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**Jennifer Kesselheim**

**Education Methodology**

**2013**

1. A first year pediatric hematology-oncology fellow tells his supervising attending that he would like to improve his communication skills. The attending and fellow work together to ensure that the fellow has the opportunity to lead several family meetings. Which of the following principles of adult learning is being utilized?
   1. Building learning on the medical literature
   2. Acknowledging the hidden curriculum
   3. Allowing the learner to self-direct\*
   4. Building an effective learning environment
   5. Basing learning on an existing framework

Answer: C. Of the choices listed, only choices c, d, and e are principles of adult learning. Because the fellow described has identified communication as his own learning need and has worked to create his own learning plan to increase his skills, this is an example of how an adult learner may self-direct.

1. Which of the following is an example of reflective practice?
   1. A multiple-choice examination that allows learners to assess their fund of knowledge
   2. A meeting between a fellow and her attending to discuss the difficulties the fellow encountered while performing a recent bone marrow aspirate\*
   3. A weekly teaching conference in which fellows hear lectures about pediatric hematology-oncology topics
   4. A case log to keep track of the diagnoses she sees during her first year of fellowship
   5. A journal club in which pivotal articles pertaining to pediatric hematology-oncology are examined and critiqued

Answer: B. Reflective practice is an element of adult learning strategy that allows the learner to plan for a learning experience, engage in the experience, and then reflect on how the learning went...what went well and what needs improvement? The reflection augments learning and the learner can then apply those lessons to future situations. Option B is an example because when the attending discusses the procedure with the fellow , and allows the fellow to reflect on the challenges of the procedure, that reflection facilitates learning the fellow can apply to future procedures.

1. A pediatric hematology-oncology fellow is supervising a 3rd year medical student during a one month elective. Which of the following is a useful strategy for giving effective feedback to the student?
   1. Use the month to collect data on the student’s performance and then meet with the student at the close of the rotation to summarize your findings.
   2. Complete the medical school’s evaluation form in a thoughtful and timely manner
   3. Email your attending to let him know your thoughts about the student’s performance during the rotation
   4. Invite the student to meet with you halfway through the rotation for feedback and ask him to reflect on his own performance before the meeting\*
   5. Meet with the student halfway through the rotation and give him a concrete list of the 5 things he most needs to improve before the rotation ends

Answer: D. Choice B is actually an example of evaluation, defined as the systematic collection of data about performance, not feedback. All of the other responses represent common methods for feedback. Rather than engaging in feedback at the end of the elective (choice A and C), a meeting to give formative feedback while the elective is still in progress will allow the student an opportunity to improve. During this meeting, the student should be allowed to reflect on his performance (as in D) rather than simply be told what to work on (choice E).

1. Which of the following most accurately describes the proper methods for formative and summative feedback?
   1. Formative feedback is optional and can happen if there are concerns about the learner’s performance while summative feedback should happen regardless.
   2. Formative feedback happens once or more than once during a learning block or rotation while summative feedback happens at the end to summarize how the learner performed\*
   3. Formative feedback is written while summative feedback is verbal
   4. Formative feedback happens at the end to summarize how the learner performed while summative feedback happens once or more than once during a learning block or rotation.
   5. Both formative and summative feedback are valuable so the decision about which strategy to utilize is left to the discretion of supervising attendings and program directors

This distinction between formative and summative feedback is important in medical education and also for the boards. Both forms of feedback should be utilized even for individuals who are performing well; neither is considered optional (choice A and E). Formative feedback can be either written or verbal and happens at least once during a learning experience. Examples are a meeting at the half-way point of a rotation or half-way through the year in continuity clinic. Summative feedback can be either written or verbal and summarizes the learner’s performance. Examples are meeting at the conclusion of a rotation or at the end of the first year of fellowship. Concerns raised in summative feedback should not be new to the learner as these points should have been raised in formative feedback as well. C is incorrect because either kind of feedback can be either written or verbal. D is incorrect because it reverses the two terms.

1. Which of the following evaluation methods is most useful for assessing non-cognitive skills like professionalism or communication?
   1. Direct observation of a clinical encounter\*
   2. Self-assessment form
   3. In-training examination
   4. Chart-stimulated recall

When choosing an evaluation method to use in assessing learners, it is important to think carefully about what skills you most want to measur. Certain skills are best measured by particular instruments and strategies. Professionalism and communication are examples of non-cognitive skills which are not well measured using a knowledge-based exam (choice c) or through examination of a patient’s chart/electronic record (choice d). Self assessment is also a weak strategy since so much of professionalism and communication skills hinge on perceptions of the external observer and for this reason choice b is also incorrect. Direct observation (choice a) is generally recognized as a good strategy for evaluating these skills because an external observer can report on the professionalism and communication skills exhibited by a learner during an actual patient care encounter. Other good options would be a standardized patient encounter or OSCE or a 360 degree evaluation.

