

Chapter 4

Designing Educational Experiences

“If you fail to plan, then you plan to fail.” H. Jerome Freiberg.

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After studying this chapter, the reader should be able to:

- list the five steps of the educational planning process
- discuss two reasons to be systematic in organizing educational experiences
- identify methods to collect data for a needs assessment
- match teaching methods to learning objectives
- list the four components of program evaluation and design an evaluation question for each of these areas

INTRODUCTION

“Research during the past 40 years on teaching effectiveness supports what most experienced teachers have concluded: effective teaching is not a haphazard process” (Freiberg). All educational experiences should be organized in a systematic fashion. Most faculty have not received training in

curriculum development or instructional design and tend to stumble along, utilizing the examples set forth by their predecessors. Rear Admiral Grace Hopper stated it quite eloquently, “The most damaging phrase in the language is ‘It’s always been done that way’.” The goal of this chapter is to introduce a method that can be used to organize all learning activities systematically.

DEFINITIONS

While the terms “curriculum” and “instruction” often are used interchangeably, they are quite different. Curriculum is that which is taught, and instruction is the method used to teach the curriculum. Luann Wilkerson, a medical educator, defines curriculum as “a series of events and materials undertaken by learners for the purpose of acquiring specific competencies.” Instruction is the means to accomplish this. Over the last few decades, there has been a shift in medical education from teacher-centered to learner-centered curricula. Traditionally, the instructor’s role has been to teach the material. In this conventional model of teaching, the student tends to take a passive role in the learning process (like a tourist), and the teacher is viewed as the expert dispenser of knowledge (tour guide). The teacher knows what is best for the learner in regard to knowledge. In a student centered model, the student is an active participant in the learning process, while the teacher functions as a facilitator of learning.

THE DESIGN PROCESS

A mnemonic, GNOME, developed by a clinician-educator, Dr. Kenneth Roberts, has been used to describe the organization of educational experiences.

- G** = goals
- N** = needs assessment
- O** = objectives
- M** = methods
- E** = evaluation

The educational design process can be compared to patient care. The goal of both is to identify what needs to be done and to do it. The starting point is the needs assessment. The needs assessment in teaching is the process of gathering information about the gap between what the learners already know and what they should know. If you compare this to patient care, it is similar to the history and physical examination. The needs assessment in patient care allows you to broaden your differential diagnosis and look at the problem from many different angles. The more you know about your learners and their problems, the more effective your teaching. The objectives of teaching are specific and measurable: what the learner should be able to do after the

learning experience. (See Chapter 3) This is comparable to patient care, where the objective is the desired patient outcome outlined through a specific management plan. For example, the patient will lose five pounds within the next thirty days. The patient could use a variety of methods to achieve this objective, avoiding sweetened drinks, decreasing the volume of food intake, or increasing the amount of exercise. The teacher also has a variety of methods to use to promote learning, including lectures, small group discussion, and role-playing. In patient care, follow-up is essential to determine whether or not the patient has achieved the desired outcome. The same is true in teaching; the only way you can know whether or not the student achieved the objectives is to follow-up through evaluation. Techniques that can be used include testing, questioning, and observation.

The design of an educational experience should be ordered and methodical. Developing a systematic process for all learning activities will allow you to focus time and effort on the best solution to meet the goals and objectives of the experience. It may also help achieve buy-in from other people affected by the instruction or curriculum if you are developing a formal course or rotation. The adage, “Changing a (college) curriculum is like moving a graveyard—you never know how many friends the dead have until you try to move them,” has been attributed to both Calvin Coolidge and Woodrow Wilson. A systematic approach to organizing educational experiences can lend credibility to the process and to its outcomes, no matter whether a single lecture or a formal course. A systematic approach also can help make a work scholarly and can lead to continued refinement of the experience.

