Chapter 1

Creating (and Choosing) an Optimal Learning Environment

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I never teach my pupils. I only attempt to provide the conditions in which they can learn.

– *Albert Einstein*

Introduction

Anesthesiology educators and accreditation organizations devote considerable effort to establish and periodically reassess what knowledge and skills an anesthesiology resident must demonstrate to become a competent practitioner. Evidence in education (e.g., active learning [Chapter 15], test-enhanced learning [Chapter 18]) is being used more to inform and guide how teachers deliver educational content. Excellent educators, however, recognize that many things influence anesthesiology learners beyond "what" they teach and "how" they teach. "Where" they teach is the learning environment – the context or setting – in which the anesthesiology curriculum exists.

Anesthesiology residents beginning training bring their individual skills, foundations of knowledge, work ethic, and attitudes into the larger context of the healthcare delivery system, program, and institution. This larger context of the everyday world surrounding residents during training has a strong influence on a resident becoming a competent practitioner, including their future performance. Accrediting organizations (Association of American Medical Colleges, AAMC; Accreditation Council for Graduate Medical Education, ACGME) have recognized this.[1]

Learning cannot be separated from its physical, social, and psychological context (the atmosphere or culture pervading the setting where faculty teach and residents learn). Teaching is as much about creating the optimal learning environment as it is about conveying knowledge or sharing expertise.

What Is a "Learning Environment"?

The characterization of a learning environment extends beyond physical structures, equipment, classrooms, and available technology.[2,3] The learning environment includes the conditions (social, emotional, intellectual) and surroundings (physical) in which learning takes place. It is *where* educators teach as opposed to *what* they teach. Other learners, their faculty, the residency program, the curriculum, the department, and the healthcare system among others influence the learning environment of individual anesthesiology residents. The learning environment is also influenced by the individual anesthesiology resident and may include many interwoven elements that are dynamic and difficult to quantify. The elements of quality of supervision, instructors, and spatial conditions, and working and learning environments have been aggregated under the term *learning climate*.

The learning environment may be experienced differently by different learners. For example, assume two residents are sitting side by side in a lecture. The physical environment is identical. They are hearing the same lecture from the same individual. One resident has a good relationship with the faculty member and perceives a very positive learning environment. The other resident had a negative interaction with the faculty member the prior day and therefore perceives the learning environment to be negative. Thus, the optimal learning environment or climate might be defined as the "best conditions in which an individual learner can learn."

Components of the Learning Environment

The resident learner is one of many microlearning "environments" embedded in a macrolearning environment that they influence. The macrolearning environment includes many physical and sociocultural elements that have an influence on the learner (Figure 1.1).

