

**2ND
EDITION**

STUDY GUIDE
for
MEDICAL STUDENTS



PROF. DR. TEHSEEN IQBAL

Bsc, MBBS, M.Phil(Physiology)
Ph.D, Medical Physiology(France)
Certificate in Health Professions Education
(Khyber Medical University, Peshawar)
Vice Principal & HOD Physiology
RYK Medical College
Rahim Yar Khan

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PREFACE

It's my proud privilege to write preface for Second Edition of "Study Guide for Medical Students". It encompasses all the essentials of learning at a medical college pronounced in modest comprehensive way. These essential tips include their role as medical student, success in medical career, improving listening skills, enhancing the memory & many others.

The author, "Prof. Dr. Tehseen Iqbal", was introduced in absentia to me while I made the charge of the Principal & Director DME of KMSMC Sialkot. He was my predecessor Director DME & pioneer who instituted the department & played vivacious role in CPD & research. His contribution will be ruminated long. I also read his interesting autobiography. He is PhD in Medical Physiology & proven celebrated veteran medical teacher. He is author of many research papers, freelancer articles on social issues & medical books.

I am propitious to find him around here on my joining as the Principal RYK MC Rahim Yar Khan. He aided me in all sorts of academic activities, CPD workshops & research as Vice Principal of the college.

He worked relentlessly to author this book on plea of curriculum committee of RYK MC. It is factual useful guide explaining the art of medical learning in fascinating, commonsensical and modest way.

I am poised that our students and even teachers will be beneficiaries of this book.

**PROF. DR. TARIQ MAHMOOD REHAN.
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PRINCIPAL
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RAHIM YAR KHAN.**

INTRODUCTION

Medical education is hard and requires maximum effort by the students. It is reported that over the years, first-year medical students have diminishing ability to understand basic concepts. Teachers believe that the **nature of medical subjects**, the **students' effort to learn** these subjects and **students' ability to integrate new knowledge** with their previous knowledge are the most important determinants of medical studies being hard. In medical schools, different teaching methodologies are being used and important point is that the students should learn the basic principles and concepts at appropriate depth of understanding. Preferably the students should learn to think as doctors from their day one in the medical college. Basic Medical Sciences, which are taught in the start of medical education, are the scientific basis for medical practice. Without the knowledge of basic medical sciences, medical practice is mere quackery.

There are many important differences between the pre-medical and medical studies. One of the major differences is that there are no textbooks in medical college and the course or syllabus is in the form of topics. Students should know the most recent and comprehensive knowledge about these topics. So, teachers always advise their students to study the latest editions of books. The second difference is that the knowledge gained in first year of MBBS should be remembered throughout life because it will help the doctor in his daily practice. So, students should learn memory techniques like making notes, mind maps etc. The Third very important difference is that students have to master many manual skills and skills to use medical equipment which is required for their professional life. Fourth difference is that students should remember that all knowledge of all medical subjects is going to be applied to a single human body – the patient. That means student should not only be able to integrate concepts within a subject but should also integrate concepts studied in various subjects. Remember that MBBS is one course of five-year duration.

Medical students go through a **Learning Cycle** many times during an academic session. This cycle starts from **Information Gathering Phase** proceeding to **Integration and comprehension Phase**, **Memorization and Consolidation Phase** and the **Presentation (Test/Examination) Phase**.

1. Information Gathering Phase:

From the very beginning of your course, you gather information through lectures, books, internet resources and fellow students. For taking benefit from Lectures, improve your **listening skill**. To benefit more from reading books improve your **reading speed**. To benefit from Computer based material, improve your **Computer skills**. Discussion among fellow students and discussion with senior students also help in your study. For this, you need effective **Communication Skills**.

2. Integration phase:

After the whole week of information gathering phase, comes the 'Sunday'. Sunday is actually a 'sum day' for medical students. You should sum up the material presented to you during the whole week or month and try to integrate the material with material already known and previously learnt. Integration in medical college is Intra-subject and inter-subject integration.

3. Consolidation phase:

While preparing for test, you revise and memorize the course covered using different Memorization techniques e.g., **repetition** is your friend, make **notes, mnemonics, mind maps** --- see details on internet.

4. Presentation Phase-----The Test or the Examination

During the test you have to recall the material memorized and then write it down on the paper or speak out during viva exam. Review your writing speed and writing style to achieve higher grades in the examination. Use appropriately, "Explanation skill" and "Précis writing skill" during the test. Develop your communication skills for viva voce examination by discussing topics with your fellow students.

