

Please see *Medical Teacher* 2001, 23, 6, pp 610-612 for the fulltext version of this paper.

<http://www.tandf.co.uk/journals/tf/0142159x.html>

Teaching in the medical setting: balancing teaching styles, learning styles and teaching methods

Lisa Vaughn, Ph.D. and Raymond Baker, M.D.
Children's Hospital Medical Center
Division of General and Community Pediatrics
Cincinnati, OH, USA

email: lisa.vaughn@chmcc.org

Summary

Effective teaching in medicine requires flexibility, energy, and commitment amidst a busy background of clinical care. Successful medical teaching also requires that teachers are able to address learner's needs and understand the variations in learners' styles and approaches. Teachers can accomplish these requirements while creating an optimal teaching-learning environment by utilizing a variety of teaching methods and teaching styles. If teachers use a variety of teaching methods and styles, learners are exposed to both *familiar* and *unfamiliar* ways of learning which provide both comfort and tension during the process ultimately giving learners multiple ways to excel. As Hemesath and colleagues have suggested (1997), new instructional methods are critical as medical school curricula are changing. Others have mentioned the importance of using a variety of creative, non-traditional teaching techniques and strategies in clinical teaching (Handfield-Jones et al., 1993; DaRosa et al., 1997; Wilkerson & Sarkin, 1998). Grasha (1996) suggests using varied teaching styles to address the diversity of learner needs. Using a variety of teaching methods and styles ultimately may encourage adaptability and lifelong learning in the teaching-learning process. This paper, supplemented by a related website, will provide a conceptual framework and an expanded compendium of teaching styles and teaching methodologies which can be used in different clinical settings.

The website (www.medicalteacher.org) features descriptions of preceptor-teaching styles, learning styles, and teaching and learning style "clusters" followed by a detailed description of a variety of teaching methods which can be used in the medical setting.

The following tables are not included in the journal published version of the paper:

Table 1: Grasha's Teaching Styles with description, advantages and disadvantages

Table 2: Grasha's Learning Styles

Table 3. Teaching and Learning Style "Clusters" (Grasha, 1996)

Table 4: Teaching Methods

TABLE 1: Grasha's Teaching Styles with Description, Advantages, Disadvantages

TEACHING STYLE	DESCRIPTION	ADVANTAGE	DISADVANTAGE
Expert	Possesses knowledge and expertise; oversees, guides, and directs learners; gains status through knowledge; focuses on facts	Knowledge and information which preceptor possesses	Knowledge and information can be overused and intimidating; may not always show underlying thought processes
Formal Authority	Possesses status among learners because of knowledge and authority/position; follows "traditions" and standards of medical practice; focuses on rules and expectations for learners; supervises learners closely with critical eye toward standard practices and procedures	Focus on clear expectations and acceptable ways of doing things	Potentially rigid and less flexible ways of managing learners and their concerns
Personal Model	Leads by personal example; suggests prototypes for appropriate behavior in office; shows learners how to do things; wants learners to observe and emulate approach	"Hand-on", emphasis on direct observation; emphasis in following a role model (mentor relationship)	May want to "clone" learners in own image; learners may feel inadequate cannot live up to; stuck in practice may believe approach is best way to practice medicine
Facilitator	Emphasizes personal nature of teaching-learning relationship; asks questions, explores options with learners; focuses on learner responsibility, independence, and initiative	Personal flexibility; Focus on learner needs and goals; openness to alternatives and options	Time consuming; sometimes more direct approach is needed; can make learner uncomfortable
Delegator	Encourages learner responsibility and initiative when appropriate; goal is to have learner function autonomously; a "resource person"; answers questions and periodically reviews learner progress	Contribute to learners professional development and confidence; two-way trust	Learners may not have capability to function in an autonomous manner; some learners are anxious when not closely supervised

Adapted from: Grasha, A.F. (1996). *Teaching With Style* (p. 154).
 Pittsburgh: PA: Alliance Publishers.