Table 5.
The GNOME Planning Process for Different Teaching Venues

	Course or rotation	Planned single lecture or group meeting	Single, patient-centered teaching encounter
Goals	Broad input, achieve consensus	Input from learners and others would be ideal, however most of the time the goals have already been set	Teacher can have non-content based, general goals for such encounters
Needs assessment	Broad input from learners and others, as well as data from the literature and experience with other courses and rotations	Ideally, input from learners and others; often from literature and teacher's own experience	Input from the learner is helpful to identify individual needs, oftentimes this is extemporaneous, based on teacher's experiences
Objectives	Critical. Should be carefully thought out, utilizing data collected from the needs assessment	Critical. Should be carefully thought out, with input from learners and others	Content based objectives are determined by teacher instantaneously, based on his/her experiences with that clinical problem
Methods	Important to utilize the most appropriate methods to achieve the objectives; multiple methods and innovation. but don't re-invent the wheel	Options for format often limited, but options for strategies, styles, and techniques usually open	Options usually limited, include techniques such as SNAPPS (see Chapter 7)
Evaluations	Important to evaluate both learner and activity	Routinely get feedback on teaching; if possible, evaluate what learners have learned (e.g. pre- and post-tests)	Evaluation of learner as time permits

Reflection exercise #1. Answers at end of chapter.

A colleague is discussing his plans to develop a curriculum in health literacy. He does not have an organized method to design the curriculum.

a) What are the five steps of the GNOME educational planning process?

b) List two reasons why your colleague should be systematic in developing his curriculum.

GOALS

The first step in the five step educational planning process (GNOME) is to develop goals. A goal is a general statement of the overall purpose of the educational experience. Goals tend to be broad and vague, e.g. "The learner will know the treatment options for migraine headaches," or "The student will understand the pathophysiology of septic shock." Vincent van Gogh said; "The thing has already taken form in my mind before I start it. The first attempts are absolutely unbearable. I say this because I want you to know that if you see something worthwhile in what I am doing, it is not by accident but because of real direction and purpose." Every learning experience should have one or more goals. Goals define the purpose of the experience and provide a global perspective of what the student should learn. Goals also can define the boundaries of the educational experience. All subsequent objectives, teaching methods, and evaluation strategies are directed toward achieving the stated goals. (See Chapter 3)

NEEDS ASSESSMENT

Joe Harless, a behavioral psychologist known for his performance improvement process, wrote, "An ounce of analysis is worth a pound of objectives." Before designing an educational experience, data should be generated to answer questions crucial to the success of the experience. A needs assessment is the systematic process of gathering this information from a variety of sources and using it to determine what instructional solutions will close the gap between what learners currently know or do and what you would like them to know or do. Once the gap has been identified, some teachers assume that implementing a lecture will solve the problem. This is not always the case. The needs assessment allows you to determine the best method to fill the gap and achieve the desired outcome. It also allows you to determine the proper focus of the educational experience, prioritize the content material that will be taught, and identify the resources needed to fill the gap.

The needs assessment gathers data from a variety of sources. Ask yourself what information you need before you start developing the educational experience. Categorize the questions by content, learners, and resources. Examples of content questions include: What problem does the educational

experience address? How important is this knowledge, skill, or attitude for the learner's future practice? Is this content taught anywhere else? Questions related to the learners might include: who are the intended learners, what are their preferred learning styles, and what is the current skill level of the learners who will take part in the educational activity? In regard to resources, consider questions such as: how much time is available for teaching, will other faculty be required, and is there a need for special equipment? Another important question in regard to resources is whether or not existing materials are available, and if so, can they be adapted? As Anthony J. D'Angelo, a motivational writer and speaker, said, "Don't reinvent the wheel, just realign it."

The best information on content, learners, and resources is provided by those affected by the educational experience and those who may be affected by, or involved in, closing the identified gap. The most credible sources of information are those closest to the gap and its identified needs. A variety of people other than learners and faculty involved in the curriculum can serve as sources of information, e.g. recent graduates, patients, faculty at other institutions, physicians in the community, and community representatives. Frequently neglected sources of valuable information for certain learning gaps include current or future employers. Data also can be gathered from the literature, as well from as the Internet. Gathering data from a variety of sources allows you to better understand how to fill the gap between where the learners currently are and where you would like them to be.