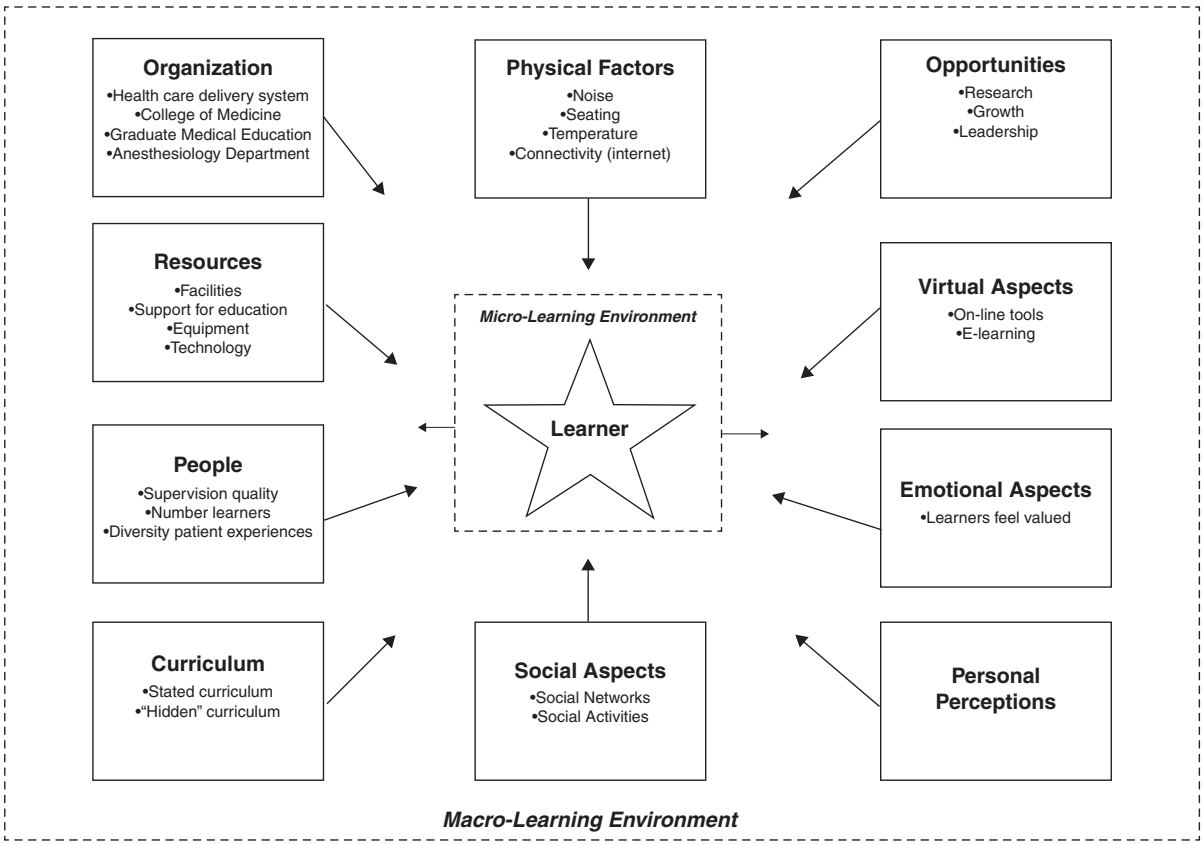

Figure 1.1 Elements of the learning environment.

The elements of a learning environment include but are not limited to the:

1. Organization (e.g., healthcare delivery system, college of medicine, graduate medical education, anesthesiology department);
2. Resources (e.g., facilities, financial support for education, simulators, equipment, technology);
3. People (e.g., quality of supervision, number of students, mix of patients available for learning);
4. Teaching or learning activities (e.g., stated or written curriculum);
5. Social aspects (e.g., teacher role modeling, social networks, activities);
6. Personal perceptions (e.g., perceptions of workload, faculty members, classmates);
7. Emotional aspects (e.g., perception of being valued);
8. Web-based aspects (e.g., online tools, podcasts, e-learning, see Chapter 16);
9. Opportunities (e.g., research, growth, leadership);
10. Physical factors, (e.g., noise, temperature, seating); and
11. The hidden curriculum (e.g., implicit, unwritten, tacit dimensions of medical learning, see Chapter 19).

Within this complex educational environment, the teacher (including actions, attitudes, enthusiasm, and interest) is one of the most powerful variables.

The learning environment has also been divided into three broad domains:

1. **Personal development or goal direction dimensions**: clarity about learning objectives, relevant learning content, and constructive criticism;

2. **Relationship dimensions:** open communication, friendliness, social and interpersonal support, cohesion and feelings of spirit; and
3. **System maintenance and system change dimensions:** orderly, clear expectations, thoughtful response to change, organizational structure, role clarity, teacher control, student influence and innovation, work pressure, and physical comfort.

In the future, we are likely to develop a better understanding of what elements comprise a learning environment, understand what is most conducive to teaching and learning, and better define what roles the teacher and learner have. A better comprehension of learning environments may improve outcomes including not only knowledge, skills, and attitudes of the learner but also patient care outcomes of safety and quality.

Importance of the Learning Environment

It has been said there are two principal influences on physician behavior: (1) how they are paid and (2) how they are trained. A positive training environment helps anesthesiology residents succeed, influences physician behavior, models a humanistic approach to medicine, may improve wellness and reduce burnout, and imprints a model of safety and quality.

The learning environment surrounding residents during training is purported to have a strong influence on patient care outcomes as well as training outcomes. A recent study demonstrated that completing graduate medical education training in hospitals with lower rates of complications is associated with achieving better patient outcomes throughout a physician's career.[1] This finding of imprinting of the learning environment on individual physician career performance and an understanding that the learning environment for medical education shapes the patient care environment has been recognized by the AAMC and ACGME and resulted in current initiatives to improve the clinical learning environment.

The AAMC Statement on the Learning Environment reads in part: "We believe that the learning environment for medical education shapes the patient care environment. The highest quality of safe and effective care for patients and the highest quality of effective and appropriate education are rooted in human dignity … We affirm our commitment to shaping a culture of teaching and learning that is rooted in respect for all. Fostering resilience, excellence, compassion, and integrity allows us to create patient care, research, and learning environments that are built upon constructive collaboration, mutual respect, and human dignity."[1] The AAMC (AAMC Optimizing Graduate Medical Education 2014), in a five-year road map for America's medical schools, teaching hospitals, and health systems, stated as a priority goal to define the critical elements of the optimal learning environment and to define the critical components of an optimal environment for faculty at academic institutions. Priority #4 is "Define and foster optimal learning environments in AAMC member institutions," and #5 is "Improve the environment for teaching faculty."