Medical teachers are not teachers in the strict sense of the word, they are just **facilitators**. They facilitate or help students to learn. Medical students are also not students but **self- learners**. Learning is their duty and responsibility. Students should not expect that teachers will teach a subject word by word. Teachers will just teach you how to learn the subject. Learning is a social activity and it does need a team work. This is especially true for medical education. Collaboration with your teachers and fellow students is a must. Teachers prepare their lectures by using different resources e.g., books, internet, medical journals etc. So, lectures are the most important thing for your study. Teachers prepare

their lectures targeting an average of 60-70 % marks in the pass out examination. Brilliant students should build up their knowledge over this baseline. Students below this level should catch up with this level to pass through the exam. Teachers use transparencies, Over Head Projector (OHP) and PowerPoint Presentation for their lectures. Take notes during lectures because this helps to memorize the material easily.

ESSENTIAL TIPS FOR NEW MEDICAL STUDENTS

[WHITECOAT, MD](#) / [EDUCATION](#) | JULY 17, 2012

Here are some of the things that will help you in your studies:

1. Cramming is bad.

Everyone does it, but it doesn't help you learn. To me, learning was understanding the concepts, not memorizing the words. Even anatomy and pharmacology were about memorizing relationships. They still are. I learn directions by seeing where things are on a map and by relating those things to the place I am going. I learned medicine in the same way. I also used to try to read ahead in the books so that when a professor addressed a subject and I did not only understand it, I could ask questions in class about it. Didn't always work out that I could read ahead, but when I did, it seemed to help my understanding and retention.

2. Avoid study groups.

There were always people in our class who studied together. They always used to interrupt each other's studying with unrelated questions or with discussions about the latest TV show. When crunch time came for tests, they knew what was happening on "Friends" but didn't always have a grasp of the concepts for the tests. That wasn't for me. I would just bring my book to a secluded spot in a little known building on campus, plug my headphones into my CD player, and listen to instrumental music (George Winston – you're the *man*) while I studied. Scary that MP3s weren't even around when I was in medical school.

3. Focus, dammit.

Turn off your internet connection. Shut down your computer. Don't even take it with you. Stop checking your e-mail messages on your phone. Don't take it with you, either. Or take it and pull the battery out of it. Take your book, some ear plugs, an MP3 player, some paper, a pen, and take notes on what you're trying to learn. Writing things out helps you remember concepts. All the other distractions make it harder for you to concentrate on learning. We didn't have "smart phones" when I was in medical school, so I didn't have to worry about that distraction. Think about it now, though. Does it really matter whether you get your BFF's text message immediately or a few hours from now? Do you really need to check your e-mail that often? Does it matter that you won't get to read my

latest post for a few hours after I hit the “publish” button? If there’s something that important pending, then deal with it before you go to study. When you study, focus on studying.

4. Get copies of old tests.

This is very important! Most professors are not industrious enough to create new questions for each exam. And there are only so many questions you can ask about the same topic. Therefore, many questions are repeated. Some may have wording changes, but most questions have the same concepts. By learning and understanding what concepts appeared on previous tests and are therefore important to the professor, you’re well on your way to learning the concepts — and passing the tests. Back before we had all these fancy computers and scanners, the students used to have a copy service where we paid extra so that we could get paper copies of previous test questions.

5. Don’t get down on yourself.

You’re going to do poorly on tests. I did. Almost everyone did. Don’t you just feel like bopping the guy in the head who aces every test and then sits there with his smug grin bragging about it in the study lounge? You may be smart, but you’re a tool, pal. You know what they call the person who graduates lowest in his medical school class? Doctor. You don’t need great grades in every subject to be a decent doctor. Trust me. I’m living proof. Study hard, do your best, keep plugging along, and don’t get discouraged. If you put in the effort, you will graduate.

6. Learn what medicine is all about.

Don’t just stick to the textbooks. Read journal articles or medical blogs about topics that interest you. Yeah, it’s more reading, but those articles are only a few pages, will hopefully be more enjoyable, and will help bring together all of the facts that you are learning to show you how to apply them. There’s a big difference between “book sense” and “common sense.” You need both to succeed.

7. You're not a doctor.

Don't act like one. We had one guy in medical school that used to wear scrubs and a white coat while he was in the grocery store. He drove a nice car and used to pick up on a few women that way. Total fool. Most of the people in school rolled their eyes when he walked by – even when he was dressed normally. Even I wasn't immune to the allure of being called "doctor." Funny thing is that now I detest being called "doctor." When I was a student, I used to carry a medical bag in the back of my car wherever I went. Still do now, but at least now I have the proper equipment and I know how to use it. Then — well, I'm not sure how many accident victims would benefit from me testing their reflexes or doing a funduscopic exam on them. I also had a large bore needle that one of our more senior professors said we could use as a "makeshift cricothyrotomy to establish a temporary airway." Then we thought how cool we would be saving someone's life by sticking an IV needle in their neck. Now, I still laugh at some of the stuff I used to carry in that bag. Thank goodness I never actually pulled the bag out of my trunk. People will ask you for medical advice. Tell them you aren't a doctor and you don't know. Or tell them you haven't studied that topic yet. Don't act like you know what you're talking about. More often than not, you'll give them the wrong advice and you could get yourself into trouble in the process.