There are multiple techniques to obtain data for a needs assessment. Examples include a survey of graduates of the program, informal discussions with faculty, and structured individual or group discussions (i.e. focus groups). Additional methods include literature reviews and analysis of existing data, such as in-service exams, exit surveys, or chart reviews. You could observe learners to determine their competence level. Observing a wide variety of learners at various levels along the learning continuum, from novice to expert, will provide you a picture of where your learners are and where you would like them to be. Professional societies like the American Academy of Pediatrics, the Accreditation Council for Graduate Medical Education, the American Board of Medical Specialties, and the American Association of Medical Colleges are valuable sources of data. If possible, use more than one method to gather data and utilize a stepwise process in collecting the information, e.g. a literature review before the focus groups. Repeated contact with interviewees improves clarification of ideas. You should obtain data on the three domains of learning: knowledge, skills, and attitudes. If there are no available data and you cannot obtain input from learners and others, you will have to rely on your own experience and best judgment.

As part of the needs assessment, you should determine and prioritize the major content areas of the curriculum. It is not possible to teach or learn everything, and therefore, essential areas must be identified. Review the data

from your needs assessment, including the literature review and opinions from colleagues, previous learners, content experts, and professional societies. One method of prioritization is to allocate 100 points among the major topics, so as to identify the relative importance of one topic in comparison to another. This allows you to reexamine those areas receiving only a small proportion of points, to determine whether or not they should be included in the allotted curriculum time. Another method of prioritization is to label topics as essential, important but not essential, and nice to know. This facilitates judgments about the distribution of time among the various components of the curriculum.

Reflection exercise #2. Answers at end of chapter.

You have been asked to develop an interdisciplinary curriculum for 1st year medical students on the cardiovascular system.

a) What data do you want to gather for your needs assessment?

b) List one question for each of the three categories: content, learners, and resources.

OBJECTIVES

Objectives are the engines that drive the educational planning process. They are specific and measurable. Objectives tell the learners what is expected of them and provide a template for measuring whether the desired outcome is achieved. The science of setting and using objectives is explored in detailed in Chapter 3.

METHODS

Once the objectives for an educational activity have been determined, the next step is to develop the teaching methods by which these objectives will be achieved. These educational strategies are the heart of the planning process. It is helpful to construct a blueprint of the planning process, the complexity of which will depend on the activity, the need for communication with others, and the amount of material. Examples of blueprints include syllabi, lesson plans, and teaching scripts. (See Chapter 5.)

When choosing teaching methods, it is important to maintain congruence between the objectives and the methods. If you want the learner to demonstrate a skill, you would not choose, as your main teaching method, reading about the skill. You would want the learner to practice the skill through simulation or real-life experiences. When selecting a teaching method, consider how well the method matches the student behavior called for in the learning objective. Another general principle is to use multiple educational methods when designing an educational experience. Some objectives only require one teaching method, others require multiple methods. Individuals also have different preferences for learning; these are referred to as learning styles.

Some people prefer to hear information, others to see it, and some to experience it. It is generally accepted that learners retain more of what they see *and* hear than what they see *or* hear. Edgar Dale developed a “Cone of Experience” which provided an intuitive model of how well audio-visual material was retained depending on the medium. He theorized that a learner would retain more information from what he did than from what he heard, read, or observed. The key concept is that people learn and process information in multiple ways, called learning styles, and it is imperative when designing a curriculum to use multiple educational techniques to maximize learning for all participants. The ACGME Outcome Project recently developed an Instructional Strategies Toolbox, which can be found on their website (www.acgme.org - select “Outcome Project” and then “Implementation”). A learner needs to practice or apply what he has learned to increase retention of the material. This may be done through simulated or real-life experiences. As Confucius said, “I hear, I know. I see, I remember. I do, I understand.”