The ACGME recognizes that the clinical setting in which residents and fellows learn directly impacts the quality of their training (CLER 2016 Executive Summary).[4] The Clinical Learning Environment Review (CLER) initiative was established by the ACGME in 2012[2] and is designed to assess and provide formative feedback to hospitals, medical centers, and ambulatory care sites that serve as clinical learning environments for ACGME-accredited residency and fellowship programs. The CLER provides formative feedback to inform graduate medical education (GME) and executive leadership (institutional) of the clinical learning environments in six main areas:

1. Patient safety;
2. Healthcare quality, including healthcare disparities;
3. Care transitions;
4. Supervision;
5. Fatigue management, fatigue mitigation, and duty hours; and
6. Professionalism.

There are many factors in the learning environment that impact learner outcomes. The tone of the environment (i.e., respectful, welcoming, sarcasm, ridicule) impacts learning and performance through motivation and emotions. Emotions can disrupt

[1] https://www.aamc.org/download/408212/data/learningenvironmentstatementdownload.pdf (accessed November 18, 2017).
[2] www.acgme.org/What-We-Do/Initiatives/Clinical-Learning-Environment-Review-CLER (accessed November 18, 2017).

cognitive processes (e.g., anger, anxiety) or support them (e.g., positive feedback, empathy). Emphasizing the importance of good role modeling, attitudes are learned through observation of those in relative power (see Chapter 19). A supportive, learner-oriented culture is of great importance in developing competent physicians. For GME to be truly excellent it must be embedded within an optimal clinical learning environment.

Optimal Learning Environment: Didactic and Clinical

At the foundation of the ideal learning environment are safety for patients and support for learners and educators in a culture of caring compassion. Select characteristics of an optimal learning environment are listed in Table 1.1.

Creating a Climate for Learning in Didactic Education

Setting the context or climate for didactic learning is as important as imparting knowledge. Learner comfort and safety, enthusiasm of the teacher, and a mutual respect between teacher and learner are critical for a positive learning environment.

The process and scientific-based methods to optimize knowledge acquisition in a learning environment are graphically represented in Figure 1.2.

For learning to maximally occur, there must be a convergence of learner, teacher, environment, and assessment, and anesthesia educators must develop a comprehensive approach to teaching. The point is to get learners to remember (retention) and transfer knowledge into practice resulting in improvement in skills development and clinical practice.

Table 1.1 Select characteristics of optimal learning environments

Institutions and Anesthesiology Departments
Expressly state the importance of the educational mission
Allocate resources to adequately support the educational mission
Provide structured learning, assessment, and feedback as part of the educational mission
Provide diversity of patient experiences, optimize work hours, and provide appropriate levels of supervision and autonomy for the learners
Deal effectively with concerns
Understand the importance of the physical and mental health of teachers and learners and support wellness initiatives within their programs that cultivate a sense of meaning and purpose, mutual appreciation, and teamwork
Establish a positive, nurturing, social environment
Continuously reevaluate their educational mission, evaluate their educational outcomes, and make changes as necessary
Teachers
Have a positive attitude toward teaching and create a positive environment for learning
Model safe, effective, and systems-based approach to patient care
Model professionalism, humanism, and wellness
Provide supervision with appropriate levels of autonomy
Provide individualized and specific feedback to learners
Are committed to the educational mission of the organization
Learners
Are committed to excellence in patient care and learning
Feel welcomed, cared about, and emotionally supported
Respect their teachers and others in the interdisciplinary patient care team
Feel safe and comfortable expressing themselves
Provide critical appraisal of their learning environment and use feedback to make change as needed
Are motivated to diagnose their own needs, develop their own learning objectives, execute their learning plans, and self-reflect on their learning performance/outcomes