TABLE 2. Grashna's Learning Styles

LEARNING STYLE	DESCRIPTION	ADVANTAGES	DISADVANTAGES
Competitive	Students learn material to perform better than others, compete with other students for rewards (grades), like to be the center of attention and receive recognition for their accomplishments	Motivates students to keep up and set goals for learning.	May turn less competitive people off; difficult to appreciate and learn collaborative skills.
Collaborative	Students feel they can learn by sharing ideas and talents; cooperate with teachers and like to work with others.	Students develop skills for working in groups and teams.	Students not as well prepared for handling competitive people; depend too much on others and not always able to work as well alone.
Avoidant	Not enthusiastic about learning content; do not participate in discussions; uninterested and overwhelmed by the content to be learned.	Students able to avoid the tension and anxiety of taking serious steps to change their lives; have time to do enjoyable but less productive tasks.	Performance poor; negative feedback from teachers; students do not set productive goals.
Participant	Good citizens in class; enjoy rounds and other learning activities and participate actively in discussions; eager to do as much of thee required and optional course requirements as possible.	Students who get the most out of every learning experience.	May do too much or put others' needs ahead of their own.
Dependent	Show little intellectual curiosity and learn only what is required; view teacher and peers as sources of structure and support; look to authority figures for specific guidelines on what to do.	Helps students manage their anxiety and obtain clear directions.	Difficult to develop skills for exhibiting autonomy and self-direction as a learner; student does not learn how to deal with uncertainty.
Independent	Students like to think for themselves and are confident in their learning abilities; prefer to learn content that they feel is important; prefer to work alone.	Students develop skills as self-initiated, self-directed learners.	May become somewhat deficient in collaborative skills; might fail to consult with others or to ask for help when it is needed.

Adapted from: Grashna, A.F. (1996). *Teaching With Style* (p. 154). Pittsburgh: PA: Alliance Publishers.

TABLE 3. Teaching and Learning Style “Clusters” (Grasha, 1996)

PRIMARY TEACHING STYLE	PRIMARY LEARNING STYLE	PREFERRED TEACHING METHODS
Expert/Formal Authority	Dependent, Participant, Competitive	Didactic lectures, technology-based presentations, teacher-centered questioning and discussion
Personal Model/Expert/Formal Authority	Participant, Dependent, Collaborative	Role modeling, coaching/guiding students
Facilitator/Personal Model/Expert	Collaborative, Participant, Independent	Case-based discussions, concept mapping, critical thinking, fishbowl discussions, kineposium, guided reading, problem-based learning, role plays, student teacher of the day
Delegator/Facilitative/Expert	Independent, Collaborative, Participant	Contract teaching, class symposium, debate formats, small group discussions, independent study/research, modular instruction, panel discussions, learning pairs, student journals

Adapted from: Grasha, A.F. (1996). *Teaching With Style* (p. 154). Pittsburgh: PA: Alliance Publishers.

