LEARNING STRATEGIES & STUDY SKILLS

Formulated & Initiated

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ALPHA Program

"The journey to truly superior performance is neither for the faint of heart nor for the impatient. The developmentof genuine expertise requires struggle, sacrifice, and honest, often painful self-assessment. "

AVICENNA MEDICAL COLLEGE

LEARNING STATERGIES &

STUDY SKILLS

Department of Medical Education

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POLICY DOCUMENT FOR

LEARNING STRATEGIES & STUDY SKILLS IN

MBBS CURRICULUM

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Learning Strategies and Study Skills

Learning Strategies and Study Skills are tactics that the students use to assist them in the learning process. They refer to the learners' approaches to **learning**. It is believed that Medical Students as active learners make use of different approaches for mastering the Theory, Professional Skills and Attitudes.

Definition

The strategic concept of **learning** has been defined based on different theoretical models, with emphasis placed on certain of its characteristics, according to the adopted focus. A basic characteristic, widely accepted by the medical educationists in current lines of research, is that in order for a **learning** procedure to really be considered as a strategy, it has to be used in a conscious and intentional way to achieve an objective in a specific situation under particular conditions.

Policy Statement

The Medical Students will experience a planned and structured program for Learning Strategies and Study Skills in the curriculum as a part of the ALPHA Program which that builds on their Study Skills through the Learning Strategies. Throughout the professional academic years of MBBS the Medical Students will be supported, encouraged and provided with opportunities to learn and develop to their full potential in Study Skills through Learning Strategies as the ALPHA Program is longitudinal and vertically integrated. The students will be trained in conducive environment to achieve the Learning Strategies and Study Skills.

Rationale

- The strategic use of the procedures (as well as of the conceptual maps) means activating declarative knowledge (knowing what), procedural knowledge (knowing how) and conditional knowledge (knowing when and why).

- The Learning Strategies and Study Skills component of the ALPHA Program runs longitudinally throughout the five academic years of the MBBS program to provide a planned and structured training to the medical students. To provide guidelines for medical students on Learning Strategies and Study Skills to ensure that they make good use of these to improve their learning of basic sciences and clinical sciences subjects and the study of medicine in general.

- The implementation, assessments of students and program evaluation will lead to continual improvement of the program.

- To encourage all the students to become reflective and active learners.

- These strategies and the skills learned by the medical students would help them in their professional lives and future careers making them life-long learners.

Learning to Learn in a Medical College and Learning Styles

It is important that medical students should understand and learn the process of learning itself. A medical student is expected to learn by developing concepts on a large quantum of knowledge, skills and attitudes (KSA) at a pace that requires them to be actively involved in their studies throughout the MBBS program.

Every medical student has his or her unique learning style and study skills; this component of the ALPHA Program will help the medical students understand the process of learning.

The ideal learner:

Everyone uses an array of learning styles and study skills that are the preferred way to take in and process new information. Learning style includes the specific and personal learning skills of reading, listening, writing, coding; and the learning processes of reflection, trial and error, or repetition and revision.

The characteristics of an ideal learner are given below;

- Possesses a high motivation to learn

- Has the ability to learn

- Has the ability to retain and retrieve knowledge

- Possesses a fair amount of self-knowledge

- Possesses a foundation of knowledge necessary for understanding new material

- Possesses cognitive strategies for learning; such as: problem solving skills; concept acquisition skills; and discrimination learning skills.

Fundamentals of the learning how to learn process:

Learning and the process of how to learn is a continuous lifelong endeavour involving change and the accompanying fear of change, but once understood the learner will have the experience, confidence, and knowledge to make the learning experience seem effortless in a similar learning situation in future.

Self-awareness is a major component of this process. The learners need to develop awareness of their preferred learning environment and what resources they can draw upon and use for goal setting and monitoring this effort toward reaching their goals.

Cognitive learning to learn skills, the learner would:

• Develop critical evaluation skills.

• Develop an appreciation for the "organizing circumstance" which cause the need to learn something new or to learn in a new way.

• Develop thinking skills:

    i.   **Convergently**--synthesizes incoming information.

    ii.   **Divergently**--making lateral connections, creative thinking.

    iii.   **Critically analytical** focus on major points, where the information comes from, why the information affects the learners, or their work and looking at the parts involved.

iv.   **Intuitively-**-understanding the connectedness between concepts, and the larger or intended meaning involved or implied.

• Learn for understanding, integrate concepts and learn the relationships between concepts.

• Not try to memorize everything.

Learning Strategies to do well at our institute:

1. **Attend every class**

   There is a lot of emphaisis on punctuality at Avicenna Medical College. They should not miss a lecture for trivial excuses. They should listen carefully to lectures and presentations first hand to receive full benefit. Don't depend on other student's notes because each student writes down and organizes concepts according to what's important to them.

    Tutorial attendance is required, come prepared for maximum learning at
    Tutorials

2. **Keep up with the work but pace theirself**

   Study a modest number of hours most days; avoid extremely long stretches of study because memory and retention diminish.

   Develop a regular review schedule; 1 day, 7 days, then 28 days.

3. **Clarify when they have questions**

   Most teachers prefer students to clarify points in class, this gives them a chance to elaborate on unclear points while the class is in session. Students should use office hours to meet the teachers personally for any queries on course material. Faculty are generally very responsive to the questions asked by the students.

4. **Get organized**

   This relates to their personality and learning style. Learn to make the most of their individuality, and particular study habits.

5. **Manage their time**

   Medical student require excellent time management skills because of the volume of work, and necessity to balance reading and clinical rotations. Build in time for personal pursuits and extra-curricular activities.

6. **Establish a study routine:**

   Some experimentation with study space, time, and environment is productive, but as soon as possible, they should establish a routine. The study environment has important psychological triggers for learning. This must include a schedule for revising and preparing for tests.

7. **Ask questions:**

   Get to know their faculty advisor or mentor senior student or faculty member and how to contact them. Don't be afraid to ask questions. The Institution has many professionals willing and ready to help they succeed.

8. **Professional Development and Leadership Skills:**

   Look for opportunities to develop professional and leadership skills
   Once their academic performance is secure, consider joining a student organization. Participate in event planning as an officer. Leadership development leads to professional development.

Make a Time Management Plan

• Analyse their work and sleep patterns and identify high, medium, and low concentration periods.

• Create a study calendar:

   Include exact due dates, type of assignment or exam; clinical schedule;

write in extra curricular activities, sports and exercise, personal time.

• Make an outline of priorities for the terms and whole academic year.

• Identify their most difficult study tasks or subjects and match them to their high

   concentration periods.

Medical Students – Adult Learners

Once the learner believe they are the agent of their own success, they begin to behave in ways that will produce success.