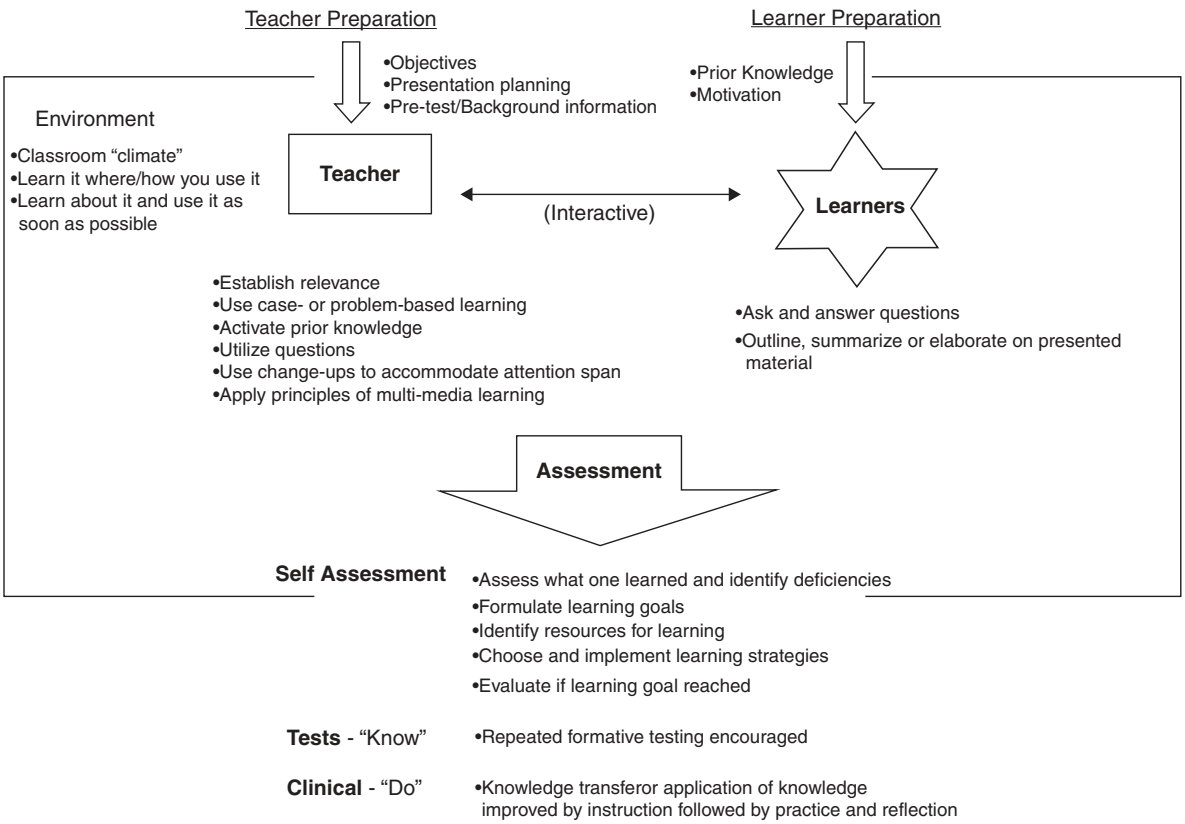

Figure 1.2 Optimizing knowledge acquisition, retention, and transfer in a didactic learning environment.

Teacher and learner must be prepared for learning. Effective teachers understand that learning and the learner, and not teaching and the teacher, are at the center of the educational process. Learning objectives should be determined in advance and the teacher should avoid attempts to provide exhaustive content on a topic. Background information (e.g., short podcast, video lecture, significant paper) may be used in preparation for an interactive learning session emphasizing direct applicability of the knowledge to practice.

Each learner brings preexisting knowledge to the learning environment. Learners should take advantage of educational content provided by the teacher in advance of an interactive educational session. This educational content may provide pertinent knowledge or activate prior knowledge.

Motivation drives learning. Motivation will be increased if (1) the learner perceives that the planned topic and information are relevant to what they currently need to know for practice; (2) the learner understands how the knowledge they are expected to learn will later be assessed and believes that their specific actions (e.g., attending an educational session, studying) will bring about a desired outcome (e.g., passing a test, gaining clinical competency); and (3) the teacher is enthusiastic about his or her topic.

The learning environment, context, and timing of learning are also important. Success in learning is more likely if:

1. There are no other competing responsibilities for the learner or teacher;
2. Knowledge acquisition and application occur as close together in time as possible (e.g., learn it and immediately use it);
3. Classroom "climate" is one where a learner is not afraid of being "wrong" and where learners trust the teacher (e.g., resist single answers, supportive);

4. Planned educational session is not of long duration; and
5. Learning environment and application environment are similar ("context-specific learning"). If the goal is for learners to retrieve and use information in actual real-life situations, it is important that the context in which learning the information occurs approximates the real clinical situation as closely as possible (e.g., learning about malignant hyperthermia in an immersive simulation session versus hearing a class on the same subject).