1. Which of the following best characterizes a 360 degree evaluation (also known as multisource evaluation)?
   1. A learner is evaluated on all major areas of his or her performance
   2. A learner is evaluated by a multidisciplinary mix of staff, clinicians, and patients, all of whom can comment on the learner’s performance from a different point of view\*
   3. A learner is evaluated by a group of observers following a standardized patient encounter or a simulation
   4. A learner is evaluated by numerous clinical supervisors who have each worked with the learner in different rotations and settings
   5. A learner is evaluated by a clinical supervisor who reviews numerous patient charts and rates the learner in various arenas of patient care

In a 360 degree evaluation, also known as multisource feedback, the goal is to collect data from numerous sources, all of whom are knowledgeable about the learner’s performance. The ideal 360 degree evaluation includes multiple participants such as patients, physicians, and other professionals like nursing, social work, administrative staff etc. Peer evaluations and self assessments may also be included. Of the choices above, only choice b accurately portrays a 360 degree evaluation. The other choices are examples of alternate evaluation strategies.

1. You are planning to teach a group of residents and medical students about the management of chemotherapy-induced nausea and vomiting. You have 20 minutes before morning rounds for this teaching. Which of the following should most influence your decision about teaching methods?
   1. Adult learners most effectively acquire new information through listening to slide presentations
   2. Adult learners seek best evidence so the teaching should completely review the available medical literature
   3. Adult learners will prefer not to discuss patients currently in the hospital with nausea due to concerns for patient confidentiality and privacy.
   4. Adult learners most effectively acquire new information through independent reading
   5. An interactive case-based discussion will utilize adult learning theory by allowing the teaching to be active and practical.\*

Adult learners function best when their teaching is problem-based, relevant to their goals and daily work, self-directed, active, and embedded within a respectful and effective learning environment. The scenario depicted in this question is a typical opportunity for teaching in the hospital yet too often these opportunities are wasted by failure to consider adult learning principles. Choices a and d are incorrect as reading in isolation and listening passively to slides do not maximize adult learning. Adults learn best with interaction and when the teaching presents them with problems to solve, as in Choice e. Choice c is flawed because learning by stydying patients who are actually suffering from nausea keeps the teaching relevant and therefore optimizes learning. Privacy considerations are rarely a concern in such teaching endeavors. Lastly, while evidence-based medicine is important, the 20 minute time frame will not allow a thorough review of the relevant medical literature, making Choice b and ill-advised strategy.

1. Which of the following best characterizes well-formulated learning objectives
   1. Three to five (3-5) statements that include action verbs to convey what the learner’s will gain from a learning experience\*
   2. A comprehensive list of what the learners should know or understand after a learning experience
   3. A single concise statement providing the rationale for a learning experience
   4. A short list of questions the learner can use to self-assess his or her knowledge before or after a learning experience
   5. A list of methods that will be used to evaluate the impact or outcomes of a learning experience

Learning objectives are a key component of educational planning as they focus the teacher, prepare the learner, and allow for coherent evaluation of both the learner and the teacher. Objectives must be written carefully and, of the choices above, only choice a represents a good strategy for writing objectives. The objectives should be limited in number (often to 3-5) making both a comprehensive list (choice b) and a concise single statement (choice c) problematic options. Choices d and e may be useful components of teaching and educational planning but neither pertain to learning objectives and are therefore incorrect.

1. You are developing a new curriculum for your fellowship program intended to teach procedural skills (bone marrow aspirates and biopsy, lumbar puncture) to first year pediatric hematology-oncology fellows. Which of the following is true about the curriculum planning process?
   1. A needs assessment is likely not necessary
   2. The goals and objectives of the curriculum should be articulated early in the planning process and agreed upon by learners, teachers, and other stakeholders\*
   3. The strategy to evaluate the curriculum can be determined at a later time and need not be included in the curriculum planning process
   4. Learner satisfaction is the only feasible method for curriculum evaluation in small fellowship programs
   5. A curriculum should be implemented and run for at least a full year before attempts are made to evaluate its outcomes

As mentioned above, articulation of the goals and learning objectives is a critical part of curriculum planning ad should happen early in the process. Anyone involved in the new curriculu, including teachers, students, etc should have the chance to review and comment on the proposed goals and objectives. A new curriculum will often require use of a needs assessment to further explore and measure educational needs (choice a). Evaluation of a new curriculum is also essential and often omitted. The evaluation plan should be conceived early, before the curriculum even begins (choice c) and evaluation can begin promptly. There is no need to wait for any particular period of time before evaluating the curriculum (choice e). Often it is assumed that in a small setting, like fellowship training, satisfaction is the only feasible outcome measure but other possibilities must be considered such as direct observation using a procedural checklist (choice d).

1. Which of the following best distinguishes evaluation and feedback?
   1. Evaluation is the process of collecting, synthesizing, and interpreting information about a learner’s performance while feedback is the process of sharing and discussing the evaluation findings with the learner\*
   2. Feedback is the process of collecting, synthesizing, and interpreting information about a learner’s performance while evaluation is the process of sharing and discussing the feedback with the learner
   3. Evaluation and feedback are interchangeable terms for helping a learner perform better
   4. Evaluation is the process of using forms to rate or score a learner and feedback involves an observer who watches the learner and then verbally comments on performance
   5. Evaluation is done by supervisors and program directors while feedback can come from numerous sources.

Evaluation and feedback are often used interchangeably, almost as synonyms (choice c), however these terms have discrete meanings and distinct roles in education. Of the choices above, only choice a conveys the definitions of these terms accurately. Choice b has reversed the terms’ meanings. Choice d represents 2 different examples of evaluation. Choice e is incorrect because neither feedback nor evaluation is defined by who is engaged in the activity. Both evaluation and feedback can be used by anyone in the educational environment.