Learning strategies, study strategies and skills, test taking strategies……learners can successfully negotiate the vagaries of academic strategies in order to get what they want to achieve. Medical College in some ways different and are unique compared to the intermediate study the medical students are used to on induction into a medical college. As adult learners, they notice a shift of responsibility from instructor-centered to student-centered learning. Research and practice has shown that adults learn best when teaching is student-centered.
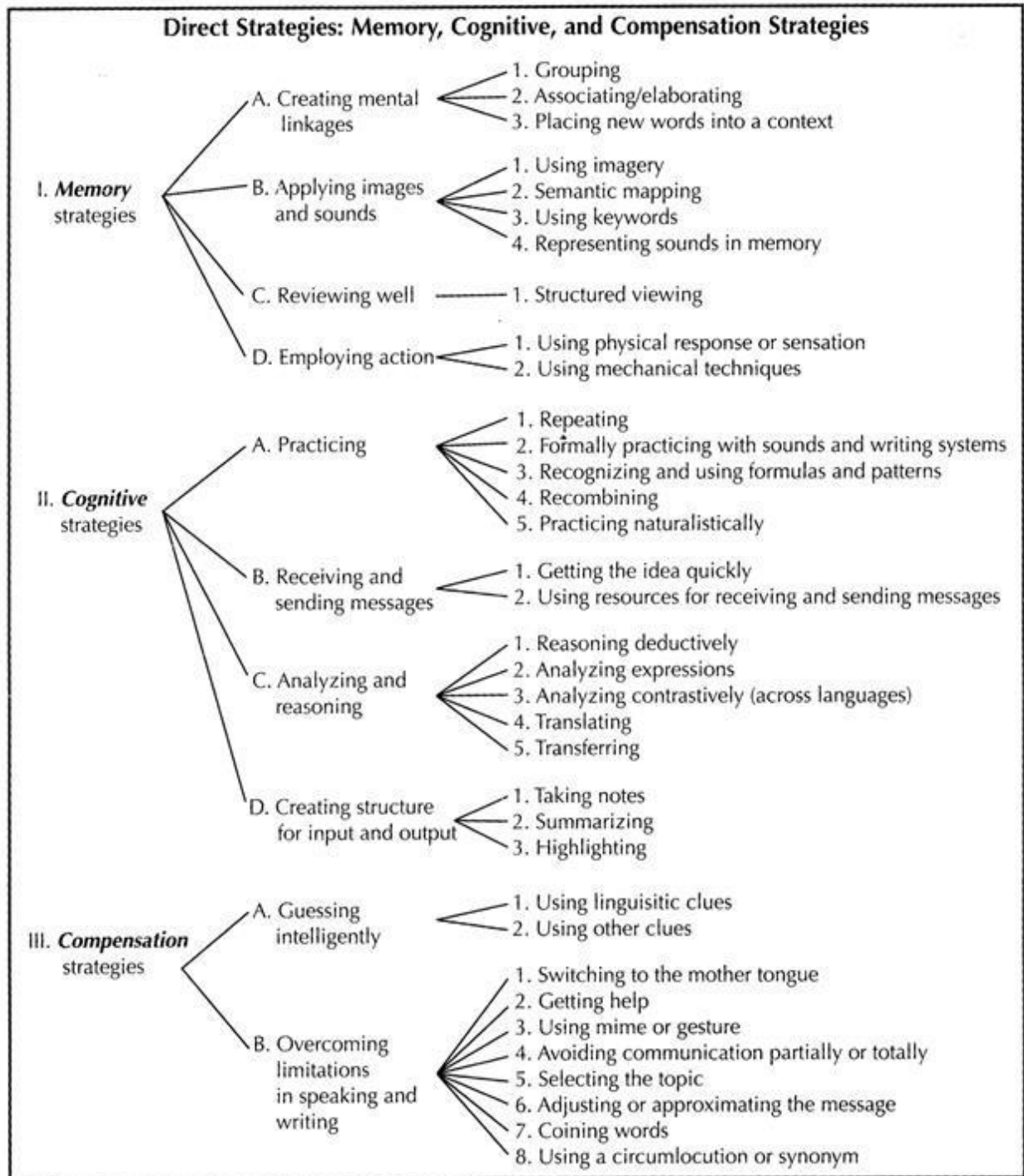
Adult learners tend to exhibit the following characteristics:

- adults tend to be self-directing
- adults bring various academic, work, and practical experiences to the learning situation; these experiences can serve as a rich source of learning resources
- adults often bring a salience to the learning situation because of a "life, task, or problem-centered orientation to learning as opposed to a subject-matter orientation.
- adults usually are motivated to learn due to internal or intrinsic factors (desire to achieve, to know) rather than external or extrinsic forces (such as salary, recognitions).

This Program will help the medical student in developing a strategy to ensure their own success and it will take some of the uncertainty out of the medical college experience.

CLASSIFICATION OF LEARNING STRATEGIES

Figure 5.1. Oxford's strategy classification system

Direct Strategies: Memory, Cognitive, and Compensation Strategies

I. **Memory** strategies
- A. Creating mental linkages
  1. Grouping
  2. Associating/elaborating
  3. Placing new words into a context
- B. Applying images and sounds
  1. Using imagery
  2. Semantic mapping
  3. Using keywords
  4. Representing sounds in memory
- C. Reviewing well
  1. Structured viewing
- D. Employing action
  1. Using physical response or sensation
  2. Using mechanical techniques

II. **Cognitive** strategies
- A. Practicing
  1. Repeating
  2. Formally practicing with sounds and writing systems
  3. Recognizing and using formulas and patterns
  4. Recombining
  5. Practicing naturalistically
- B. Receiving and sending messages
  1. Getting the idea quickly
  2. Using resources for receiving and sending messages
- C. Analyzing and reasoning
  1. Reasoning deductively
  2. Analyzing expressions
  3. Analyzing contrastively (across languages)
  4. Translating
  5. Transferring
- D. Creating structure for input and output
  1. Taking notes
  2. Summarizing
  3. Highlighting

III. **Compensation** strategies
- A. Guessing intelligently
  1. Using linguisitic clues
  2. Using other clues
- B. Overcoming limitations in speaking and writing
  1. Switching to the mother tongue
  2. Getting help
  3. Using mime or gesture
  4. Avoiding communication partially or totally
  5. Selecting the topic
  6. Adjusting or approximating the message
  7. Coining words
  8. Using a circumlocution or synonym

Learning Strategies

To learn how to learn a student should:

1. **Become acquainted with their learning style.**

   A basic part of understanding the learning process is to think critically about the way a student learns. What are their most successful approaches to conquering course work? When they understand their preferred learning styles, they can bring a greater sense of control and flexibility to the demands of each course as required. The following categories suggest learning styles, but are actually learning modalities. Everyone uses these in different circumstances, but most people also have a favorite or preferred modality.