Following teacher and learner preparation, and in the appropriate learning environment, the teacher and learner are optimally ready to instruct and learn, respectively. The teacher may motivate and guide the learner by initially stating what the learner should learn from the lesson (e.g., learning objectives) and by providing examples of test items. Assessing and activating prior knowledge of the learner can be accomplished by sample audience response system (ARS) questions (see Chapter 15) and providing a short review of familiar material before new material is introduced. Instructional techniques to guide cognitive processing during learning include:

1. **Establish relevance:** Show how what is being learned is relevant to their future performance as anesthesiologists.
2. **Manipulate knowledge:** Focus on case-based and problem-based learning because acquiring knowledge through a professional problem or situation leads to more accessible knowledge.
3. **Activate prior knowledge and assist encoding:** Use analogies, compare and contrast, and present examples that connect to students' existing knowledge to ensure that new information can be meaningfully situated in the context of what learners already understand and will more likely be encoded into long-term memory.
4. **Utilize questions:** Insert questions (e.g., ARS, Socratic) before a section of a lesson to focus learners on parts of the lesson that help answer the questions, and insert questions after each section of a lesson to help learners focus on the most important information presented in the lesson.
5. **Use periodic activities (change-ups) to accommodate audience attention span:** Adult learners can stay attentive for approximately 15–20 minutes at a time and that is only at the beginning of a presentation. Reviewing what has been learned at natural breaks in presentation material and asking questions (e.g., ARS) at key points throughout the lecture are examples of effective change-ups.
6. **Apply principles of multimedia learning** (see Chapter 14): Use conversational style, combine words and pictures in presentation, use spatial layout such as outlines or headings to help learners organize information and increase retention, emphasize words or concepts in the lesson by use of highlighting (e.g., color, font, bold), accompany a visual with spoken description rather than on-screen captions, and keep corresponding printed words and pictures near rather than far from each other on screen or page.

The learners will facilitate and remain engaged in their own learning and improve retention by asking and answering questions during the presentation and outlining, summarizing, or elaborating on presented material.

Retention of knowledge is better if:

1. Demonstrations are used during the educational session rather than exclusively a formal lecture format;
2. The session includes interactive learning with a multimodal approach (e.g., images, figures, pictures, cases, problems, questioning);
3. Practical application of knowledge is emphasized; and
4. Repeated formative testing is used.

Evidence suggests that information retained through repeated practice or formative testing surpasses that of repeated studying, especially if testing is spaced over time (see Chapter 18). The practical application of this is for a learner to utilize sample practice questions or tests on multiple occasions rather than simply restudying a topic to retain knowledge better. Instruction, practice, and reflection are required for improved application or transfer of knowledge into clinical practice.

Creating a Climate for Learning in the Operating Room

A large component of clinical teaching in anesthesiology occurs in the perioperative environment including the operating room.[5] However, many

aspects of this learning environment act as a barrier to effective learning.

Teaching in the operating room (see Chapters 5 and 7) is demanding and requires balancing teaching activities with the primary responsibility for patient safety. The operating room learning environment is frequently stressful and noisy, there is a lack of learner privacy, and time allotments for teaching are unpredictable. High levels of learner anxiety associated with patient care are an impediment to learning, divert attention, and decrease learning. Residents may be reluctant to challenge negative hierarchy. A negative hierarchical system, that is, one laden with fear and intimidation, can not only adversely affect resident learning but also unfavorably impact patient safety as well as team functioning and should not be tolerated.

Excellent clinical teachers demonstrate clinical competence and a passion for teaching. They are clear and organized, utilize multiple teaching methods, are self-reflective, target their teaching to the learner's level of knowledge, are kind, and demonstrate integrity and respect for others.

Some suggestions for the teacher in the operating room setting are listed in Box 1.1.

A starting point for creating an optimal learning environment in the operating room is an enthusiasm expressed by the teacher for what is being taught and an eagerness to transmit this enthusiasm to the learner. Adequate supervision and accessibility of the teacher is expected and this can reduce workplace stress that might distract from structured learning activities.

Box 1.1 The teacher in the perioperative environment should

- Set clear goals.
- Ask the learner what they would like to learn that day.
- Provide adequate supervision.
- Be accessible and responsive to the learner.
- Provide meaningful, specific, and prompt feedback.
- Create a low-stress learning environment where uncertainty and mistakes are used as teaching moments.
- Demonstrate genuine concern for the learner's progress toward independent practice.

Teaching in the operating room is likely to be more effective when the residents choose topics that are of interest to them, when learning topics directly apply to the clinical situation, and when the teacher considers all aspects of the operating room clinical learning environment.

