## MODELING

*Principle No. 1: A student is more likely to learn if he or she is presented with a model performance to watch, analyze systematically, and imitate.*

Most of us have had our professional role models, our mentors, our heroes or heroines, who have contributed to our image of the type of practitioner, teacher, and researcher we want to be. This type of learning by modeling occurs continuously with all aspects of behavior being watched and imitated, sometimes unbeknownst to us.

However, the kind of modeling I am talking about here goes beyond the mere emotional identification learners make with their models. What this principle suggests is that modeling should be a purposeful activity

utilized to demonstrate those skills, behaviors, or ethical standards that we wish students to acquire (Bandura, 1977). Students should be given concrete and systematic opportunities to observe good models and to study the behaviors that make them effective.

Let me illustrate the difference between purposeful use of modeling and the type in which we say "He/she is a really good Doc," knowing in our guts what we mean, but not being able to put words to it. Several years ago, I was speaking with a medical resident about his experience in a new teaching hospital. In describing a number of the faculty members, he paused, "Dr. Gabriel has just been terrific to work with. His diagnostic skill is excellent and he seems to know just what to do in even the most unusual cases. The only problem is," the resident continued, "I can't see how he reaches these difficult diagnoses. I wish he could be persuaded to think out loud. Then maybe I could begin to organize my thinking about the problem in a similar way."

This is an example of the unintentional use of modeling in the teaching setting. What the learner is requesting is a more intentional, systematic use of modeling. In a 1964 study of clinical medical education, Reichsman found that students were generally exposed only to the instructor's solution to a problem and not to the reasoning process that led to that solution.

When teaching effectively through modeling, the teacher is involved in three activities:

- 1) demonstration of a skill, behavior, or attitude
- 2) the labeling of important aspects or components of the demonstration, and
- 3) the discussion or analysis of the criteria to be imitated, not just the outcome to be achieved.

The old adage of "see one, do one" might be revised to read, "see one, understand what it takes to do one, do one".

We all need heroes; . . . And we can most profit from these heroes at a time when we still believe in them—that fragile

time between stages of maturity when, if only for brief interval, we are exposed to a fresh and stimulating personality who has an easy and firm control over our new endeavor and wishes to let us in on the secret. It is a precious time, a time when we are prepared to believe and desperately want to listen. (Ratzan, 1982, p. 1422)

## ACTIVE, APPROPRIATE PRACTICE

I don't know if you like to watch baseball, but I could spend hours in the ballpark. I can appreciate the skills involved. I can cite the rules being followed. I can even describe the strategies to be pursued at different points in the game—but I cannot begin to play baseball well enough to join a sandlot team. What I lack is practice. Principle No. 2: *The student is more likely to learn when provided with the opportunity to practice actively the skills or thought processes to be learned.*

Stritter (1975) asked medical students at two schools to identify characteristics of instructors whom they thought were most helpful in supporting clinical learning. The most important items selected by the 265 students responding were those related to the opportunity for active participation in the learning process:

- 1) Provides time for discussion and questions.
- 2) Answers carefully and precisely questions raised by students.
- 3) Provides students opportunities to practice both technical and problem solving skills.
- 4) Encourages students to raise questions.
- 5) Gives every student a chance.

Practice, in order to contribute fully to student learning, should be active and appropriate.

*Active:* Activity is certainly a part of the clinical setting. A lack of active participation would seem to be more of a problem in the classroom setting. However, some evidence suggests that active participation can be lacking in the clinical setting as well. In a study of faculty/resident/student interactions in a medical clerkship at the

University of Illinois Medical Center, Foley, Smilansky and Yonke (1979) found that in a variety of clinical teaching situations, students talked only 5% of the time. Residents talked 37% of the available time, faculty, 57%. When students were asked to participate, they were primarily asked questions requesting them to supply factual information, usually concerning data from the patient's chart. Very few questions required students to discuss their reasoning, propose alternatives, or suggest implications for action, that is, to practice actively medical problem solving. The recent report on medical education by the Project Panel on the General Professional Education of the Physician (GPEP) recommends that students "be active, independent learners and problem solvers, rather than passive recipients of information" (1984, p. 12).