Motivation is a key component to successful instruction. Teachers know that when learners have little motivation, learning is almost impossible. John Keller, an educator, developed a model of the types of motivation necessary for successful learning. According to Keller’s ARCS model, there are four major categories of motivational strategies: attention, relevance, confidence, and satisfaction. These factors should be taken into account when designing educational experiences. To gain attention, use novel techniques, vary the types of instruction, and stimulate information seeking behavior in the learner. The use of different teaching methods maintains interest, overcomes the problem of different learning styles, and provides opportunities for reinforcement of learning. Instruction should be relevant to what the learner needs to know or needs to be able to do. There should be expectancy for success (both on the part of the learner and the teacher), steps or multiple end points, and feedback to the learner to maximize his confidence. Determining what the learner would like to learn increases satisfaction and enhances motivation to learn. When designing educational activities, think outside the box and do not depend only on traditional methods, such as lectures and assigned readings. Finally, provide opportunities for the learner to use the newly acquired knowledge or skills with feedback and reinforcement from the teacher to sustain the desired behavior.

Noted psychologist, Abraham Maslow, observed many years ago, “If the only tool you have is a hammer, all problems begin to look like nails.” Master a variety of teaching methods, and while limitations of resources may constrain the ideal approach, dream big and select the best methods possible.

Table 6.
Partial List of Methods that Can Be Used in Educational Activities

Method and description	Attributes or qualities for effectiveness	Examples
<p>Lecture A talk by a single speaker</p>	Should contain material that is either synthesized for the learner or not readily available (See Chapter 11)	A lecture based on the latest research or a synthesis of the current literature
<p>Readings Learners are assigned chapters, articles, or other written material</p>	Learner should be held accountable for the material	Review an article on allergic rhinitis and write one examination question on the most significant learning point
<p>Site visit The learner goes to the site to see or experience the processes firsthand</p>	There should be a defined, expected outcome from the experience	Take a shopping trip for baby food – list prices, sizes of jars, differences between 1 st , 2 nd and 3 rd stage foods etc. Go to the operating room and describe methods by which the sterile field is maintained
<p>Small group discussions Groups of 10 or fewer learners address a question or issue under the guidance of a discussion leader</p>	To be effective the leader needs to be skilled in working with groups and facilitating participation. Problem based learning is a type of small group discussion. It is student-directed and allows the learners to choose concepts they would like to explore further to aid in group understanding; effectiveness depends on participation, self-	Discussion of ethical issues related to adolescents, work-up and management of a patient with thrombocytopenia, including issues related to health economics, access to care, alternative and complimentary medicine, and cultural aspects

	motivation, and a well formed and functioning group	
<p>Team learning Preparatory readings are assigned and the learners comes prepared to demonstrate their knowledge of the material first as individuals and then as a group. The group then applies this knowledge to selected problems</p>	Both the individual learner and the team should be held accountable for the material. Discussion material should stimulate problem solving and not focus on rote memory	A group of students assigned to the core medicine rotation discuss and apply current management strategies in the treatment of HIV
<p>Demonstrations The instructor demonstrates a procedure so the learner can observe the action performed correctly</p>	Directions should be given to the learners on what they should observe during the procedure; procedural steps should be discussed prior to demonstration	Suturing or physical examination skills
<p>Prepared Audio/visual materials The use of visual and auditory media such as pictures, diagrams, slides, movies, and sounds</p>	Material chosen should help the learner achieve the outcome and not just entertain	Websites with heart and lung sounds; using portions of movies to demonstrate concepts or as attention getters
<p>Role plays Learner acts out a scenario and the experience is analyzed by members of the group</p>	Most effective when there is a high level of motivation and participation among individuals and the group	Counseling techniques dealing with the difficult patient or with breaking bad news