**2015**

**Education Methodology**

*Jennifer Kesselheim, MD Med*

1. A first year pediatric hematology/oncology fellow tells his supervising attending that he would like to improve his communication skills. The attending and fellow work together to ensure that the fellow has the opportunity to lead several family meetings. Which of the following principles of adult learning is being utilized?

A. Acknowledging the hidden curriculum

B. Allowing the learner to self-direct

C. Basing learning opportunities on an existing framework

D. Building an effective learning environment

E. Building learning opportunities on the medical literature

2. Which of the following is an example of reflective practice?

A. A multiple-choice examination that allows learners to assess their fund of knowledge

B. A meeting between a fellow and her attending to discuss the difficulties the fellow encountered while performing a recent bone marrow aspirate

C. A weekly teaching conference in which fellows hear lectures about pediatric hematology/oncology topics

D. A case log to keep track of the diagnoses each fellow sees during the first year of fellowship

E. A journal club in which pivotal articles pertaining to pediatric hematology/oncology are examined and critiqued

3. A pediatric hematology/oncology fellow is supervising a third-year medical student during a 1-month elective. Which of the following is a useful strategy for giving effective feedback to the student?

A. Use the month to collect data on the student’s performance and then meet with the student at the close of the rotation to summarize your findings.

B. Complete the medical school’s evaluation form in a thoughtful and timely manner.

C. E-mail your attending to let him know your thoughts about the student’s performance during the rotation.

D. Invite the student to meet with you halfway through the rotation for feedback and ask him to reflect on his own performance before the meeting.

E. Meet with the student halfway through the rotation and give him a concrete list of the five things he most needs to improve before the rotation ends.

4. Which of the following most accurately describes formative and summative feedback?

A. Formative feedback is optional and can happen if there are concerns about the learner’s performance while summative feedback is essential.

B. Formative feedback happens while a learning block or rotation is in progress while summative feedback happens at the end to summarize how the learner performed.

C. Formative feedback is written while summative feedback is verbal.

D. Formative feedback is from peers or other “low stakes” individuals while summative feedback comes from supervising attendings.

E. Both formative and summative feedback are valuable, so the decision about which strategy to utilize is left to the discretion of supervising attendings and program directors.

5. Which of the following evaluation methods is most useful for assessing nontechnical skills like professionalism or communication?

A. Direct observation of a clinical encounter

B. Self-assessment form

C. In-training examination

D. Chart-stimulated recall

E. Chart audit

6. Which of the following best characterizes a 360-degree evaluation (also known as multisource evaluation)?

A. A learner is evaluated on all major areas of his or her performance.

B. A learner is evaluated by a multidisciplinary mix of staff, clinicians, and patients, all of whom can comment on the learner’s performance from a different point of view.

C. A learner is evaluated by a group of observers following a standardized patient encounter or a simulation.

D. A learner is evaluated by numerous clinical supervisors who have each worked with the learner in different rotations and settings.

E. A learner is evaluated by a clinical supervisor who reviews numerous patient charts and rates the learner in various arenas of patient care.

7. You are planning to teach a group of residents and medical students about the management of chemotherapy-induced nausea and vomiting. You have 20 minutes before morning rounds for this teaching. Which of the following should most influence your decision about teaching methods?

A. Adult learners most effectively acquire new information through listening to slide presentations.

B. Adult learners seek best evidence so the teaching should completely review the available medical literature.

C. Adult learners will prefer not to discuss patients currently in the hospital with nausea due to concerns for patient confidentiality and privacy.

D. Adult learners most effectively acquire new information through independent reading.

E. Adult learners prefer an interactive case-based discussion.

8. Which of the following best characterizes well-formulated learning objectives?

A. Three to five (3–5) statements that include action verbs to convey what the learner’s will gain from a learning experience

B. A comprehensive list of what the learners should know or understand after a learning experience

C. A single concise statement providing the rationale for a learning experience

D. A short list of questions the learner can use to self-assess his or her knowledge before or after a learning experience

E. An agenda listing the content the speaker intends to cover during the learning experience

9. You are developing a new curriculum for your fellowship program intended to teach procedural skills (bone marrow aspirates and biopsy, lumbar puncture) to first-year pediatric hematology/oncology fellows. Which of the following is true about the curriculum planning process?

A. A needs assessment is likely not necessary.

B. The goals and objectives of the curriculum should be articulated early in the planning process and agreed upon by learners, teachers, and other stakeholders.

C. The strategy to evaluate the curriculum is best determined at a later time, after the curriculum is implemented.

D. Learner satisfaction is the only feasible method for curriculum evaluation in small fellowship programs.

E. A curriculum should be implemented and run for at least a full year before attempts are made to evaluate its outcomes.

10. Which of the following best distinguishes evaluation and feedback?

A. Evaluation is the process of collecting, synthesizing, and interpreting information about a learner’s performance while feedback is the process of sharing and discussing the evaluation findings with the learner.

B. Feedback is the process of collecting, synthesizing, and interpreting information about a learner’s performance while evaluation is the process of sharing and discussing the feedback with the learner.