*Appropriate:* In order to promote learning most effectively, active practice must be relevant to what is to be learned. The filling of hours with activity that may not relate to the skills, knowledge, or thought processes to be learned does not constitute adherence to this principle. I do not mean to imply that students should not do the "scut work" for which clinical rotations around the world are famous, only that time be left for participation in those activities that directly involve them in honing their skills at clinical problem solving.

A great deal of research has been conducted on the effect of practice on learning, particularly in the area of skill learning. Several teaching approaches have been found to increase the likelihood that students will learn from practice:

- 1) The student needs to know what he or she is to learn from the clinical experience.
- 2) The student needs brief guidance during the early periods of practice. Guidance is important because some evidence suggests that people actually learn the errors they commit and tend to repeat them in later trials.
- 3) During practice, the student needs help in discovering critical cues that will allow him or her to evaluate

performance. How does it feel when it is right? What immediate signs indicate correct performance?

- 4) During periods of practice, the student needs knowledge of results.

In order to provide active and appropriate practice, the teacher may need to consider resources that will meet learning goals not represented by the daily flow of cases. Simulated cases consisting of paper and pencil problems, videotapes, charts, or paid actors can allow careful observation and evaluation in a risk-free setting. Standardized problems allow the teacher to be certain that the student has been exposed to essential cases or important aspects of particular problems. The standardized case also leads to better group discussions. Each member of the group shares a common experience and the leader can plan specific objectives for discussion. Simulation materials should maintain fidelity to the clinical setting to maximize transfer to "real" problems (Frederiksen, 1984).

The posing of questions that require the students to analyze and synthesize data is another method of encouraging active practice. In a study of clinical teaching (Medio, Wilkerson, Maxwell, Cohen, & Reinhard, 1984), we observed faculty members using three types of questions: asking for clarification (e.g., "How long has he been in the hospital?"); asking for recall of knowledge (e.g., "What are the possible causes of azotemia?"); and asking for problem solving (e.g., "What do you think is causing the problem and why?"). Clarification questions accounted for slightly less than half of all of the questions posed by faculty members during clinical teaching sessions. Questions designed to promote interaction around analysis and evaluation of problems accounted for only 20% of the questions asked. More of the latter type are needed to promote learning through active participation in problem solving.

Increasing active participation also involves a transfer of responsibility from the teacher to the learners. Data from a study of clinical medical teachers at the University



of North Carolina suggest that "general movement from a directive to a consultative approach to instruction, with increasing delegation of the teaching function to others in the group, can be an effective strategy" for the clinical teacher (Mattern, Weinholtz, & Friedman, p. 1130).

Finally, the instructor can encourage active, appropriate practice through direct observation of student performance in classroom and clinical settings. Both physical and mental activity should be the focus of observation and guidance if practice is to instill accurate, efficient performance.

## PLEASANT CONDITIONS

Principle No. 3: *A student is more likely to continue learning if instructional conditions are pleasant.*

This does not mean that clinical training should be all fun and games. What it does suggest is that learning has an emotional component.

Studies on long-term memory have found that information with a positive emotional association is remembered better than that with negative or neutral associations. The emotional responses of the student to the learning environment, the teachers, and the situation influence level of motivation and desire for future learning. When faced with continuing unpleasantness, the student may work to avoid the situation. If the unpleasantness is combined with frustration or punishment over a long period of time, the student may actually develop maladaptive behaviors. An old adage reads: "Things surrounded by unpleasantness are rarely surrounded by people."

Initial success is one aspect of a positive learning environment. If students experience great difficulty when beginning a new subject, their investment of energy and effort may be minimal for the duration of the course of study. In order to determine what expectations are appropriate, the teacher needs to assess what the individual learners have brought to the course. What prerequisites do they have? What do they already know about the discipline? What procedures can they already perform? What do they want to learn? Since each student will be

different, a brief conversation on the first day may assist the teacher in setting the appropriate level of responsibility and challenge. Students should be challenged to struggle with new content but that struggle should provide some success and not lead to undue frustration and anxiety. When anxiety levels are too high, learning may be blocked. Conversely, when anxiety is non-existent, motivation may lag (Eysenck, 1979).