Assessing the Anesthesiology Learning Environment

Residents' perception of program quality is related to the relevancy of training (exposure to patients, education), quality of the faculty, collegiality of the group, and the social environment. Learners' perceptions of the quality of the educational environment influence their involvement, satisfaction, success, and motivation. However, residents differ widely in the importance they place on different aspects of residency training programs and they are often less satisfied with conditions in the working environment that should be more easily addressed (computer systems, clerical support) than those in the educational environment. One can see how difficult it may be to quantitatively or qualitatively measure a learning environment that is unlikely to be static, nor experienced in the same way by every learner.

Residents' assessment of their learning environment is an important element of residency accreditation and a strong predictor of resident satisfaction. The annual ACGME Resident/Fellow Survey (Box 1.2) is a useful tool for evaluating the learning environment of residency programs. The annual ACGME Faculty Survey focuses on faculty perceptions of the learning environment and determining alignment of the Resident versus Faculty Survey results may be of benefit. The results of the ACGME Resident Survey and ACGME Faculty Survey may be particularly useful to assess the departmental learning environment.

The ACGME established the CLER[3] in 2012 as part of the Next Accreditation System (NAS) to provide feedback to inform GME and institutional executive leadership of the clinical learning environments in six main areas (see Box 1.3).

The data from this review might be particularly useful as one measure of the clinical learning environment of the institution.

[3] www.acgme.org/What-We-Do/Initiatives/Clinical-Learning-Environment-Review-CLER (accessed September 14, 2017).

Box 1.2 Aspects of the learning environment assessed in the ACGME Resident/Fellow Survey

- Clinical experience and education;
- Faculty;
- Evaluation;
- Educational content;
- Resources;
- Patient safety;
- Teamwork.

Box 1.3 CLER categories

1. Patient safety;
2. Healthcare quality, including healthcare discrepancies;
3. Care transitions;
4. Supervision;
5. Fatigue management, fatigue mitigation, and duty hours; and
6. Professionalism.

Instruments used to measure clinical learning environments have recently been reviewed.[6,7] Several of these instruments measure learners' perceptions about teachers, teaching, atmosphere, academic self-perceptions, and social self-perceptions. Instruments include the Postgraduate Hospital Educational Environment Measure (PHEEM), Anaesthetic Theatre Educational Environment Measure (ATEEM), Surgical Theatre Educational Environment Measure (STEEM), Dutch Residency Educational Climate Test (D-RECT), and the Dundee Ready Educational Environment Measure (DREEM). The DREEM is a 50-item questionnaire with five domains ([1] students' perception of teaching, [2] students' perceptions of teachers, [3] students' academic self-perceptions, [4] students' perceptions of atmosphere, and [5] students' self-perceptions) used to measure the educational environment in health professional education programs. It was recently used to measure anesthesiology residents' perceptions of their educational environment and to evaluate the association between year of residency training and perception of the learning environment.[8] The learning program studied was measured to be positive overall and interestingly, there was no association between the year of training and the overall DREEM score or subscores for the five DREEM domains.

Surveys or instruments, as well as focused interviews with teachers and learners, can help provide a snapshot in time of the learning environment. They also can be used to assess the alignment of the formal and informal curricula and to assess strengths and weaknesses of individual departments. Factor analysis often suggests that teaching quality, instructor mentoring, and social support are very important.

Choosing a Learning Environment: Teachers and Learners

Many discussions about learning environment or culture start with the teacher (faculty member) already in an academic position or a learner (resident) already in a graduate residency training program. Creating the learning environment may not be a temporal or positional option and choosing from various learning environments you desire to join may be important. How might one who values excellence in the learning environment seek to determine if education and training are a valued part of the organizational structure?

Select elements from the educational environment can be used to help an anesthesiologist being recruited to an academic position evaluate the learning environment and are listed in Table 1.2.

A medical student desiring to choose a residency training program in anesthesiology with an optimal learning environment should interview multiple residents and faculty within the program and inquire about similar areas as did the potential faculty member discussed previously. The student's questions might focus on those things listed in Table 1.3.

Wellness and the Learning Environment

The intensive clinical workload, difficulties of communicating within multiprofessional teams, inadequacy of support and mentoring, and psychological stress associated with the practice of medicine not only threaten learning environments and learning effectiveness, but also the physical and mental health of resident trainees.