C. Evaluation and feedback are interchangeable terms for helping a learner perform better.

D. Evaluation is the process of using forms to rate or score a learner and feedback involves an observer who watches the learner and then verbally comments on performance.

E. Evaluation is done by supervisors and program directors while feedback can come from numerous sources.

11. Your division chief asks you to make some recommendations to revitalize the hematology course for second-year medical students. She explicitly requests incorporation of novel teaching techniques. Which of the following should be included if your plan is to use the “flipped classroom” approach?

A. Content previously comprising faculty lectures is instead delivered by the students who each make didactic presentations to the course faculty who ask them follow-up questions.

B. Content previously comprising faculty lectures is instead delivered to students before the class meets, often by videos viewed at home.

C. Faculty lectures are delivered during class in a shortened form, and in between each lecture students are asked questions using an audience response system (ARS).

D. The flipped classroom is an approach reserved for teaching in the clinical arena (e.g., on the wards) and is therefore not useful for second-year medical student courses.

E. Faculty lectures focus primarily on content included on the shelf exam, and students take practice exams at key points during the course.

12. Which of the following taxonomies goes from most broad to most narrow definition?

A. Competency, Milestone, Domain of Competence, Learning Objective

B. Domain of Competence, Milestone, Learning Objective, Competency

C. Domain of Competence, Competency, Milestone, Learning Objective

D. Learning Objective, Competency, Domain of Competence, Milestone

E. Learning Objective, Milestone, Competency, Domain of Competence

**Education Methodology: Answers**

**2015**

**Question 1**

**Answer:** B

**Explanation:** Because the fellow described has identified communication as his own learning need and has worked to create his own learning plan to increase his skills, this is an example of how an adult learner may self-direct.

**Question 2**

**Answer:** B

**Explanation:** Reflective practice is an element of adult learning strategy that allows the learner to plan for a learning experience, engage in the experience, and then reflect on how the learning went—what went well and what needs improvement? The reflection augments learning and the learner can then apply those lessons to future situations. Option B is an example because when the attending discusses the procedure with the fellow and allows the fellow to reflect on the challenges of the procedure, that reflection facilitates learning that the fellow can then apply to future procedures.

**Question 3**

**Answer:** D

**Explanation:** Choice B is actually an example of evaluation, defined as the systematic collection of data about performance, not feedback. All of the other responses represent common methods for feedback. Rather than engaging in feedback at the end of the elective (choices A and C), a meeting to give formative feedback while the elective is still in progress will allow the student an opportunity to improve. During this meeting, the student should be allowed to reflect on his performance (as in D) rather than simply be told what to work on (choice E).

**Question 4**

**Answer:** B

**Explanation:** This distinction between formative and summative feedback is important in medical education and also for the boards. Both forms of feedback should be utilized even for individuals who are performing well; neither is considered optional (choices A and E). Formative feedback can be either written or verbal and happens at least once during a learning experience. Examples are a meeting at the half-way point of a rotation or half way through the year in continuity clinic. Summative feedback can be either written or verbal and summarizes the learner’s performance. Examples are meeting at the conclusion of a rotation or at the end of the first year of fellowship. Concerns raised in summative feedback should not be new to the learner because these points should have been raised in formative feedback as well. C is incorrect because either kind of feedback can be either written or verbal. D is incorrect because summative and formative are not distinguished by who delivers the feedback.

**Question 5**

**Answer:** A

**Explanation:** When choosing an evaluation method to use in assessing learners, it is important to think carefully about what skills you most want to measure. Certain skills are best measured by particular instruments and strategies. Professionalism and communication are examples of noncognitive skills that are not well measured using a knowledge-based exam (choice C) or through examination of a patient’s chart/electronic record (choices D and E). Self-assessment is also a weak strategy (at least when used in isolation) because so much of professionalism and communication skills hinge on perceptions of the external observer, and for this reason choice b also is incorrect. Direct observation (choice A) is generally recognized as a good strategy for evaluating these skills because an external observer can report on the professionalism and communication skills exhibited by a learner during an actual patient encounter. Other good options would be a standardized patient encounter or OSCE or a 360-degree evaluation.

**Question 6**

**Answer:** B

**Explanation:** In a 360-degree evaluation, also known as multisource feedback, the goal is to collect data from numerous sources, all of whom are knowledgeable about the learner’s performance. The ideal 360-degree evaluation includes multiple participants such as patients, physicians, and other professionals like nursing, social work, administrative staff, etc. Peer evaluations and self-assessments may also be included. Of the choices above, only choice B accurately portrays a 360-degree evaluation. The other choices are examples of alternate evaluation strategies.

**Question 7**

**Answer:** E

**Explanation:** Adult learners function best when their teaching is problem-based, relevant to their goals and daily work, self-directed, active, and embedded within a respectful and effective learning environment. The scenario depicted in this question is a typical opportunity for teaching in the hospital yet too often these opportunities are wasted by failure to consider adult learning principles. Choices A and D are incorrect because reading in isolation and listening passively to slides do not maximize adult learning. Adults learn best with interaction and when the teaching presents them with problems to solve, as in choice E. Choice C is flawed because learning by studying patients who are actually suffering from nausea keeps the teaching relevant and therefore optimizes learning. Privacy considerations are rarely a concern in such teaching endeavors. Last, while evidence-based medicine is important, the 20-minute time frame will not allow a thorough review of the relevant medical literature, making choice B and ill-advised strategy.