2. **Identify the learning habits, monitor, and adjust as needed.**

   The students should understand themselves as learners; recognize that their style of learning may not fit every learning situation appropriately. They learn to monitor their study strategies for every course and adjust when necessary.

Communicate their environmental study needs, such as quiet, background music/noise, group or individual study space.

3. **If it works, keep doing it.**

   The learning strategies that worked for the medical students in their intermediate study can be retained. They should be alert to problems such as too much to learn, not enough time, unexpectedly low marks in tests. These signal that the old methods may not be working in medical college. If it isn't working, they should not just do more of the same thing. They should seek advice in developing strategies that will work for them now.

4. **Approach each course individually.**

   Strategies for learning course material should be geared toward each particular subject content and expected mode of assessment (such as multiple choice, short answer, essay, factual content, case study, clinical performance).

5. **Use study groups for review.**

   Reviewing material in a group can be very useful because it builds on the approaches and understanding developed by different students. The initial approach to understanding new material is best undertaken individually.

6. **Use test marks to build learning skill.**

   Tests and the marks obtained by students can be considered tools for adjusting their study strategies. They can review incorrect answers during key discussion to discover where their understanding lapsed.

7. **Practice, practice, practice.**

   Active and purposeful study geared toward particular a test, along with adequate practice, can reduce performance anxiety and improve performance.

Ways to use learning style to the advantage of the students

Preference	Defining Characteristic	Characteristic Learning Style	Learning Advice
Extroversion	Find energy in things & people, prefer interaction with others.	Learn by explaining to others. Learn well in groups.	1."Chunk" groups of inter-related knowledge/ information.
Introversion	Find energy in inner world of ideas, concepts, and abstractions	Learn by developing connections & relationships between concepts.	2. Learn to group data. 3. Learn to recognize conceptual relationships. 4. Build compare/contrast tables; flowcharts; and concept maps to illustrate.
Sensing	Detail oriented, look for facts, trust facts	Prefer organized, linear, instructional lectures and handouts. Look for advance organizers. Case study: prefer Application, Theory, Application.	1. Use of group study. 2. Case study method integrates needs of both: general principles & detailed mechanisms. 3. "Intuitive students help sensing students to discover the theory; sensing students help identify & marshal the facts."
Intuition	Look for patterns and relationships among facts, trust intuition.	Prefer to focus on the integrating framework, the "big picture." "Why method." Case study: prefer Theory, Application, theory.	
Thinking	Decisions based on impersonal analysis, logic, principle. Value: fairness, look for objective criteria.	Prefer clear, concise course topics & action oriented objectives.	1. Match course and/or tutorial case objectives to know what they will be tested on. 2. Pay attention to group process in tutorials, keep good communication. 3. Recognize the need to integrate the different levels of learning: rote memorization, integrated meaning, and critical thinking.
Feeling	Decisions based on personal values, potential. Value: harmony, look for consensus, good at persuasion & facilitation.	Prefer group work, instructors can provide guidelines to facilitate group process.	

Preference	Defining Characteristic	Characteristic Learning Style	Learning Advice
Judging	Decisive, self-regulated. Quick to action.	Prefer to limit input and make decisions.	Note taking and test taking: 1.Use speedwriting (omit vowels) 2.Split Page lecture notes with follow-up rewrite in own words. 3.Color Coding notes 4. Anticipate and follow assignment deadlines.
Perceiving	Curious, adaptable, spontaneous.	Prefer to gather more data, wait to draw conclusions.	

Visual

- Visual learners prefer the use of images, maps, and graphic organizers to access and understand new information.

Auditory

- Auditory learners best understand new content through listening and speaking in situations such as lectures and group discussions. Aural learners use repetition as a study technique and benefit from the use of mnemonic devices.

Read & Write

- Students with a strong reading/writing preference learn best through words. These students may present themselves as copious note takers or avid readers, and are able to translate abstract concepts into words and essays.

Kinesthetic

- Students who are kinesthetic learners best understand information through tactile representations of information. These students are hands-on learners and learn best through figureing things out by hand (i.e. understanding how a clock works by putting one together.)

Strategic Learning and Study Skills for Medical Students

1. **Be strategic in developing learning skills**

2. **Reading textbooks preview, review. Highlight text with markers using different colors and scents.**

   Be selective, take note of text headings, subheadings, bold and italic print, this shows what the author considered important. Question while reading; What is this related to? Why do I need to know this? Write notes and questions in margins when reading. Read for understanding. Highlight for outlining later.

3. **Class notes**

   Use a notebook with a line down the center; on the right put class notes, on the left write their own questions and clarifications. Take time to relate notes to text. Rewrite and Review. Compare their "important points" with those of other students. Try writing notes, formulas, concepts, memorization material on "butcher paper" or "newsprint," tape paper to walls and study it by walking around. Highlight portions that become committed to memory. Review, review, review!!

4. **Create concept maps.**

   Use diagrams, charts, graphs. To illustrate important concepts in material, good for showing relationships between concepts. Good visual connections.

5. **Flash cards and Note cards**

   Review often. Good for memorization. Make sure information is accurate!

6. **Outline: text and class notes**

   Good for visual learners. Use Roman numerals in an outline format, then review the outline. Use highlighted text from text review.

7. **Study as if they were teaching the lecture.**

   This focuses their study time and allows they to internalize new information sooner.

8. **Prepare a list of test questions.**

   Can be used as study group review, or self-review. The learning process involved in preparing questions promotes thoughtful long-term learning.

Strategic Learning:

I.   Steps to Strategic Learning:

1. **Set realistic learning goals**.

   These goals serve as the driving force "to generate and maintain the motivation, thoughts, and behaviors" * necessary to succeed. Set and use long-term professional goals (they want to be a doctor) and short-term learning goals (they want to understand this new material).

2. **Types of knowledge needed to be a strategic learner:**
   - Know your self as a learner (learning preferences, talents, best times of day to study, ability to match study skills to learning task); this knowledge helps them set realistic yet challenging learning goals.
   - Knowing the nature and requirements of different types of educational tasks.
   - Knowing a variety of study skills and learning strategies and how to use them.
   - Knowing the contexts in which what is being learned can be used now or in the future.

3. **Use a variety of learning strategies:**
   - manage the study environment,
   - coordinate study and learning activities,

- keep the motivation for learning clear,

- generate positive behaviors toward learning,

- make new information meaningful to you,

- organize and integrate new information with existing knowledge, or reorganize existing knowledge to fit the new understanding and information.

- place new information in a present or future context

- How will it be used?

II. Text Review: A Strategic Reading for Understanding Method

The Survey, Question, Read, Recall, Review

The "foundation approach" also known as SQ3R is outlined below.