Burnout and satisfaction with work-life balance have worsened in US physicians over the last several

Table 1.2 Select elements from the educational environment that a potential faculty member might use to assess the learning environment

Health Care Institution mission statement
College of Medicine and Graduate Medical Education (GME) mission statements
Department of Anesthesiology mission statement
Results of institutional and departmental physician surveys
Results of GME learning environment surveys
Pattern of commitment of department to education (time, finances, technology, equipment)
Previous action(s) of the department when clinical service and education were in conflict
Pattern of supervision of learners
Availability of mentoring and record of faculty development
Wellness focus and emphasis (welcomed, valued, emotionally supported, care about all aspects of person/learners)
Specific examples where administrative leaders put education first
Record of retention of academic faculty
Pattern of using feedback to guide change when change is needed
Frequency of social activities
Examples of response to failures by individual faculty or programs
Examples where concerns were raised (standard of care, education) without fear of adverse consequences and where those concerns were addressed in a timely and effective way
Examples of how administrative leadership request feedback and how the results of feedback have been used to effect positive change

Table 1.3 Select elements from the educational environment that a potential resident might use to assess the learning environment

Program accreditation status
Availability of mentors
Examples of the department commitment to wellness of the residents
Examples of the way the department supported learners having difficulties
Evidence of departmental commitment to education
Examples of the way the program seeks feedback and utilizes the feedback to make change(s) as needed
A review of the results of surveys of learners and faculty (ACGME Annual Resident Survey, ACGME Annual Faculty Survey; www.acgme.org/Data-Collection-Systems/Resident-Fellow-and-Faculty-Surveys; accessed November 19, 2017)

years with more than one-half of US physicians now experiencing burnout.[9]

The percent of anesthesiologists reporting burnout is just slightly above the mean of physicians as a whole. Anesthesiology residents are not immune. In one study, 22 percent of anesthesiology residents screened positive for major depressive disorder and 5 percent reported suicidal ideation in the past two weeks, which is more than twice the rate of their age-matched peers in the general US population. Moreover, those survey respondents with high burnout and depression risk reported more multiple medication errors in the last year compared with low-risk respondents, suggesting an association between burnout and decreased patient safety.[10]

The ACGME's CLER Program outlines an expectation that institutions both educate residents about burnout and measure burnout annually. Efforts to improve the residency learning environment as it relates to wellness could begin with a focus on Maslach's six areas of work stress that can contribute to burnout (Box 1.4).

Leaders in anesthesiology programs should consider wellness initiatives (Figure 1.3) that cultivate a sense of meaning and purpose, mutual appreciation, and teamwork.

Box 1.4 Maslach's six areas of work life related to burnout

1. **Workload**: The extent to which work demands spill into personal life, the social pressures, as well as the physical and intellectual burden of job demands.
2. **Control**: The opportunity to make choices and decisions, to solve problems, and to contribute to the fulfillment of responsibilities.
3. **Balance between effort and reward**: Recognition, financial and social, you receive for your contribution on the job.
4. **Community**: The quality of the social context in which you work, encompassing your relationships with managers, colleagues, subordinates, and service recipients.
5. **Fairness**: The extent to which the organization has consistent and equitable rules for everyone, or the quality of justice and respect at work.
6. **Values**: The consistency between the values of the person that they bring to the profession and the values inherent in the organization where they work.