**Question 8**

**Answer:** A

**Explanation:** Learning objectives are a key component of educational planning because they focus the teacher, prepare the learner, and allow for coherent evaluation of both the learner and the teacher. Objectives must be written carefully and, of the choices above, only choice A represents a good strategy for writing objectives. The objectives should be limited in number (often to 3–5), making both a comprehensive list (choice B) and a concise single statement (choice C) problematic options. Choices D and E may be useful components of teaching and educational planning but neither pertain to learning objectives and are therefore incorrect.

**Question 9**

**Answer:** B

**Explanation:** As mentioned above, articulation of the goals and learning objectives is a critical part of curriculum planning and should happen early in the process. Anyone involved in the new curriculum, including teachers, students, etc., should have the chance to review and comment on the proposed goals and objectives. A new curriculum often will require use of a needs assessment to further explore and measure educational needs (choice A). Evaluation of a new curriculum also is essential and often omitted. The evaluation plan should be conceived early, before the curriculum even begins (choice C), and evaluation can begin promptly. There is no need to wait for any particular period of time before evaluating the curriculum (choice E). Often it is assumed that in a small setting, like fellowship training, satisfaction is the only feasible outcome measure but other possibilities must be considered such as direct observation using a procedural checklist (choice D).

**Question 10**

**Answer:** A

**Explanation:** Evaluation and feedback are often used interchangeably, almost as synonyms (choice C); however, these terms have discrete meanings and distinct roles in education. Of the choices above, only choice A conveys the definitions of these terms accurately. Choice B has reversed the terms’ meanings. Choice D represents two different examples of evaluation. Choice E is incorrect because neither feedback nor evaluation is defined by who is engaged in the activity. Both evaluation and feedback can be used by anyone in the educational environment.

**Question 11**

**Answer:** B

**Explanation:** The flipped classroom is a relatively novel pedagogical approach that is becoming more prevalent in medical education. The approach is intended to optimize adult learning. More passive learning experiences, such as reading and watching of didactic content happens at home before the learner enters the classroom. Classroom time is then spent engaged entirely in interactive exercises intended to apply lessons already learned. The exercises may be case-based (as in problem-based learning) or may revolve around assessment (as in team-based learning).

**Question 12**

**Answer:** C

**Explanation:** Under the new system of competency-based milestones evaluation (CBME), the traditional Accreditation Council for Graduate Medical Education core competencies are still of paramount importance and are known as domains of competence. To help educators ensure these domains of competence are taught and assessed, these large domains are broken down into more tangible and manageable concepts. Each domain of competence can be subdivided into numerous competencies, of which pediatric hematology/oncology has a total of 51. Each competency can be assessed using a milestone-based scale with 4–5 milestone levels per competency. Learning objectives remain essential for medical educators because attainment of the objectives drives the development of each learner from one milestone level to the next.

**2017**

#### **Education Methodology**

Jennifer C. Kesselheim, MD MEd

1. A first-year pediatric hematology-oncology fellow tells his supervising attending that he would like to improve his communication skills. The attending and fellow work together to ensure that the fellow has the opportunity to lead several family meetings. Which of the following principles of adult learning is being most used?
   1. Acknowledging the hidden curriculum
   2. Allowing the learner to self-direct\*
   3. Basing learning opportunities on an existing framework
   4. Applying Kolb’s Cycle of Experiential Learning
   5. Building learning opportunities on the medical literature

Answer: B. This is an example of how an adult learner may self-direct, because the fellow described has identified communication as his own learning need and has worked to create his own learning plan to increase his skills.

1. Which of the following is an example of reflective practice?
   1. A case log to keep track of the different diagnoses each fellow sees during the first year of fellowship
   2. A journal club in which pivotal articles pertaining to pediatric hematology-oncology are examined and critiqued
   3. A meeting between a fellow and her attending to discuss the difficulties the fellow encountered while performing a recent bone marrow aspirate\*
   4. A multiple-choice examination that allows learners to assess their fund of knowledge
   5. A weekly teaching conference in which fellows hear lectures about pediatric hematology-oncology topics

Answer: C. Reflective practice is an element of adult learning strategy that allows the learner to plan for a learning experience, engage in the experience, and then reflect on how the learning went—what went well and what needs improvement? The reflection augments learning and the learner can then apply those lessons to future situations. Option C is an example because when the attending discusses the procedure with the fellow and allows the fellow to reflect on the challenges of the procedure, that reflection facilitates learning, which the fellow can then apply to future procedures.

1. A pediatric hematology-oncology fellow is supervising a 3rd-year medical student during a 1-month elective. Which of the following is a useful strategy for giving effective feedback to the student?
   1. Use the month to collect data on the student’s performance and then meet with the student at the close of the rotation to summarize your findings.
   2. Complete the medical school’s evaluation form in a thoughtful and timely manner.
   3. E-mail your attending to let him or her know your thoughts about the student’s performance during the rotation.
   4. Invite the student to meet with you halfway through the rotation for feedback and ask him or her to reflect on his/her own performance before the meeting.\*
   5. Meet with the student halfway through the rotation and give him or her a concrete list of the 5 things he/she most needs to improve before the rotation ends.