> **A. Survey--**the text chapter by reading the headings, sub-headings, and boldface print; then based on this survey of the text...

> **B. Develop questions**--write out questions remaining concerning the text material.

> **C. Read the text**—trying to answer the questions generated earlier

> **D. Recall** the materials read with the book closed.

> **E. Review** the material with the book open.

Study Skill Strategies and Study Support Strategies:

These are Primary and secondary support strategies and sometimes both are needed by the medical students.

> i. **Primary strategies** are those that they use to learn the material directly;

> ii. **Secondary support strategies** are used to keep focused.

1. **Strategies for comprehension and retention.**

> To help they reorganize, integrate, and elaborate the new material:

- set the mood to study
- read for understanding by highlighting, marking important points
- recall material without referring to the text

- correct recall, amplifying material to digest
- expand knowledge by self-inquiry
- review mistakes (learn from tests)
- repeat , mentally process the same material more than once using active recall, also process the information by putting the material into an alternate form such as their own words, or another symbol system like concept maps.

Essentials of strategies for comprehension & retention

i. **Understand strategy:**

On first pass: mark spots they do not understand,

On second pass: focus on marked areas they still don't understand, Then,

- Identify why they don't understand (words, sentences, paragraph)
- Break the problem down into parts, look at the surrounding text for clues
- Check other resources

ii. **Recall strategies:**

After the initial reading:

a. Paraphrase and use imagery. Periodically when reading re-phrase the new material and try to form mental pictures of the concepts.

b. Networking means transforming the material into concept maps, or "networks"; they organize important concepts and represent their interrelationships in a "network map." They can use pre-set named links to code these relationships. For example, the categories of:

- hierarchies (type)

- chains (lines of reasoning)
- clusters (characteristics, definitions)

c. Identify key concepts, develop systematic definitions and elaborations of concepts, like the interrelationship between pairs of concepts.

iii. <u>Digest strategies.</u>

  ➢ Follow the strategies described in understanding section.

iv. <u>Expand strategies.</u>

Go back to material and correct their understanding, expand on the recalled material, store important information, ask and answer specific questions in 3 categories:

  ➢ Imagine they could talk to the author, what questions would they ask? What criticisms would they raise?
  ➢ How can the material be applied?
  ➢ How could they make the material more understandable and interesting to other students?

v. <u>Review strategy.</u>

- Look at the effectiveness of their studying
- Identify errors and determine underlying causes, so that they can modify study methods.

2. Strategies for retrieval and utilization.

It explains how to move all this new material into long-term memory so they can find it again…

i. **Understand**

   The requirements of the task: Use the comprehension-retention strategies focusing on test questions. Paraphrase. Image. Use problem-solving techniques (break material down into parts and make connections).

ii. **Recall**

   Main ideas relevant to the task requirement. Look at retrieval process as problem-solving process. What's the difference between their present state of knowledge and their goal state? Set up reasonable sub-goals to get they there.

iii. **Detail**

The main ideas with specifics, after recall of the main ideas, just fill in with details.

iv. **Expand**

This phase organizes the information pulled together during recall and detail.

v. **Review**

Translate the information/material into their own prose.

Schedule their periodic review: 24 hours, 7 days, 28 days later to make it part of their long-term memory. They must use information to retain it!

3. Environmental Strategies to enhance learning:

i. **Goal Setting and scheduling:**

   Set daily, weekly, and semester goals, they need to schedule time to study, review, and plan, especially long term projects.

   Use a workbook to set...

   - career goals,
   - then skill-oriented sub-goals (that are prerequisite to reaching the

career goals)

- concrete goals for each semester and/or block, and
- a weekly activity schedule.

ii. **Concentration management:**

Two problem sources are attitude problems and problems coping with distractions:

- Attitude problems. When setting the mood to study, learn to monitor their negative and positive self-talk along with the images created. Stop the negative self-talk spiral before it gains momentum.
- Follow their negative thoughts to their logical conclusion in an attempt to bring emotion in line with reality.
- Practice relaxation techniques. In a relaxed state create mental images of them self successfully coping with the learning distractions, and replace the negative self-talk with more positive thoughts, and successful outcomes.

iii. **Use their learning issues:**

- List their questions and what they want to learn
- Keep a running learning issues list like a "to do" list
- Identify the depth and level of understanding they have of the learning issue
- Review the list regularly to see how much progress they have made, it helps overcome any discouragement they may have.

III. Elaboration Techniques for Learning:

Elaboration techniques are used to remember new material and commit the information to long-term memory. There are several kinds of elaboration techniques, choose one that suits their needs.

1. **Visual Elaboration:**

   Develop skill in forming visual images by highlighting new material, including concepts, facts and formulas, making sure:

   - _ The image is clear, striking, vivid and detailed.
   - _ The image has real meaning.
   - _ The image has some activity, energy, movement, and interaction.
   - _ The image relates back to the main idea of the lesson.
   - _ The image shows how main concepts are related.

2. **Verbal Elaboration:**

   Connect new material to understanding and long-term memory by focusing more on language elements, using these triggers:

   - _ Is this material related to something I already know?
   - _ Relate the material to personal beliefs, values, experiences, attitudes.
   - _ Think about the implications of the material.
   - _ Compare and contrast parts of the material.
   - _ Invent stories or sentences, relate parts to other parts.
   - _ Connect information to the main idea.

   Strategies:

   - _ Use analogies: What is this information like?
   - _ Use transformations, paraphrase the information in their own words.
   - _ Teach someone else the new material.

- Organization Strategies: Use whatever works in each learning situation.

- _ Use outlining, highlighting, underlining.

- _ Tree diagrams (or other representations).

- _ Use charts, graphs.

- _ Concept maps--use to relate concepts, especially relationships between concepts

- _ Any kind of schematic to reflect the main idea

IV. <u>Tips for specific learning situations:</u>

1. **Lectures**

2. **Discussions & Tutorials**

3. **Laboratory work & Practicals**

4. **Experiential Learning**

5. **Cooperative & Group Learning**

6. **Small Group Discussions (SGD) Tutorials**

7. **Concept Mapping**

8. **Clinical Problem-Solving Orientation**

1. LECTURES

"Get the most out of class lectures"

1. **<u>Read</u>** about the material ahead of time!!

2. **<u>Look for an overview</u>** at the beginning of the lecture. This will help they organize their thoughts and take better notes--which will assist with long-term

retention of the new material. Create a "concept map" of these major concepts to direct their note taking and review sessions.

3. **Deductive framework:** In these lectures the "general statement of law or principle" is presented at the beginning, and followed with the related and consequent sub-material. The instructor provides the framework for the presentation of material.