Faculty members may also find that committing one of the Seven Deadly Sins of Teaching (Eble, 1983) sets an unwanted tone for the learning environment—making it ARID or giving students the HiVeS:

- A Arrogance
- R Rigidity
- I Insensitivity
- D Dullness
- H Hypocrisy
- V Vanity
- S Self-indulgence

What factors can be used to contribute to the building of positive learning conditions? First, we can be enthusiastic about our subject and the opportunity to teach. In a study I did in 1979, enthusiasm was the teaching behavior most highly correlated with student assessment of overall teaching effectiveness. We demonstrate enthusiasm by: preparing for teaching; being available; indicating interest in the topic and the students; conveying enjoyment while dealing with students; demonstrating sensitivity to patients; being friendly; and listening carefully. Stritter (1975) found that students rated a positive attitude toward teaching as the second most important set of clinical teaching skills.

Second, we can set challenging tasks for students that allow for initial success and require the exercise of clinical reasoning.

Third, we can make ourselves accessible to students. Alumni from the state colleges and universities of California cited contacts with faculty outside of class time as the most important aspect of their college learning experience

(Wilson, Gaff, Dienst, Wood, & Bavry, 1975).

## CLARITY

Principle No. 4: *The student is more likely to accomplish intended learning if told in a clear manner what is to be learned and why.*

This principle implies that, as teachers, we have decided what it is that students should learn from us. We have identified the knowledge, behaviors, and attitudes that we wish students to develop as a result of our instruction.

It also implies that students can increase their learning when they know what they are expected to learn, its relevance to their professional lives, and how the sequence of activities will enable them to learn. If these factors are explained and understood, it is more likely that students will learn what we wish them to learn. The GPEP report (1984) describes the failure of clinical faculty members to specify clearly the knowledge, skills, and attitudes that students should acquire on their rotations.

The field of cognitive psychology, through its emphasis on the understanding of covert mental activity as a key to human behavior, offers some perspective on the importance of this type of clarity. Two mental activities—attention and memory—when manipulated, affect student comprehension and retention (Fuhrmann & Grasha, 1983).

- 1) *Attention*: Before we can assimilate any information, we must attend to it. The mind tends to focus on a precise task and peripheral stimuli, while noticed, are not processed very well. Unless we structure the process of what gets paid attention to, each student will perceive the learning somewhat differently on the basis of personal interest and previous experience.
- 2) *Memory*: We act upon stimuli, putting them into a form that we can “hold on to.” We attempt to extract key features and basic patterns, to match the new information to previous learning or experience.

The learner is an active participant in the process of memory storage. We can increase the “accuracy” of

learning by providing links, suggesting relationships, providing familiar comparisons, identifying relevance to future practice.

Clarity in teaching is that process of deciding what should be taught and sharing those intentions with students. Clarity means matching learning opportunities to the purposes you are pursuing. When informed of the purpose of an activity, an assignment, a case presentation, or a teaching round, students can better focus their attention on the important details to be learned. Mattern et al. (1983) identified the most effective strategies for case discussion teaching as maintaining the focus of discussion and clarifying important clinical issues. Eliciting the thoughts of others in the group and encouraging students to raise questions were also found to be effective means of guiding clinical discussions. Clarity also means describing the relevancy of what is to be learned to help students in organizing the information or experience for storage in long term memory.

## FEEDBACK

I mentioned earlier that the opportunity for active participation is a key principle of learning in the clinical setting. However, practice without feedback or knowledge of results does not necessarily lead to accurate learning.

*Principle No. 5: Accuracy in learning is increased when the student receives information on what he or she is doing correctly or incorrectly.*

Twenty years ago, in an article in the *Journal of the American Medical Association*, two Columbia University physicians described the failure of clinical teachers to observe medical students performing the complete physical examination prior to graduation (Siegal & Wertheim, 1962). The lack of clinical supervision remains a problem in clinical education today (Project Panel, 1984). Foley and Smilansky (1980) describe one frequent pattern of clinical supervision:

After observing the instructor demonstrate a procedure, students are sent to practice by themselves. They are usually not provided with a picture of the precise steps involved in the procedure or with time for the supervised practice that guarantees they are performing it in the correct manner and sequence. (p. 71)

Clinical supervision is, however, one of the skills identified in numerous studies of clinical teaching reviewed by Irby (1978) as an important factor in effective teaching and learning. Clinical supervision involves: being accessible and willing to help students; observing student performance; and providing frequent indications of the quality of performance.

Although both negative and positive feedback can assist the learner, factual, descriptive, positive comments have been found to have the greatest impact on improved student performance. Compare these two comments by a teacher to a student during a case discussion:

1. You did a good job of highlighting the case for me. Can you now summarize the key problems that emerge rather than just summarizing the data collected?
2. You need to work on your ability to present a case.