Answer: D. Choice B is actually an example of evaluation, defined as the systematic collection of data about performance, not feedback. All of the other responses represent common methods for feedback. Rather than engaging in feedback at the end of the elective (choices A and C), a meeting to give formative feedback while the elective is still in progress will allow the student an opportunity to improve. During this meeting, the student should be allowed to reflect on his or her performance (choice D) rather than simply be told what to work on (choice E).

1. Which of the following most accurately describes formative and summative feedback?
   1. Formative feedback is best used when there are concerns about the learner’s performance; summative feedback should happen every time.
   2. Formative feedback happens while a learning block or rotation is in progress; summative feedback happens at the end to summarize how the learner performed.\*
   3. Formative feedback is written; summative feedback is verbal.
   4. Formative feedback is from peers or other “low stakes” individuals; summative feedback comes from supervising attendings.
   5. Both formative and summative feedback are valuable so the decision about which strategy to use is left to the discretion of supervising attendings and program directors.

This distinction between formative and summative feedback is important in medical education and also for the boards. Both forms of feedback should be used, even for individuals who are performing well; neither is considered optional (choices A and E). Formative feedback can be either written or verbal and happens at least once during a learning experience. Examples include a meeting at the halfway point of a rotation or halfway through the year in continuity clinic. Summative feedback can be either written or verbal and summarizes the learner’s performance. Examples include meeting at the conclusion of a rotation or at the end of the first year of fellowship. Concerns raised in summative feedback should not be new to the learner; these points should have been raised in formative feedback as well. C is incorrect because either kind of feedback can be either written or verbal. D is incorrect because summative and formative are not distinguished by who delivers the feedback.

1. Which of the following evaluation methods is most useful for assessing nontechnical skills like professionalism or communication?
   1. Chart-stimulated recall
   2. Chart audit
   3. Direct observation of a clinical encounter\*
   4. In-training examination
   5. Self-assessment form

When choosing an evaluation method to use in assessing learners, it is important to think carefully about what skills you most want to measure. Certain skills are best measured by particular instruments and strategies. Professionalism and communication are examples of nontechnical skills, which are not well measured using a knowledge-based exam (choice D) or through examination of a patient’s chart/electronic record (choices A and B). Self-assessment also is a weak strategy (at least when used in isolation) because so much of professionalism and communication skills hinge on perceptions of the external observer; therefore, choice E also is incorrect. Direct observation (choice C) is generally recognized as a good strategy for evaluating these skills because an external observer can report on the professionalism and communication skills exhibited by a learner during an actual patient encounter. Other good options would be a standardized patient encounter, an Objective Structured Clinical Examination (OSCE), or a 360-degree evaluation.

1. Which of the following best characterizes a 360-degree evaluation (also known as multisource evaluation)?
   1. A learner is evaluated on all major areas of his or her performance.
   2. A learner is evaluated by a group of various observers, all of whom can comment on the learner’s performance from a different point of view.\*
   3. A learner is evaluated by a group of various observers following a standardized patient encounter or a simulation.
   4. A learner is evaluated by numerous clinical supervisors who have each worked with the learner in different rotations and settings.
   5. A learner is evaluated by a clinical supervisor who reviews numerous patient charts and rates the learner in various arenas of patient care.

In a 360-degree evaluation, also known as multisource feedback, the goal is to collect data from numerous sources, all of whom are knowledgeable about the learner’s performance. The ideal 360-degree evaluation includes multiple participants such as patients, physicians, and other professionals like nurses, social workers, and administrative staff. Peer evaluations and self-assessments also may be included. Of the choices above, only choice B accurately portrays a 360-degree evaluation. The other choices are examples of alternate evaluation strategies.

1. You are planning to teach a group of residents and medical students about the management of chemotherapy-induced nausea and vomiting. You have 20 minutes before morning rounds for this teaching. Which of the following should most influence your decision about teaching methods?
   1. Adult learners most effectively acquire new information through listening to slide presentations.
   2. Adult learners seek best evidence, so the teaching should completely review the available medical literature.
   3. Adult learners prefer not to discuss patients currently in the hospital with nausea due to concerns for patient confidentiality and privacy.
   4. Adult learners most effectively acquire new information through independent reading.
   5. Adult learners prefer an interactive, case-based discussion.\*

Adult learners function best when their teaching is problem-based, relevant to their goals and daily work, self-directed, active, and embedded within a respectful and effective learning environment. The scenario depicted in this question is a typical opportunity for teaching in the hospital, yet too often these opportunities are wasted by failure to consider adult-learning principles. Choices A and D are incorrect because reading in isolation and listening passively to slides do not maximize adult learning. Adults learn best with interaction and when the teaching presents them with problems to solve, as in choice E. Choice C is flawed because learning by studying patients who are actually suffering from nausea keeps the teaching relevant and, therefore, optimizes learning. Privacy considerations are rarely a concern in such teaching endeavors. Lastly, although evidence-based medicine is important, the 20-minute time frame will not allow a thorough review of the relevant medical literature, making choice B and ill-advised strategy.