4. **Inductive framework:** In these lectures the "general statement of law or principle" is presented last, after a series of statements leading toward the concluding general law. Here, they must construct their own framework, this demands much more attentiveness on their part. Using the classic scientific model, the lecturer proposes a link between discussed examples, and tests the suggestion with known facts and evidence, proposing a hypothesis, and works to determine if it is supported by evidence. At the conclusion of question/answer/discussion session, a general statement of law or principle is the concluding remark.

2. DISCUSSIONS & TUTORIALS
"Get the most out of class discussions & Tutorials"

1. **Read the text.** Prepare for class discussions. Try to make the text material relevant to they.

2. **Preparation.** Find out what the discussion will cover in advance so they know what to look for in the readings.

3. **Clarity of Purpose**. Try to stay focused on an identifiable problem or issue. When reading course material, identify components of an argument while they have the original material in front of they; look for differing opinions. Try to identify the values, beliefs, feelings associated with students' different perspectives.

4. **Common Focus**. Bring books, handouts, outlines to class with they. If the facilitator prepares quotes, overheads, outlines, use this information to focus their ideas in class. Materials the facilitator brings to class are a clue to what he/she believes is important.

5. **Refer to their text.** Use the textbooks and handouts as resources; refer to them often to clarify their thoughts and backup their arguments.

6. **Summaries.** Watch for instructor summaries of discussions to validate what they think was said and organize their thoughts for further discussion.

3. LABORATORY WORK & PRACTICALS
"Tips for Laboratory Work & Practicals"

1. **Use the scientific process skills** of hypothesis formation, identification, and manipulation of experimental variables, and the process of inferring from data.

2. **Learn to improve operational thought** through "inquiry-based, hands on approaches" to laboratory investigation. Begin with concrete examples and move toward the general abstract understanding of basic principles.

3. **Rephrase the write-up:** Learn to rephrase the assignment in their own words to truly understand what is needed.

4. **Look for meaningful patterns**. Learn to summarize data, look for patterns, infer from the data collected whether the hypothesis can be accepted or rejected; and to identify extrapolation questions, such as generalizations, and implications. What do the results really mean?

4. EXPERIENTIAL LEARNING

"Take benefits of Experiential Learning"

Experiential learning takes its thrust from the constructivist model which describes the learning process as one of constructing one's own knowledge. Through the process of active involvement in the learning process, they gain greater depth and usefulness of learning.

In other words, the knowledge is created by the learner. In contrast, the didactic method can be characterized as the instructor imparting knowledge to the learner. According to literature Experiential learning:

1. Allows the students to discover for them self, gaining a sense of ownership and increasing the likelihood that they will actually use what they learn outside of class.

2. Creates awareness of the process of learning, which leads to the probability of lifelong learning abilities.

3. Allows they to appreciate the contributions of all learning styles, as well as the learning dimensions of behavior, intellect, and feeling.

5. <u>COOPERATIVE LEARNING & STUDY GROUPS</u>

"Characteristics of cooperative study groups"

1. Small study groups are self-selected.
2. It may be easier to learn difficult new material with others in a group situation.
3. Groups work especially well for test review.
4. The discovery method of learning depends on an integration of knowledge. The variety of backgrounds and learning styles inherent to group study can support this process.
5. Students can quiz one another:
   - In what way does this information increase their ability to function?
   - How does this new material relate to what they already know?
   - How will this information impact their interaction with patients?

<u>Some guidelines:</u>
   ➢ Each person comes prepared having read the text and outlined important points.
   ➢ Each person prepares 15-20 quiz questions ahead of time.
   ➢ Group study is best used as "drill time."
   ➢ Attend learning and study groups for clarification of subject content, and skills practice.

6. <u>SMALL GROUP DISCUSSION (SGD) TUTORIALS</u>

"It is not that I'm so smart; it is just that I stay with the Problem longer – Albert Eintsein"

Problem-based learning (PBL)

As practiced in the medical school curriculum, grew out of a cognitive psychology framework with its emphasis on constructivist, student centered learning. In cognitive psychology and PBL, instructional strategies integrate concepts such as linkage to prior knowledge, contextual learning, discussion and dialogue as learning tools, constructing learning, use of instructional scaffolding, and the primacy of metacognitive knowledge as a fundamental tool for lifelong self-regulated learning.

Training in medicine has reached such a high level of complexity that an effective integrative strategy is necessary to ensure adequate coverage and deep learning in both basic science and clinical skill development. Student-centered, problem-based learning is a teaching and learning strategy which has wide application due to its effectiveness in helping integrate complex primary data, learning of problem solving techniques for clinical practice, integrating medical science across disciplines in a systems understanding of medical functioning, as well as life-long independent learning skills.

In tutorials, they will use a simulated or actual clinical case scenario, described in the context of medical practice, as a starting point for self-directed learning with small discussion groups. Using adult learning theory as the framework, they are encouraged to follow these steps in a PBL session.

Steps in a PBL Session:

1. **Identify the Problem:**
    Given a written description of a clinical condition, identify the problem(s).

2. **Propose hypotheses:**
    To explain the condition identified. In this step, they recall prior knowledge, brainstorm or brainstream possible hypotheses to explain the clinical condition,

question each other to clarify statements. **Explain the mechanisms** underlying the proposed hypotheses.

3. <u>**Explore what they already know:**</u>

   Use it to make lists of questions that can't be answered at this time for which self-directed study will be helpful.

4. **Identify needed information:**

   Information such as clinical history, physical, lab and x-ray data.

5. **Learning Issues:**

   During discussions they will identify learning issues. These are areas of basic science, clinical knowledge and medical procedures beyond their (the group's) present understanding that will then be researched, learned, and discussed in the group. All members of the group identify, prioritize, and share the key learning issues for research, study and understanding. These learning issues may or may not be addressed in the next tutorial session.

6. **Learning Issue is applied to the clinical problem:**

   New information brought forward through studying the learning issues is systematically applied to the clinical problem and discussed, through several cycles to arrive at an eventual conclusion to the particular case. New learning issues emerge as information is discussed in the group.

The faculty tutors guide they through this process, allowing group members to identify learning issues. The tutor role includes maintenance of group cohesion and functioning, ensuring full group participation, focusing the discussion on important aspects of the clinical problem, answering technical questions to move the discussion along, and importantly, offering the scaffolding to move learning toward integration of important

aspects of basic and clinical science that will explain the medical processes they study and answer the clinical questions emerging from the tutorial case study.