<p>Simulation The learner practices skills on a simulated patient, either a trained actor (standardized patient) or a mannequin</p>	<p>Simulations should be life like to maximize the benefits (outcomes) to expense ratio</p>	<p>Intubation of mannequins, gynecologic exams on simulator that records pressure and location of touch; history taking skills on standardized patient</p>
<p>Computer-assisted Any instruction that makes use of a computer</p>	<p>Instruction should be linked to learning objectives and evaluation</p>	<p>X-ray diagnosis, games, patient simulations (see resources at end of chapter)</p>
<p>Case presentations Oral presentations of history, physical, and laboratory findings, with subsequent discussion of case, including differential diagnosis; if diagnosis is known, may include discussion of that entity; more advanced learners will also delineate a management plan</p>	<p>To be effective, requires a skilled leader to facilitate problem-solving</p>	<p>Typical learning activity utilized on inpatient rounds as well as in the outpatient setting; can be used for large or small groups; multiple types of one-on-one teaching models;</p>
<p>Learning activities and projects Specific tasks directed toward a predetermined outcome or product related to the learner's needs or application of recent knowledge and skills</p>	<p>To achieve maximal outcomes requires highly motivated learner and lots of instructor support</p>	<p>Create a resource handout for parents; chart review for current practice habits with subsequent plan for improvement; peer teaching</p>

<p>Real life experiences The learner interviews or examines a patient or performs a procedure on a real patient</p>	<p>Experiences should be linked to educational outcomes and previous activities should have been provided to give the learner the necessary skills to perform the task; content is dependent on the availability of patients</p>	<p>Interviewing, examining, counseling, and performing procedures; also can be used in the context of performing a non-traditional interview focusing on the costs of the disease to the patient, economically and emotionally</p>
<p>Prepared cases Group discussion of a case under the direction of a discussion leader: deductive case discussion is where the learner begins with general concepts about the case and proceeds to the specific components (starts with unknown diagnosis); inductive discussion proceeds in the opposite direction, specific to general rules (starts with known diagnosis)</p>	<p>Prepared cases can fill curriculum gaps to provide uniformity across learning sites.</p>	<p>Deductive case discussion of a patient with fever that ultimately progresses to a differential and a probable diagnosis; an inductive case discussion would be a subspecialty case conference or morbidity and mortality rounds where a specific case is discussed and generalizations are made in regard to the information generated</p>
<p>Programmed instruction Textbooks or computers that present material in a sequential method, allowing learners to proceed at their own pace, identify their own deficiencies, set their own objectives and receive immediate feedback, without direct human oversight</p>	<p>Requires motivation and an individualized learning plan to achieve the desired outcome.</p>	<p>Pediatrics Review and Education Program (PREP) or specifically prepared readings with questions and patient case scenarios</p>

After Kern et al.

In choosing educational methods, it can be helpful to group the objectives into the three domains of learning (knowledge, skill, and attitude) and select activities most likely to be effective for each type of objective. For more information on these three domains, see Chapter 3, *Setting Goals and Objectives*.

Knowledge

Methods that are commonly used to achieve knowledge objectives include readings, lectures, individual learning projects, programmed learning, and team learning. The combination of lecture and small group discussion can be especially effective in teaching medical facts, as well as the higher-order cognitive skills of assessment and integration.

Skills

To achieve objectives in the skill domain, the learner must have both cognitive knowledge and the ability to practice the skill under supervision with feedback. Medical educators can no longer depend on the “see one—do one—teach one” approach to ensure competency. According to Kern, the learning of a skill can be enhanced when a learner:

1. Receives an introduction to the skills by lectures, demonstration or modeling, and discussion.
2. Practices the skills with artificial models, role-playing, simulated patients, or real patients.
3. Reflects upon his performance. Audio or visual review of performance may enhance the learner's understanding of what was done right and what could be improved.
4. Receives feedback about his performance from the instructor
5. Repeats steps 2-4 until competence (or mastery) is achieved

As this type of experience requires the learner to expose his strengths and weaknesses to the teacher, creation of a safe and supportive environment is imperative. Methods to accomplish a safe and supportive learning climate begin with the development of faculty-learner rapport, often facilitated by the disclosure by the instructor of his own difficulties with the material. This is followed by explicit recognition and reinforcement of the learner's strengths and then provision of feedback about deficiencies in a factual, nonjudgmental, helpful, and positive manner.