TABLE 4: Teaching Methods

Teaching Method	Possible Setting(s) and Suggested Number of Learners	Suggested Approach	Sample Topics
<p>Abbreviated Case Presentation (“Aunt Minnie”) (Cunningham et al., 1999; Sackett, Haynes, & Tugwell, 1985)</p>	<p>Precepting residents and medical students in a clinic setting or office (1-4)</p>	<p>Preceptor asks the resident to present the chief complaint and his/her presumptive diagnosis. While learner records his findings in the medical record, the preceptor evaluates the patient, then discusses the case with the learner and signs the chart. Case discussion may address discrepancies between the learner’s findings and the preceptors or focus on a relevant teaching point resulting from the case.</p>	<p>Based on clinical cases</p>
<p>Bedside Teaching (Usatine et al., 1997)</p>	<p>Precepting residents and medical students in a clinic or office setting (1-4)</p>	<p>Preceptor and learner interview and examine the patient together, perhaps after the learner has already completed his/her assessment. The preceptor may demonstrate a physical finding or focus on a particular teaching point with the learner at the bedside. The patient must be acknowledged as part of the process – either by explaining the teaching points in non-medical language during the encounter or immediately afterwards (by preceptor or learner).</p>	<p>Cardiac auscultation; knee examination for effusion; differential diagnosis of knee effusion</p>
<p>Concept Mapping (Chastoney et al., 1999; Van Neste-Kenney et al., 1998; Bietz, 1998)</p>	<p>Structured learning time (1 to large group)</p>	<p>Allows organization of complex material by visually representing relationships and connections between information; can be used to facilitate discussion and solve problems. (e.g., evaluation or management algorithm, intercepting circles)</p>	<p>ADHD and co-morbidities; evaluation/ management of chronic otitis media with effusion</p>
<p>Contract Teaching (Montauk & Grasha, 1993; Grasha, 1996; Pratt & Magill, 1983)</p>	<p>Resident/student taking a specialty elective. Resident at beginning of continuity clinic experience (1)</p>	<p>Preceptor and learner meet to collaborate on the expectations of the rotation/research project/continuity clinic experience and together develop a plan which might include: timetable for selected readings, medline search, presentation by resident at rotation conclusion, evaluation process. Process can result in written document.</p>	<p>Subspecialty rotation; continuity clinic; research elective (outcome expectations)</p>
<p>Electronic Lectures (Constantinou et al., 1994)</p>	<p>End of or during clinic session or unstructured learning time (1 to large group)</p>	<p>Prepared by preceptor for self-study or for presentation by preceptor. Requires computer availability and learner computer capabilities. E.g. Power Point presentations..</p>	<p>Intoeing; otitis media; hypertension</p>
<p>Fishbowl</p>	<p>Medical conference</p>	<p>5-7 learners in inner circle discussing the topic 5-15 minutes.</p>	<p>Medical ethics;</p>

Discussion (Grasha, 1996)	(10-20)	Larger outside circle acting as observers who comment and ask questions after the discussion is over. Members of outer circle may join inner circle.	parenting; difficult patient/family
Helping Trios (Grasha, 1996)	End of clinic session, medical conference, beginning of new rotation (3/group)	Learners individually develop a plan/draft, then collaborate in groups of three with each participant playing the role of presenter (of his/her plan), consultant, or observer. Consultant clarifies and presents options, observer oversees and comments on the process. After brief discussion, roles change and process repeated until all participants have played all three roles.	Diagnosis or treatment of complex patient; planning a conference
Jigsaw Groups (Grasha, 1996)	Conference with a group of medical students on a pediatric clerkship rotation (10-20 total divided into small groups of 3-5)	The larger group of students is broken up into smaller groups of 3-5. The small groups are assigned a topic and each member of the group learns 1/3 to 1/5 of the material individually. When the larger group reassembles the following day (or next session), the small groups meet and exchange information so that each member of the group learns all the material (assuming all of the smaller groups had the same assignments). If the smaller groups were assigned different topics, then a representative from each of the smaller groups shares the information learned in his/her group with the larger group.	In behavioral pediatrics, individual topics might include sleep issues, feeding issues, time-out technique, and school refusal
Kineposium (Grasha, 1996)	Conference with a group of medical students on a pediatric clerkship rotation (10-20 total divided to 3-5/small group)	Learners are divided into small groups of 3-5 members with one individual designated as the recorder. The groups discuss the issue for 5-7 minutes. Then all members (except the recorder) of each of the groups move on to another group. The recorder summarizes what the previous group discussed, then leads the new members of the group in a discussion to further clarify the issue. Groups change 3-4 times. The larger group then reconvenes and recorders summarize their groups' discussions while the preceptor notes on a blackboard or overhead major themes. The preceptor then comments on the results.	Physician-assisted suicide; Improving the show rate in continuity clinic; Communicating with difficult patients/families
Mini-lecture (Grasha, 1996; Gershen, 1978)	Precepting residents and medical students in a clinic or office setting (1-4)	Brief, 2-5 minute mini-lecture when need to know is high. E.g. During a busy clinic session when a learner's knowledge base about a diagnostic work-up or treatment modality is lacking and patient needs disposition.	Specific medical topics; Description of a treatment modality or diagnostic work-up
Modular Instruction (Herrick et al., 1998)	Medical seminar (e.g. Behavioral seminar) (Unlimited)	Development of individual units that cover major content areas of a course or seminar. Modules can be designed for self study or presentation. Module should include goals and objectives, rationale, pre and post-test, teaching methods, deadlines. Modules may include: case study, reading list, videotape, slides (e.g. carousel or computer), written materials, instructions for small group activities, etc.	Sleep disorders; Feeding problems; management of COPD
One-Minute Preceptor (Neher et al., 1992; Ferencchick et al., 1997)	Precepting residents and medical students in a clinic setting or office (1-4)	After the learner presents the case, the preceptor attempts to determine the diagnosis and assess the learner's knowledge in the area. The preceptor can begin by asking "Given this information what do you think is going on with this patient?" In response to a proffered diagnosis the preceptor might then ask	Based on clinical cases