The first comment provides information to the student on what he or she did correctly. It also suggests what should be done to improve his or her performance and states what behavior needs to be changed. The second comment does not provide the student with information that can be used to improve performance. Even if the comment were positive "Great presentation!"—the student would still not be getting the type of descriptive information that would allow him or her purposefully to repeat the same behavior another time. Feedback is most effective when: the student knows what criteria will be used to assess performance; the feedback is provided at the earliest opportunity, not postponed until the end of the course or clerkship; and the student has the opportunity to compare self-assessment to the judgment of an expert (Ende, 1983).

Feedback is difficult to give for several reasons. Some teachers feel uncomfortable when criticizing student

performance. They say that students are neophytes and are expected to make mistakes. Others find it difficult to provide praise. The largest single barrier, common to almost all clinical teachers, however, is the lack of time for supervising student performance. Effective clinical supervision requires time for: being accessible and willing to help; observing student performance; and providing indications to the student of correct and incorrect behavior.

## CONCLUSION

In the clinical setting we cannot "not" teach. Every contact with students constitutes a learning experience. Our choice is not whether to teach but rather how to teach in order to maximize the learning from a clinical encounter.

Although clinical teaching occurs in a variety of settings and is many times impromptu, we can enhance the impact of the clinical experience in all of its variation by 1) more purposefully modeling the behaviors that we wish students to learn; 2) providing students with opportunities for active, goal-related participation; 3) supporting a positive environment for learning; 4) clearly indicating the goals of particular clinical experiences; and 5) supervising student performance for the purpose of providing constructive feedback.

## REFERENCES

- Eble, K. E. (1983). *The aims of college teaching*. San Francisco: Jossey-Bass.
- Ende, J. (1983). Feedback in clinical medical education. *Journal of the American Medical Association*, 250, 777-781.
- Eichna, L. W. (1980). Medical school education, 1975-1979: A student's perspective. *New England Journal of Medicine*, 303, 729-734.
- Eysenck, M. W. (1970). Anxiety, learning, memory: A reconceptualization. *Journal of Research in Personality*, 13, 363-385.
- Foley, R. P., & Smilansky, J. (1980). *Teaching techniques: A*

- handbook for health professionals*. New York: McGraw-Hill.
- Roley, R., Smilansky, J., & Yonke, A. (1979). Teacher-student interaction in a medical clerkship. *Journal of Medical Education*, 54, 622-626.
- Frederiksen, N. (1984). Implications of cognitive theory for instruction in problem solving. *Review of Educational Research*, 54, 363-407.
- Fuhrmann, B. S., & Grasha, A. F. (1983). *A practical handbook for college teachers*. Boston: Little, Brown and Company.
- Irby, D. M. (1978). Clinical teacher effectiveness in medicine. *Journal of Medical Education*, 53, 808-815.
- Matern, W. D., Weinholtz, D., & Friedman, C. P. (1983). The attending physician as teacher. *New England Journal of Medicine*, 308, 1129-1132.
- Medio, F. J., Wilkerson, L., Maxwell, J. A., Cohen, R. M., & Reinhard, J. D. (1984). Improving teaching rounds: Action research in medical education. *Research in Medical Education*, Proceedings of the Twenty-Third Annual Conference.
- Project Panel on the General Professional Education of the Physician. (1984). Physicians for the twenty-first century. *Journal of Medical Education*, 59, 1-31.
- Ratzan, R. M. (1982). On teaching. *New England Journal of Medicine*, 306, 1420-1422.
- Reichsman, F., Browning, F. E., & Hinshaw, J. R. (1984). Observations of undergraduate clinical teaching in action. *Journal of Medical Education*, 39, 147-163.
- Siegal, D., & Wertheim, A. R. (1962). On the failure to supervise students' performance of complete physical examinations. *Journal of the American Medical Association*, 180, 876-882.
- Stritter, F. T., Hain, J. D., & Grimes, D. A. (1975). Clinical teaching reexamined. *Journal of Medical Education*, 50, 876-882.
- Wilson, R. C., Gaff, J. G., Dienst, E. R., Wood, L., & Bavry, J. L. (1975). *College professors and their impact on students*. New York: Wiley.