Attitudes

Attitudes are very difficult to measure, let alone change. Methods that can be used to achieve affective objectives include exposure through readings, discussions, and observations of role models (see Chapter 10). Attitudinal change is most likely to be influenced by the use of facilitation techniques that promote openness, introspection, and reflection.

Reflection exercise #3. Answers at end of chapter.

a) You are designing a course on “Delivering Bad News” and would like the learners to demonstrate how to tell a patient that he has a terminal illness. What method(s) would you use to teach this skill?

b) You are designing a course on cultural sensitivity and would like the learners to be attentive to patients who do not speak English and the inherent issues associated with obtaining health care under these circumstances. What method(s) would you use to teach this attitude?

c) You are charged with the development of student knowledge in regards to leadership. What method(s) would you use to teach this topic?

EVALUATION

Evaluation is the cornerstone of curricular development. It reveals whether or not the learner achieved the stated objectives and ultimately the effectiveness of the curriculum. Two processes are necessary to evaluate the curricular intervention: learner evaluation, and program evaluation. The purpose of learner evaluation is to see if the student achieved the stated objectives. The purpose of program evaluation is to assess the effectiveness of the curriculum in regards to content, process, participants, and outcomes.

Evaluation of learners

The current emphasis in medical education is on the assessment of competency. Competency-based education focuses on learner performance (learning outcomes) in reaching specific objectives. The Accreditation Council for Graduate Medical Education (ACGME) and the American Board of Medical Specialties (ABMS) have joined forces on the ACGME Outcome Project and have identified six general competencies for residency education. These competencies are:

- Medical Knowledge
- Patient Care
- Interpersonal and Communication Skills
- Professionalism
- Practice-Based Learning and Improvement
- Systems Based Practice
-

The ACGME website has a “Toolbox of Assessment Methods” that describes a variety of evaluation methods that can be used to assess the learner (www.acgme.org – select “Outcome Project” and then “Assessment”). When choosing evaluation strategies, you need to match the assessment

method to the objective domains (knowledge, skills, attitudes), just as you did for educational methods.

Some suggested methods for evaluating knowledge include written or oral examinations, chart review, case presentations, and case studies. When evaluating attitudes you could use standardized patients, direct observation, or a 360° global rating. When assessing skills the following techniques can be helpful: direct observation with checklists, videotape reviews, objective structured clinical examinations, and clinical performance examinations. (See Chapter 17, *Evaluation and Feedback*) Whenever possible, use multiple methods. Choose the evaluation strategies that best match the behaviors. Select evaluation instruments that have sound measurement properties (reliability and validity), and most importantly, do not overwhelm the learner with the evaluation process.

Evaluation of program

Gall defines program evaluation as the process of making judgments about the merit, value, or worth of an educational program. Program evaluation is the process of collecting data to assess the effectiveness of various components and products of the curriculum. Program evaluation serves multiple purposes. It is a tool for oversight. It can be used to assure compliance, guide program improvement, and assess particular aspects of the program. According to Anderson and Henry, there are four main components of curriculum evaluation: content, process, participants, and outcomes. In the realm of content it would be important to evaluate how well the content of the curriculum adequately addresses the needs of the learners and whether the content is relevant to what the learners need to know in order to be competent. Further, is the content complete in regard to addressing each of the competency areas? In evaluating processes, you want to know if the methods are appropriate for the achievement of the objectives and if there were sufficient resources to sustain the curriculum. You want to determine whether there were too few, too many, or just enough objectives for the allotted time frame. In regard to the area of participants, you want to know if the learners were satisfied with the curriculum, what impact the curriculum had on attitudinal change, and what the level of participation was among the learners. Finally, in assessing the outcomes of the curriculum, you want to know whether or not the objectives were achieved and, if the current curriculum replaces a previous one, how well the learners performed in comparison to those who experienced the prior curriculum.