		<p>“What do you base this diagnosis on?” This may be followed by a question requiring the learner to synthesize and integrate information and a further question to broaden the scope of the case. The preceptor may then focus on a single relevant teaching point and finally provide feedback to the learner.</p>	
<p>Role Modeling (Grasha, 1996; Wilkinson, 1989)</p>	<p>Precepting one or more residents and medical students in a clinic or office setting (1-4)</p>	<p>Role modeling may occur by direct interaction of the preceptor with the patient, by means of a videotaped interaction, or by role play with preceptor and learner. Preceptor should discuss with the learner before the interaction what to observe, and what was observed after the interaction.</p>	<p>Psychosocial history; counseling a parent about temper tantrums; counseling about smoking cessation</p>
<p>Role Plays (Handfield-Jones et al., 1993; Grasha, 1996)</p>	<p>End of clinic session Medical conference (4/group)</p>	<p>Preceptor discusses role play rules (perhaps demonstrates with a resident or student volunteer) and collaborates with groups on topics. Limit time per role play (3-5 minutes), permit time-outs during role play; and encourage comments from participants and preceptor at end of each role play.</p>	<p>Temper tantrums; time-out technique; exercise and diet</p>
<p>Small Group Discussion (Westberg, 1996)</p>	<p>Before or after a clinic session (2-6)</p>	<p>Preceptor should trigger discussion with a question. All group members should (be encouraged to) participate. Preceptor may summarize the points made during the discussion and add his/her own points drawn from experience.</p>	<p>Adult with drug seeking behavior; infant with failure to thrive</p>
<p>Socratic method (Constantinou, 1994)</p>	<p>Precepting residents and medical students in a clinic setting (1) or leading a small group discussion (4-8)</p>	<p>Preceptor asks questions of the learner after the case presentation. Questioning should be non-threatening (non-“pimping”) and designed to stretch the learner’s knowledge and open avenues of learning. E.g. “What are some other physical findings that one might see in the allergic patient?”; “Do you know of any OTC medications that might help this patient’s nasal congestion?”</p>	<p>Based on clinical cases; based on assumed knowledge or assigned readings</p>
<p>Student Journal (DaRosa et al., 1997; Riley-Doucet & Wilson, 1997; Hahnemann, 1986)</p>	<p>Resident in private practice continuity site (1)</p>	<p>Learner is encouraged to keep a daily or weekly journal of his/her experiences in a medical situation. This technique fosters critical and creative thinking about psychosocial aspects of medicine, helps develop writing skills, and provides the learner and preceptor opportunities to discuss successes, failures, and progression of the learner’s growth.</p>	<p>Death of a patient; Frustrating families; difference between inner city and private population</p>
<p>Student Teacher-of-the-Day (Grasha, 1996)</p>	<p>Medical students on an inpatient ward rotation (4-6)</p>	<p>Preceptor develops a list of topics about which the learners will be responsible for preparing a formal presentation to give to the other members of the group. Preceptor should serve as an advisor and resource person, encouraging the use of hand-outs, visual aids, cases, posters, test questions, etc. Preceptor then attends all presentations and encourages open discussion with other group members.</p>	<p>Specific disease; pharmacologic management of a disease process; logic evaluation of a disease process</p>
<p>Think-Pair Share (Grasha, 1996;</p>	<p>Medical conference with small to</p>	<p>Preceptor raises a question with broad implications requiring some thought to develop a response. Preceptor then asks the</p>	<p>Barriers to medical care; ethical issues;</p>