1. Which of the following best characterizes well-formulated learning objectives?
   1. Three to five statements that include action verbs to convey what the learners will gain from a learning experience\*
   2. A comprehensive list of what the learners should know or understand after a learning experience
   3. A single, concise statement providing the rationale for a learning experience
   4. A short list of questions the learner can use to self-assess his or her knowledge before or after a learning experience
   5. An agenda listing the content the speaker intends to cover during the learning experience

Learning objectives are a key component of educational planning as they focus the teacher, prepare the learner, and allow for coherent evaluation of both the learner and the teacher. Objectives must be written carefully, and, of the choices above, only choice A represents a good strategy for writing objectives. The objectives should be limited in number (often to three to five), making both a comprehensive list (choice B) and a concise single statement (choice C) problematic options. Choices D and E may be useful components of teaching and educational planning but neither pertain to learning objectives and are therefore incorrect.

1. You are developing a new curriculum for your fellowship program that is intended to teach procedural skills (bone marrow aspirates and biopsy, lumbar puncture) to first-year pediatric hematology-oncology fellows. Which of the following is true about the curriculum planning process?
   1. A needs assessment may be unnecessary.
   2. The goals and objectives of the curriculum should be articulated early in the planning process.\*
   3. The strategy to evaluate the curriculum is best determined after the curriculum is implemented.
   4. Learner satisfaction is the only feasible method for curriculum evaluation in small fellowship programs.
   5. A curriculum should be implemented and run for at least a full year before attempts are made to evaluate its outcomes.

As mentioned above, articulation of the goals and learning objectives is a critical part of curriculum planning and should happen early in the process. Anyone involved in the new curriculum, including teachers and students, should have the chance to review and comment on the proposed goals and objectives. A new curriculum often will require use of a needs assessment to further explore and measure educational needs (choice A). Evaluation of a new curriculum also is essential and often omitted. The evaluation plan should be conceived early, before the curriculum even begins (choice C), and evaluation can begin promptly. There is no need to wait for any particular period of time before evaluating the curriculum (choice E). Often it is assumed that in a small setting like fellowship training, satisfaction is the only feasible outcome measure, but other possibilities must be considered, such as direct observation using a procedural checklist (choice D).

1. Which of the following best distinguishes evaluation and feedback?
   1. Evaluation is the process of collecting, synthesizing, and interpreting information about a learner’s performance; feedback is the process of sharing and discussing the evaluation findings with the learner.\*
   2. Feedback is the process of collecting, synthesizing, and interpreting information about a learner’s performance; evaluation is the process of sharing and discussing the feedback with the learner.
   3. Evaluation and feedback are interchangeable terms for helping a learner perform better.
   4. Evaluation is the process of using forms to rate or score a learner; feedback involves an observer who watches the learner and then verbally comments on performance.
   5. Evaluation is done by supervisors and program directors; feedback can come from numerous sources.

Evaluation and feedback often are used interchangeably, almost as synonyms (choice C); however, these terms have discrete meanings and distinct roles in education. Of the choices above, only choice A conveys the definitions of these terms accurately. Choice B has reversed the terms’ meanings. Choice D represents two different examples of evaluation. Choice E is incorrect because neither feedback nor evaluation is defined by who is engaged in the activity. Both evaluation and feedback can be used by anyone in the educational environment.

1. Your division chief asks you to make some recommendations to revitalize the hematology course for second-year medical students. She explicitly requests incorporation of novel teaching techniques. Which of the following should be included if your plan is to use the “flipped classroom” approach?
   1. Content previously comprising faculty lectures is instead delivered by the students who each make didactic presentations to the course faculty, who then ask the students follow-up questions.
   2. Content previously comprising faculty lectures is instead delivered to students before the class meets, often by videos viewed at home.\*
   3. Faculty lectures are delivered during class in a shortened form, and, in between each lecture, students are asked questions using an Audience Response System (ARS).
   4. The flipped classroom is an approach reserved for teaching in the clinical arena (e.g., on the wards) and is therefore not useful for second-year medical student courses.
   5. Faculty lectures focus primarily on content included on the self-exam, and students take practice exams at key points during the course.

The flipped classroom is a relatively novel pedagogical approach, which is becoming more prevalent in medical education. The approach is intended to optimize adult learning. More passive learning experiences, such as reading and watching didactic content, happens at home before the learner enters the classroom. Classroom time is then spent engaged entirely in interactive exercises intended to apply lessons already learned. The exercises may be case-based (as in problem-based learning) or may revolve around assessment (as in team-based learning).

1. Which of the following taxonomies goes from most broad to most narrow definition?
2. Competency, milestone, domain of competence, learning objective
3. Domain of competence, milestone, learning objective, competency
4. Domain of competence, competency, milestone, learning objective\*
5. Learning objective, competency, domain of competence, milestone
6. Learning objective, milestone, competency, domain of competence

Under the new system of competency-based milestones evaluation (CBME), the traditional Accreditation Council for Graduate Medical Education (ACGME) core competencies are still of paramount importance and are known as domains of competence. To help educators ensure these domains of competence are taught and assessed, these large domains are broken down into more tangible and manageable concepts. Each domain of competence can be subdivided into numerous competencies, of which pediatric hematology-oncology has 51. Each competency can be assessed using a milestone-based scale with four to five milestone levels per competency. Learning objectives remain essential for medical educators because attainment of the objectives drive the development of each learner from one milestone level to the next.