The process of program evaluation is similar to the needs assessment. The first step is to determine what questions to ask about the curriculum, the second is to decide to whom to ask the questions (learner, faculty, staff, subject matter experts), and the third step is to decide how to pose these questions (rating forms, interviews, direct observation, logbooks, exam performance). Prior to performing program evaluation, think about who is going to see the finished

report and how the data will be used. Collect objective data where possible, and be as comprehensive in the program evaluation as is economically feasible.

Reflection exercise #4. Answers at end of chapter.

Reflect on a curriculum you have developed or are developing. If you do not have one, think about a curriculum or program in which you were a participant, as either learner or teacher. List the four components of program evaluation and provide a sample question for each of these components.

Educational planning

The educational planning process is a cyclical activity that should not be carried out in isolation. It is most effective when it is comprehensive and systematic in its design. Prior buy-in by key individuals is essential to the success of the curriculum. A curriculum that sits on a shelf and is never utilized is a waste of time and energy. Peter F. Oliva in his book *Developing the Curriculum* states, “Curriculum change results from changes in people”. Oliva believes that curriculum developers should begin with an attempt to change the people who must ultimately effect curricular change. The educator, A. Miel, wrote, “To change the curriculum of the school is to change the factors interacting to shape the curriculum. In each instance this means bringing about changes in people—in their desires, beliefs, and attitudes, in their knowledge and skill. . . . In short, the nature of curriculum change should be seen for what it really is—a type of social change, change in people, not mere change on paper.”

SUMMARY

The five steps of the educational planning process (GNOME) are: goals, needs assessment, objectives, methods, and evaluation. A systematic approach to planning educational experiences focuses time and effort on the right solutions to meet the goals and objectives, lends credibility to the process and its outcomes, can facilitate refinement of the experience, can induce buy-in from others affected by the instruction or curriculum, and can help make the work scholarly. A properly designed needs assessment is key to an effective curriculum or educational experience. The four main components of curriculum evaluation are content, process, participants, and outcomes.

ACTION STEPS

- Determine the reason for the educational experience
- Perform a needs assessment
- Write goals and objectives based on results of needs assessment
- Select content appropriate to the goals and objectives

- Determine best methods to achieve the goals and objectives
- Evaluate the program (as well as the learners)
- Use results of evaluation to fine-tune and improve program

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Answers to reflection exercises

1.

a) GNOME – Goals, Needs, Objectives, Methods, Evaluation.

b) A systematic approach to teaching can lend credibility to the process and its outcomes (scholarly work) and can lead to further refinement of teaching and, hopefully, improvement in learning.

2.

a) You want to know what was previously taught about the cardiovascular system and what examination data are available from previous classes of learners. Have other institutions developed interdisciplinary curriculum and what have been their experiences? Are there national requirements, deficits identified by other faculty, or needs identified by the previous learners?

b) Content: what should a medical student know about the cardiovascular system to manage patients with cardiovascular complaints? Learners: what is the average medical student's skill in cardiac auscultation? Resources: will there be sufficient resources available to pair basic scientists and clinicians if small group breakouts are utilized?

3.

a) Role play, simulated experiences

b) Small group discussion; a panel discussion with actual patients where the learners could ask questions and the panel members can discuss their experiences; video; learning activity where the learners are provided with a simulated experience of forms written in a language they were not familiar with; role-plays with simulated patients and staff as they try to make appointments and tell about their symptoms.

c) A combination of case discussions, readings, lectures, and role-plays. Create learning activities where the learners have to work together as a team and switch roles of team leader, so that everyone has a chance to practice.

4.

Content: is the content of the elective relevant to the needs of both the primary care physician and the subspecialist?

Process: did the participants have sufficient opportunity to visualize and outline a management plan for the most common conditions as outlined in the objectives?

Participants: were the learners satisfied with the feedback received on their management plans during the elective?

Outcomes: how did the participants score on the post-test in comparison to other learners who did not take this elective?