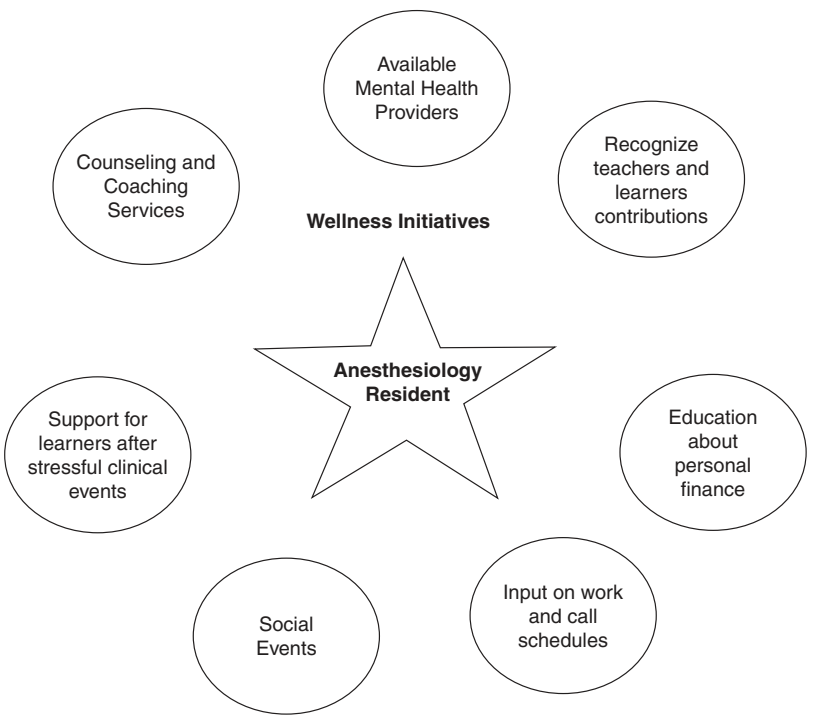

Figure 1.3 Wellness initiatives to support residents during training.

Select practical suggestions include (1) having mental health providers (psychiatrists, counseling services) who are unaffiliated with the institution available by appointment; (2) making counseling or coaching services available for those with life stressors; (3) developing an organized department response to support learners after stressful clinical events such as a death in the operating room; (4) providing opportunities for social bonding outside of work; (5) giving residents some sense of control and input on work and call schedules when possible; (6) providing education about personal finance (financial stress is associated with burnout and decreased quality of life); and (7) frequently providing mutual recognition of teachers' and learners' hard work and contributions.

Summary Points

- The learning environment consists of the conditions (social, emotional, intellectual) and surroundings (physical) in which learning takes place.
- Elements of the learning environment include the organization, resources, people, curriculum (stated and hidden), social aspects, emotional aspects, and physical factors.
- Because learning cannot be separated from its physical, social, and psychological context, teaching is as much about creating the optimal learning environment as it is about conveying knowledge or sharing expertise.
- A positive training environment helps anesthesiology residents succeed, influences physician behavior, models a humanistic approach to medicine, may improve wellness and reduce burnout, and imprints a model of safety and quality on the learner that is associated with similar practice patterns of safety and quality after graduation from training.
- The optimal learning environment or climate might be described as the "best conditions in which a learner can learn."
- A supportive, learning-oriented culture is an environment where learners are welcomed, valued, involved in the design and implementation of their own learning, emotionally supported, and where respect, collegiality, kindness, and cooperation among healthcare team members are embraced.
- Successful learning outcomes in the didactic learning environment are more likely if (1) there are no other competing responsibilities for the learner or teacher; (2) knowledge acquisition and application occur as close together in time as possible; (3) classroom "climate" is one where the learners are encouraged to inquire and trust the teacher; (4) planned educational sessions are not of long duration; and (5) evidence-based methods of teaching and learning are utilized.
- The clinical (operating room) learning environment is improved when there is enthusiasm for what is being taught and an eagerness to transmit this enthusiasm to others; a mutual goal of both teacher and learner for excellence in patient care and resident learning; professionalism and mutual respect; adequate supervision; attempts to decrease noise in the work environment; a reduction in learner anxiety; and structured learning that uses the patient situation/conditions to guide brief learning opportunities.
- Tools to measure or assess the learning environment include the annual ACGME Resident/Fellow Survey (resident assessment), the annual ACGME Faculty Survey (faculty assessment), the ACGME CLER (institutional assessment), and survey instruments determining self-perceptions of the learning environment (e.g., DREEM).
- An anesthesiologist evaluating an academic position or medical student choosing a residency training program can use select elements from the educational environment (e.g., mission statements, survey results) and interviews to determine whether education and training is a valued part of the organizational culture and to assess the learning environment.
- The percent of anesthesiologists reporting burnout is slightly higher than the mean of other physicians, and burnout has been associated with decreased patient safety. Wellness initiatives within departments might focus on Maslach's six areas of work stress: workload, control, balance between effort and reward, community, fairness, and values.

Conclusion

Great teachers take deliberate actions to foster a positive learning environment. Accreditation organizations also recognize the importance of the learning environment where graduate medical education is occurring. In 2016 the ACGME launched a new shared learning collaborative as part of its larger CLER initiative. The collaboration, called Pursuing Excellence in Clinical Learning Environments, aims to improve teaching practices and patient care in the hospitals, medical centers, and ambulatory care sites where residents and fellows pursue their formal clinical training. The goal is to stimulate changes that will broadly improve patient care and clinical learning environments across the nation.[10]

> The process through which residents become competent practitioners has as much to do with the everyday world surrounding their training as it has to do with their own brainpower and hard work.
>
> – T. Hoff (Academic Medicine 2004)

It is, I think, not easy to exaggerate the importance of the informal social element in the promotion of science and learning.

– Abraham Flexner 1930

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Further Reading

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