7. CONCEPT MAPPING

"Concept Mapping makes learning easier"
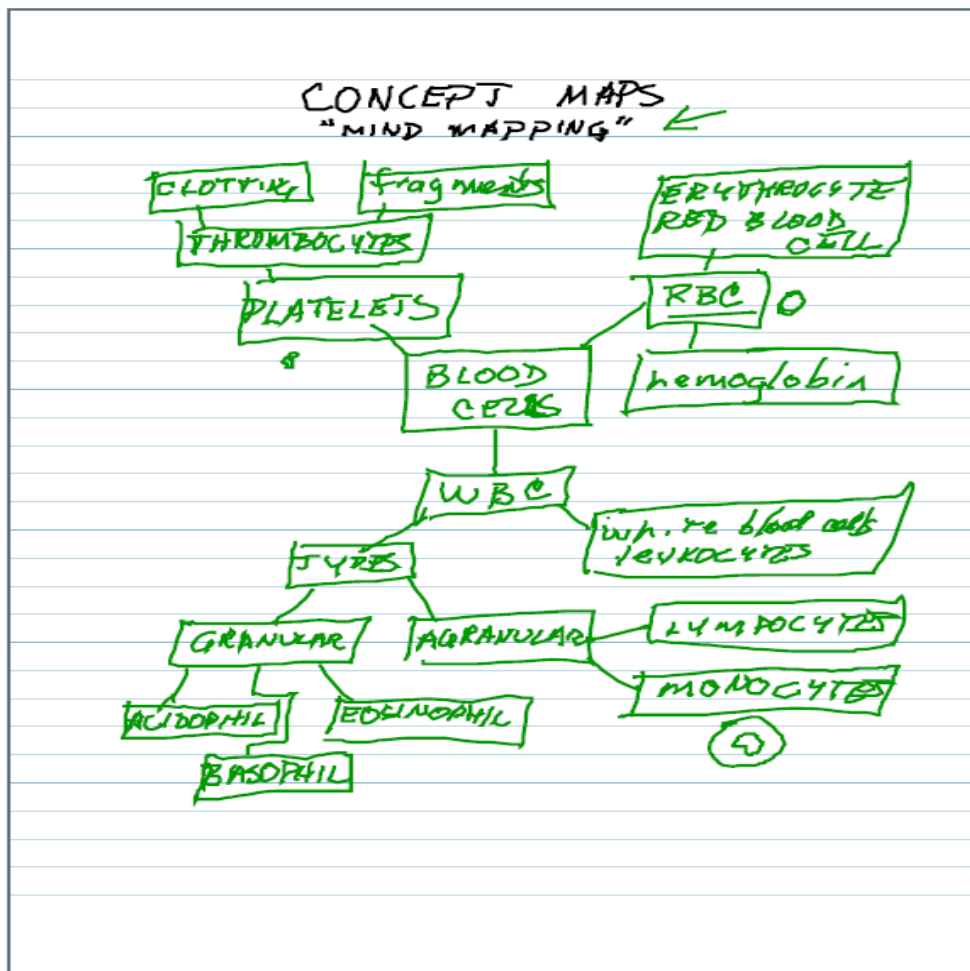
Concept Mapping

Concept mapping is a learning, organizing and review tool that emphasizes the relationship between concepts. This is important because medical knowledge and training draws from multiple sources, the different basic science disciplines, clinical practice, and communication. To fully appreciate this complexity inherent in medical training, clinical case studies are used to demonstrate the relationships between basic and clinical science.

Concept maps can be used from the beginning of medical school to illustrate concepts and the relationships between concepts. This is an excellent way to purposefully "chunk" information and related concepts for more thorough understanding and for better long term memory and recall.

Concept mapping and diagramming may be something they have already used; continuing this technique purposefully and consistently can also be helpful in medical school. Maps can be constructed any way they like, using concepts and factual information important to they, with relationships between concepts drawn by they reflecting what is important to their thinking and learning style.

Making the maps or diagrams them self necessitates a thought process that allows for in-depth learning, new information is more likely to move into their long-term memory, and will still be easier to retrieve in a more complete way later on.

The student map can be drawn with as much detail as suits their needs, from broad maps that outline major concepts to very detailed maps showing cause and effect relationships. Newer, more complex subject areas may warrant several maps with varying degrees of specificity, where other, more familiar subjects can be adequately illustrated with less detail.

Tips for constructing concept maps:

- Select a topic
- Identify the major concepts
- Rank the concepts from general to specific
- Start with the most general concept at the top, then spread out to supporting concepts with circles or squares

- Show linked and/or causal relationships by connecting the appropriate concept circles or squares
- Elaborate by naming the kind of relationship between concepts on the connecting line, or using arrows to indicate direction of relationship

8. CLINICAL PROBLEM-SOLVING ORIENTATION

"Develop Clinical Reasoning"

Clinical Problem-Solving Orientation

Semantic Qualifiers and "Semantically Competent Clinicians"

1. **Learn to use "semantic qualifiers":**
This involves learning to use precise quantifiable language in the clinical setting to communicate patient information. For example, instead of "pain in the right knee" they would use "mono-articular" pain and instead of "pain in joints" they would use "poly-articular" pain, and for "both knees" they would use "bilateral."

2. **Semantic qualifiers** are "qualitative abstractions of the signs and symptoms of a case in which an opposing abstraction is either explicit or implicit." The idea is to develop skill in clarifying and quantifying patient symptoms in order to develop better diagnostic skill. Use of specific terminology that distinguishes symptoms helps to clearly represent the clinical situation in their mind, allowing for clear communication of those representations during clinical case presentation.

Example 1:

"pain over the last two months" could be described as gradual onset (vs. sudden onset)

Example 2:

"the pain is in my second and fourth fingers on both hands" might be characterized as pain that is symmetrical (vs. asymmetrical) in the MCP and PIP joints, mostly small joints (vs. large).

Example 3:

"Mr. Chaudhry, a 35-year nurse, previously in good health presented with a **first**, **acute** episode of **severe** (7/10), right-sided low back pain of **recent** onset (24 hrs) <u>constant</u> and **sharp**, that occurred **on exertion** **immediately** after lifting a patient from bed. The pain radiates below the knee, to the right lateral part of the leg, the medial part of the foot, and to the great toe."

The underlined descriptors noted above are focused, show transformations, follow the (clinical) reasoning, and use comparing and contrasting.

3. **Semantic qualifiers are distinguished by these characteristics:**
- They are more abstract
- They have built-in oppositions
- They are used to build problem representation
- They are a means to access and compare and contrast relevant diagnoses

Examples of semantic qualifiers:

Patient Characteristics	Chronology	Location	Quality
Male Female	Acute Chronic	Anterior (site) Posterior (site)	Active Passive, latent
Tall Short	Immediate, spontaneous Delayed, postponed	Facial Truncular	Apparent, visible Insidious, invisible
	New, first time, initial Second, third, relapse, recurrence, flare up	Intra, within Extra, outside	Burning Crushing
	Morning Evening		Full Empty, hollow
	Sudden, abrupt Gradual, progressive		Greasy Dry

Test Taking Strategies

Standardized exams are useful in that the scores allow they to see where they stand among their peers, at medical school and nationally. They can gauge their progress through medical college and monitor and adjust their learning strategies appropriately.