1. You are teaching hematology to second-year medical students and leading a small group session about platelets. You decide to create a case about immune-mediated thrombocytopenic purpura to teach about the pathophysiology and diagnostic evaluation of a patient with low platelets. Which of the following best represents an adult-learning principle being used by the case-based approach?
   1. Experiential learning
   2. Pedagogy
   3. Practical problem-solving\*
   4. Reflection in action
   5. Systems-based learning

One of the key characteristics of the adult learner is the desire for practical problem-solving (choice C). Adult learners want to know how your lessons will help them solve the actual problems they will confront in their practice. Experiential learning (choice A), such as learning done with actual patients, is the most authentic way to learn, but it may be impractical in some cases. In such situations, case-based learning provides a helpful alternative. Adults learn best from teaching that is highly relevant to their everyday lives, depending less on erudite theory and more on implementation, application, and practicalities. Case-based teaching is useful when teaching adults because the content to be taught is embedded within a case scenario, demonstrating from the outset how the material is relevant to an actual situation. The more realistic and compelling the case, the stronger the message that this is content worth knowing. Choice B is incorrect because adult learning pertains to andragogy, not pedagogy. Although cases may prompt reflection (choice D) and even learning about the healthcare system (choice E), neither of these are of primary consideration when choosing to teach with a case.

1. Your fellowship program provides teaching to the fellows every Monday, Wednesday, and Friday from 7–8 am. These sessions are mandatory for first-year fellows and are specifically timed before the day gets busy so that fellows will be protected to attend. You plan to attend teaching tomorrow but your attending instead asks you to accompany her to meet with a family at 7 am. You mention you have teaching scheduled for that time and your attending looks annoyed. She says “you can skip that….this discussion will be far more valuable.” Not wanting to upset your attending, and fearing a negative evaluation for the rotation, you accompany her to the meeting and miss your teaching session. What facet of the learning environment is most represented in this scenario?
   1. Collaboration
   2. Hidden curriculum\*
   3. Commitment to feedback
   4. Spirit of inquiry
   5. Teachers as facilitators

The hidden curriculum is a powerful force within the learning environment. It reflects the implicit messages that are sent to learners that may undermine, or overtly contradict, aims within the formal curriculum. In this case, fellows are instructed to attend their morning teaching, but the social cues and culture of the program instruct the fellow to do the opposite. This tension causes significant stress on trainees, contributes to a toxic learning environment, and undermines educational objectives.

1. You have been asked to update the assessment instruments being used on the residents’ inpatient rotation. Which of the following should be the most relevant concern when making a decision about a new tool?
   1. Whether the tool has been published in the medical literature
   2. Whether the tool has available data about validity
   3. Whether the tool is used on other rotations in the hospital
   4. Whether the tool uses the language of the milestones
   5. Whether the tool aligns well with the rotation’s learning objectives\*

Although using an assessment instrument that has been previously published (A), used throughout your hospital (C), or about which extensive validity data are known (B) would be nice, it is in no way a requirement for using a new instrument. Often, we use tools lacking in a robust track record. It is not essential for assessment instruments to contain the language of the milestones, especially if that language would be difficult for those completing the instrument to understand; hence, D is incorrect. The priority is to choose an instrument that aligns well with the objectives for the rotation so that it will help you understand which learners are achieving the objective and which are not.

1. Leaders in medical education at your hospital would like all trainees to complete an individualized learning plan (ILP) and review it at least annually with their program director. The fellows in your program object to this requirement. Which of the following is the best justification for this practice?
   1. The ILP provides information to make decisions about fellows’ graduation.
   2. The ILP contributes positively to the learning environment.\*
   3. The ILP must be reviewed at the hospital level and therefore is mandatory.
   4. The ILP must be completed annually to allow fellows to take the subspecialty certification exam.
   5. The ILP details the curriculum the fellow will be exposed to over the next year.

Completion of an ILP is required by the bodies that oversee fellowship training, such as ACGME, but do not get reviewed or collected outside of the program, making C and D incorrect.

The ILP also is not used for high-stakes decision making such as graduation decisions, so A also is incorrect. The ILP does not contain the whole of a fellow’s curriculum (D) but details the unique goals for that particular learner. In this way, completion of and discussion about the ILP creates a collaborative and respectful learning environment in which the fellow’s own goals are articulated and incorporated into the educational planning.

1. Which of the following is an essential step when preparing to give feedback?
   1. Schedule a time in the future to sit down with the learner for feedback.\*
   2. Bring the written evaluation forms with you to the feedback discussion.
   3. Review evaluations from past rotations for the learner to prepare your feedback.
   4. Ask the learner to give you feedback on your performance first.
   5. Find a place to meet the learner outside of the hospital or clinic environment.

Before giving feedback, you want to prepare the recipient by scheduling the discussion for a future time (choice A). The discussion doesn’t need to take place outside of the clinical setting (choice E) and should not be informed by past evaluation data (choice C). Written evaluation forms don’t need to accompany you to the discussion, but this is an acceptable practice (choice B). It is generally encouraged to ask the learner to give you feedback on your own performance as a teacher/supervisor, but the learner should receive your feedback first; therefore, choice D is incorrect.