Nolinske & Millis, 1999)	moderate sized group of learners (10-20 total divided into pairs)	learners to turn to a partner and share ideas and explore the question for a few minutes. Learners then reconvene as a group and group discussion ensues involving all learners.	curriculum changes
Two-Minute Papers (Grasha, 1996)	Residents or medical students in a medical conference/ discussion (10-20)	Learners are asked to write down in two minutes their thoughts or points of discussion about a controversial topic or important issue that may have resulted from a group discussion. Responses may then be shared with the group by the individual; collected and summarized by the preceptor for purposes of discussion, or swapped with a partner to discuss and present to the group.	Dealing with non-compliance (visits or medications); confidentiality issues with HIV infection

REFERENCES

- Baker, J. D., Cooke, J. E., Conroy, J. M., Bromley, H. R., Hollon, M. F., & Alpert, C. C. (1988). Beyond career choice: the role of learning style analysis in residency training. *Medical Education*, 22(6), 527-32.
- Beitz, J. M. (1998). Concept mapping: Navigating the learning process. *Nurse Educator*, 23(5), 35-41.
- Bibace, R., Catlin, R. J., Quirk, M. E., Beattie, K. A., & Slabaugh, R. C. (1981). Teaching styles in the faculty-resident relationship. *Journal of Family Practice*, 13(6), 595-900.
- Caracuhansky, S. (1977). Matching instructional preference and teaching styles: a review of the literature. *Nurse Education Today*, 2(2), 106-10.
- Chastain, A. D. (1994). Papart, J., Laporte, J., Praplan, G., Brenner, E., Walker, F., Rougemont, A., Guilbert, J., & Lagoutte, J. (1999). Use of concept mapping to define learning objectives in a masters of health program. *Continuing Education in Medicine*, 11(1), 24-25.
- Constantin, P. (1994). Transforming information for computer-aided instruction: Using a socratic dialogue method to teach gross anatomy. *Proceedings of the Annual Symposium of Computer Applications in Medical Care*, 104B, & Weinberger, H. (1999). The art of precepting: Socrates or Aunt Minnie? *Archives of Pediatric and Adolescent Medicine*, 153(1), 11-16.
- DeRosa, D. M., Dime, J. G., & Stearns, J., Ferenchick, G., Bowen, J. L., & Simpson, D. E. (1997). Ambulatory teaching lite: Less clinic time, more educationally fulfilling. *Academic Medicine*, 72(5), 358-61.
- Dember, W. (1965). The new look in motivation. *American Scientist*, 53, 400-427.
- Ferenchick, G., Simpson, D., Blackman, J., DaRosa, D., & Dunnington, G. (1997). Strategies for efficient and effective teaching in the ambulatory care setting. *Academic Medicine*, 72(4), 277-80.
- Gershen, J. A. (1978). Comparing the effectiveness of the mini-lecture technique to role- playing in a dental psychology course. *Journal of Dental Education*, 42(5), 470-5.
- Grasha, M. A. (1972). 42(5), 470-5 on relating teaching goals to student response styles and classroom methods. *American Psychologist*, 27, 474-47.
- Grasha, M. A. (1981). Learning style: The journey from Greenwich Observatory (1796) to Dalhousie University (1981). Paper presented at the Dalhousie Conference on Learning Style in Continuing Medical Education, Dalhousie University, Nova Scotia.
- Grasha, M. A. (1986). *Learning Styles: A Practical Guide to Enhancing Learning By Understanding Learning and Teaching Styles*. (New York: Alanen Publishers).
- Handfield-Jones, R., Nasmith, L., Steinert, Y., & Lawn, N. (1993). Creativity in medical education: The use of innovative techniques in clinical teaching. *Medical Teacher*, 15(1), 3-10.
- Hemesath, K., Fischetti, L., Henley, E., & Yonke, A. (1997). Innovative Methods for Teaching Behavioral Science Concepts. Paper presented at the Association of American Medical Colleges, Washington, DC.
- Herrick, C. A., Jenkins, T. B., & Carlson, J. H. (1998). Using self-directed learning modules: A literature review. *Journal of Nursing Staff Development*, 14(2), 73-80.
- Hersey, P., & Blanchard, K. (1977). Leadership style and the classroom. In P. Hersey & K. Blanchard (Eds.), *Management of Organizational Behavior: Utilizing Human Resources*. (Englewood Cliffs, NJ: Prentice Hall).
- Hollon, M. F. (1988). Learning styles. *Nurse Educator*, 13(6), 30-2.