There are many assessments throughout medical college, both evaluating their command of course content and evaluating faculty members' teaching performance and the medical school curriculum process.

Assessment and evaluation is the basic method for knowing where we stand, academically and in providing the academic environment. For these reasons, they might as well embrace both the formative and summative examinations offered throughout their medical training, and learn to use the results pro-actively and constructively.

Test Taking Tips

- Practice, practice, practice
- Study what you don't know first
- Take a simulated exam when possible and appropriate
- Plan your study periods
- Use positive self-talk
- B-R-E-A-T-H-E

To review: General Tips for Medical Students

1. **Don't cram, review daily.**

   Take the time to integrate new material with what is already known.

2. **Use elaboration techniques.**

   Consciously relate new material to old. How does the medical school curriculum build upon the academic foundation already established? Know their science!

3. **Make new material meaningful to they.**

   Keep their end goal in mind. Ask: How will this help me reach my goal?

4. **Practice, review, practice, review...**

   Calculations, problems, terminology, essay questions, verbal clinical communications; practice and rehearse everything.

5. **Start strong--it is very difficult to catch up.**

   Start heavy studying early in the academic year, then let up later if possible. It is much easier than trying to catch up.

6. **Learn relaxation techniques, apply them when studying & before taking tests.**
   Some stress can be motivational, too much stress limits their ability to perform and accomplish.

Student Support Strategies:

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I.   Students, Stress and Learning:

Learning in the medical college environment is full of pressure to perform and to coordinate a seemingly endless series of competing responsibilities. Stress can be a

great motivator, but finding the right balance for competing interests can become a continuous struggle.

Balance lies with maintaining a learning environment that is challenging but not threatening. Fellow students, faculty and advisement staff can play a role in creating this positive environment. Either too much or too little stress can inhibit learning; remember that stress is defined differently for everyone. Ineffective stress control mechanisms are often employed, however, because of a lack of understanding combined with a lack of confidence in an ability to perform.

"Defensive avoidance" is a common practice: where they avoid studying and avoid completing assignments in order to reduce stress. A helpful intervention for defensive avoidance is "stress inoculation" whereby they make sure to have all course materials, timelines, and due dates, so that they know what to expect; also look for timely feedback on their performance and progress, which will result in a feeling of some control over course activities.

II.   Test and other Anxiety:

Test, or performance anxiety, is often related to inadequate course work preparation. Along with improved study habits, time management, and monitoring of self talk, they can develop specific skills for coping directly with this anxiety. The anxiety spiral is controlled through specific behavioral and cognitive techniques.

A. Understanding the anxiety spiral process.

Effective strategies for recognizing and controlling the anxiety spiral:

1. Bibliotherapy.

Read books and articles describing the phenomenon of test anxiety. Naming an emotional overload is often more than half the battle, as well as understanding that their condition is normal and shared by many other students. When they learn to

identify and control their self talk, they are well on the way to overcoming their anxiety.

2. **Early Detection Training.**

a. **Situational Cues**.

They can learn to improve their ability to identify conditions when problems are likely to occur. "Awareness that they are entering a troublesome situation can then cue them to begin using or preparing to use coping strategies.

b. **Physiological Cues.**

Identified and learned through discussions, homework exercises, monitoring, role playing, and imagery exercises. These cues can help they learn to "tune into what happens early in the anxiety spiral that can be a tip that anxiety is mounting."

Common cues: "Butterflies" in stomach; fast heart rate; cold hands; perspiration; dry mouth; tense skeletal muscles, especially in the face, neck, shoulders, back, and stomach. Learn to tune in to these changes, and adjust their behavior appropriately, as with relaxation exercises.

c. **Cognitive Cues.**

This refers to an awareness of thought patterns that are associated with spiraling emotions. Sometimes the unproductive or even negative thoughts can be identified before the physiological symptoms occur.

d. **Behavioral Cues.**

Certain behaviors are themselves the result of a spiraling string of emotions. For example:

- anxiety about being evaluated might lead they to avoid all instances where this may occur, such as public speaking, tests, writing assignments.

- learn to recognize these avoidance behaviors, letting them serve as a cue to begin coping strategies.

B. <u>**Beck's Three-Tiered Approach to dealing with Irrational Beliefs:**</u>

Literature shows that often at the root of anxiety, especially for students. Irrational beliefs are illogical and exaggerated thoughts including extreme and absolute words, such as:

Irrational belief	Description
Over generalization	"the idea will never work"
Arbitrary influences	something is wrong with___because of _____
Catastrophizing	"I'm just a failure"
Two-sided reasoning	statements just don't connect
Over socialization	"I've seen it work before, I'll just keep trying."
Negative thinking	"I'm just no good."

Self-talk

Self-talk is an important element underlying the experience of anxiety. Once they learn to recognize negative or non-productive thought process, they can use Beck's three-tiered method to alter the pattern.

Step 1: Learn to recognize a negative thought process.

Step 2: Identify faulty reasoning patterns in the automatic thoughts.

For example:

- *dichotomous thinking:* thinking in black or white, i.e. total success or failure

- *over generalization:* difficulty with one test question means they will not be able to finish the whole test

Step 3: Then learn to control their thinking by stopping the automatic thoughts and thinking errors and identifying faulty thought themes. This is accomplished by use of the "what would it mean to they....." technique to draw out their belief system. What are the worst possible outcomes? As diagramed below.

Point A	Point B	Point C
Event: *Anticipating something will happen...*	**Belief System:** (automatic thoughts) *What if...then...then....then.*	**Consequent Feelings:** *Anxiety*

- Learn to **reorient their thinking** to more positive expectations

- **Humor** can be useful to aid in changed thinking

- **Relaxation training** is also useful to calm the anxiety so they can focus on the present.

- *Remember:* It is important to find a coping strategy that works for you, own that method and use it appropriately.

III. Learning Disability:

i. Formal Definition:

A permanent neurological disorder that affects the manner in which information is taken in or received, organized and remembered, and then retrieved or expressed.

ii. What this means for they as a student:

Learning disabilities may surface in an educational setting through the basic functions such as memory, oral expression, comprehension in lecture format, organization of thoughts and concepts, and retrieving information and expressing knowledge either verbally or in writing. These processes show up in all academic areas of reading, writing, spelling, logical reasoning, math, oral communications.

True learning disabilities do not go away, however, inconsistencies are common as students learn over time to compensate for their individual differences.

To fit the *diagnostic criteria* for a learning disability, intelligence must be measured at average or above. Disability does not prevent learning, although some students may need special accommodations. All academic areas are usually not affected, as students may show strength in some areas and weakness in others.

For example, a student may be strong in biostatistics, but weak in reading comprehension and writing, or may understand concepts well but do poorly on tests.

iii. <u>**Indicators that could suggest the presence of a learning disability:**</u>

Indicators are varied and individual, some may include: working hard in class and feeling they know the material, yet still doing poorly on tests; consistently overloading on course schedule, or taking courses without planning; poor self management skills; repeating classes, withdrawing from or taking incomplete in many courses; high levels of test anxiety, finding there is not enough time to complete tests; academic history of special education support; anger and frustration because of spending large amounts of study time with lower results than peers.

iv. <u>**What kinds of help are available?**</u>

They are the best source of information on their learning needs. Some accommodations are simple: additional time for academic tasks, help with providing alternate formats for studying options.

<u>iv. Gender & Intercultural Communication:</u>

1. <u>What is communication?</u>

Communication is a process involving the exchange of information. Successful communication requires a transmission of meaning, and that understanding and acceptance also occur. The role of receiver and sender is interchangeable because the roles keep changing and interchanging. Because the ultimate goal of communication is acceptance of the message, some modification of original message, using feedback both on the part of the receiver and the sender may occur. This is especially true of cross cultural communication. It is essential that they check for meaning and understanding.

2. Communication and the classroom.

Communication is natural among people but misunderstandings are common. The classroom is one of the worst places for misunderstanding to occur. According to literature disastrous consequences may occur, such as: damaged relationships between learner and instructor, loss of confidence in the learner, loss of the instructor's credibility, and confusion, disappointment, or despair on both sides.

Communication Style: Learner and Faciliator/Teachers

It is important to realize that the communication style of their instructor can conflict with their *preferred communication* style.

For example, important differences can include:

- wait time between utterances (how fast or slow do they talk?)
- how a person gains attention
- how a person acknowledges that a message has been understood (verbal, and non-verbal)
- how people take turns in a conversation

Pay attention to both classroom and tutorial communications, between faculty and fellow students. Miscues can lead to inappropriate responses on the part of both students and instructor, a seeming uncooperative atmosphere, and subsequent potential for lack of respect. Whereas good communication can build trust, shared decision-making, good peer learning and teaching, and confident learners.

3. Barriers to effective communication.

Some barriers to effective communication in the classroom:

- **Poor listening.**

  On the part of instructor (sender) or student (listener).

- **Information overload**.

  Student or instructor (receiver) may become overloaded with information and the pace of presentation.

- **Poor sequencing of presentation**.

  A jumbled presentation can interrupt the learner's concentration.

- **Semantics.**

  The use of language without precise meaning. A lack of clarity in presentation. Statements that are too general may cause misunderstandings of content.

- **Distancing.**

  The instructor may appear too distant from learners. A misunderstanding of intention may result in loss of content on the part of learners.

- **Mental set and trained incapacities.**

  The practice of selective retention on the part of learners. People tend to retain information that relates to something they already know, or that fits their belief or mental system by training.

- **Anxiety and fear.**

  This is especially true of learners that have been out of the classroom for many years.

- **Lack of interest.**

  A problem of motivation for the subject content.

- **Outside distraction**.

  Problems with the learning environment.

- **Lack of background information**.

  This involves learner characteristics that can impact their learning.

- **Self Concept/Self Image.**

  Learner and instructor comparing themselves to one another and forming judgments can affect communication in the learning environment. Conflict may arise if the learner feels threatened by the instructor's attitude, expectations, or classroom communication style.

4. Gender & Intercultural Communication.

Defining culture:

A social system consisting of learned behaviors, artistic traditions, technological achievements, communicative techniques, religious beliefs, philosophical concepts, even genetic characteristics.

Defining intercultural communication:

Interaction between members of differing cultures, creating the possibility that the value systems of the interacting members are so different that real understanding is quite difficult.

Elements of communication that may be affected by culture:

Perception, information retention, pitch, articulation, intelligibility, translation, and dialect.

Non-verbal factors in intercultural communication.

i. **Personal space**--that distance characteristically kept between people in various cultures; symbolic of the nature & extent of relationships between people.

ii. **Smile-**-shows pleasure, almost universal in meaning (also frowns), can also be used to indicate scorn, ridicule, or contempt. Can also signify discomfort or embarrassment.

iii. **Posture-**-associated with a person's frame of mind and general attitude about themselves, varies by culture.

iv. **Smell**--associated with type of food consumed, among other things.

v. **Eye contact**--very basic and varies by culture; can show respect either looking straight at another or looking away depending on cultural context.

vi. **Touch-**-specific to culture; closer personal space cultures touch more to communicate.

5. Communication and medicine; cultural competence in health care.

Good communication between patient and health provider is essential for providing and receiving good health care. The practitioner brings a wealth of medical knowledge to the clinical setting, but only the patient really knows what their symptoms are, how long the duration and how intense, and other pertinent diagnostic information. Patients

need to feel comfortable in the health care setting, in order to communicate freely and honestly with the health practitioners. It can be helpful to verify communications and ask patients what their concerns are, and to be aware of family needs.

The achievement of good communication between patients, families, and health providers, despite differences in ethnicity, language, or health practice is known as cultural competence in providing health care. As a medical student, they should understand how good communication impacts the quality of health care delivery and develop their awareness, through clinical experience, of how to communicate well with their patients, whoever they are.

Glossary

Term	Definition
Active Learning	Means active listening, reading, and studying for understanding, and taking an interactive role in the learning process. Student is proactive, completes advanced preparation for class to discuss, analyze, participate. Student centered.
Cooperative Learning	Interaction between instructor/student, and student/student that promotes learning, usually in a group setting.
Equal Opportunity	The process of engaging and including all students as partners in the learning experience.
Group Process	The interactive behaviors inherent in communication among several individuals embarked upon a shared purpose or goal.
Learning Disability	A permanent neurological disorder that affects the manner in which information is taken in or received, organized and remembered, and then retrieved or expressed.
Learning Process	Reflection, trial and error, repetition

Learning Skill	Reading, listening, writing, coding, mapping, memorizing.
Learning Strategy	An organized and purposeful approach to the learning task.
Learning Style	The way a student learns best. Very individual. Could be a preference for kinesthetic, auditory, linguistic, or visual ways of learning, among others.
Learning to Learn	The process of identifying one's preferred style and best strategy to use for each learning task.
Non-traditional teaching methods.	Interactive between instructor and students. Both students and instructor are active participants in the process of learning. Learning is self directed, as an active problem-solving orientation, instructor acts as facilitator and coach.
Passive Learning	Student listens to prepared and presented material, takes notes, and is tested on recall and understanding.
Traditional Teaching methods.	Lecture, class notes, review, test. Discussion centers upon the instructor. Instructor centered.

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