Kowoser, E., & Berman, N. (1996). Comparison of pediatric resident and faculty learning styles: Implications for medical education. *American Journal of Medical Science*, 312(5), 214-218.

Montauk, S., & Grasha, A. (1993). *Adult HIV Outpatient Care: A Handbook For Clinical Teaching*. (Cincinnati, OH: University of Cincinnati Department of Family Medicine).

Meyer, B., & Stevens, N. (1992). A five-step microskills model of clinical teaching. *Journal of the American Board of Family Practice*, 5(4), 319-209.

Norris, P. (1999). Cooperative learning as an approach to pedagogy [In Process Citation]. *American Journal of Occupational Therapy*, 53(1), 33-40.

Partridge, S. (1983). Learning styles: a review of selected models. *Journal of Nursing Education*, 22(6), 243-8.

Pratt, D., & Magill, M. K. (1983). Educational contracts: a basis for effective clinical teaching. *Journal of Medical Education*, 58(6), 462-7.

Quirk, M. (1994). *How To Teach and Learn In Medical School: A Learner-Centered Approach*. (Springfield, IL: Charles C. Thomas).

Rezler, A. G., & Rezmovic, V. (1981). The Learning Preference Inventory. *Journal of Allied Health*, 10(1), 28-34.

Riley-Doucet, C., & Wilson, S. (1997). A three-step method of self-reflection using reflective journal writing. *Journal of Advanced Nursing*, 25(5), 962-8.

Haynes, R., & Tugwell, P. (1985). *Clinical Epidemiology*. (Boston, MA: Little Brown & Co, Inc).

Usatine, R. P., Nguyen, K., Randall, J., & Irby, D. M. (1997). Four exemplary preceptors' strategies for efficient teaching in managed care settings. *Academic Medicine*, 72(9), 766-9.

Van Neste-Kenny, J., Cragg, C. E., & Foulds, B. (1998). Using concept maps and visual representations for collaborative curriculum development. *Journal of Nursing Education*, 23(6), 325-33.

Wagner, R. (2001). Microburst teaching and learning. *Medical Teacher*, 23(1).

Westberg, J., & Jason, H. (1996). *Fostering Learning In Small Groups: A Practical Guide*. (New York: Springer Publishing Company).

Wilkerson, L., & Sarkin, R. T. (1998). Arrows in the quiver: Evaluation of a workshop on ambulatory teaching. *Academic Medicine*, 73(10 Suppl), S67.

Wilson, J. (1989). Role modeling as a teaching strategy. *AD Nurse*, 4(1), 29-32.