8. Set aside a day to relax.

All work and no play makes Jack a dull boy. We usually had our exams on Monday mornings. Most of us studied all weekend. Sometimes during weeks with less difficult tests, we'd take a Saturday night off and go to the bars. However, Monday afternoon and evenings after school, everyone relaxed, partied, went to the beach, played cards, and acted like normal people. Some of the fondest memories (and the most incriminating pictures) I have from medical school were from events that took place on Monday nights. Make friends and have fun. It's a school, not a prison.

9. Don't forget your family.

Your family is proud as heck of you for making it into medical school. Call them once in a while. Better yet, write them an e-mail and send pictures. Chances are that they sacrificed a lot so that you could go to medical school and they probably brag about you to all their friends. Give them some material to brag with. Without your family, you probably wouldn't be where you are right now. Trust me ... you'll miss them when they're gone.

TIPS TO SUCCEED IN MEDICAL SCHOOL

By Anthony Youn, MD, and Brian Smith, MD on November 3, 2011

Becoming a doctor isn't easy. If you're planning to go into medical school, be prepared. These four years will be sleep-deprived, stressful, exhausting, and humbling – but ultimately rewarding. We went through medical school together at the Michigan State University College of Human Medicine. Although there were times when it didn't look like it would happen, we survived, matched in our top residency choices, and are now successful doctors with the practices we always dreamed of. Looking back, most physicians have certain words of advice they wished they heard prior to becoming a doctor. Here are our ten tips – learned the hard way – for pre-med students on how to succeed in medical school with the least amount of trauma.

On Preparing for Medical School...

Have Fun Before You Start

The day your medical school orientation begins, life as you know it is over. For the next four years you will be dedicated to learning everything it takes to become a doctor. This means that you will never again have a three-month summer vacation. Any vacation time you have in medical school should be spent shadowing doctors in clinics, performing research, or studying for your boards. So the summer between undergrad and medical school is a key time for you to HAVE FUN. Enjoy yourself, do some travelling, and see some old friends and family. If you want to glance at an anatomy atlas or your old college biochemistry notes, feel free. Just don't forego that trip you always wanted to take. Do not stay home and study. There will be plenty of time for that later.

Minimize Distractions

When preparing for medical school life, it's best to minimize any distractions that could take time away from what will be your most important task: studying. It's like Tony wrote in his medical school memoir, *In Stitches*: "Overall, medical school means study. And then study some more. And when you finish all that studying, you will definitely feel the need to study." That means you should consider cancelling your Netflix subscription, since your days of watching an entire season of *It's Always Sunny in Philadelphia* in one sitting are over. Only perform essential functions on your computer — you will not have time to tweet or blog nearly like you did in college. Don't take a video game system to medical school. You may have a few minutes for *Cut the Rope* on your

smart phone, but that's about it. Consider ending any bad romances, since it's best to limit the drama in your life. Unhealthy relationships steal valuable time and focus. Finally, don't spend a ton of dough on a brand new, big- screen 3-D television. You will either feel obligated to watch it, causing your test scores to drop, or you'll neglect it and four years later find it was barely used and now obsolete.

Live Off Campus

One of the biggest mistakes we made when preparing for medical school was signing up to live in the graduate dorm. We were both single males who erroneously believed that living in the grad dorm would enhance our social lives and give us a good place to study. NOT TRUE. There were two main problems. First, the grad dorm was filled with international students. We had little in common with our neighbors and therefore didn't make many friends. Second, living in dorms, whether graduate or not, came with distractions. The walls were thin, people were talking at all hours, and our rooms were the size of veal pens with comparable aesthetics. Tony spent most of his first days as a medical student listening to his neighbor flush the toilet in their shared bathroom. Even worse, he was forced to spend his nights hearing an over-enthusiastic couple in the room above enjoying each other. This is not the way to start life as a doctor-in-training. As a medical student, you are no longer an undergrad. Get an apartment.

Relax – You've Made It.

The weeding out process is over. Once you receive the golden ticket of admission to medical school, you are almost certainly going to be a doctor. Most medical schools really want you to succeed. This is not like undergrad, where the pre-med professor tells you, "Look to your left. Look to your right. Only one of you will become a doctor." On the contrary, it's more like, "Look to your left. Look to your right. All of you will become doctors... except that shifty-looking guy in the corner of the auditorium." So relax: the next four years will be tough, but you will likely survive and get your M.D. or D.O. like the majority of other medical students.

On Being a Successful Medical Student...

Balance

It's easy to let the stress of passing exams and attending classes in medical school completely take over your life. When Tony was in medical school he took up running. He hates, and has always hated, running. Tony took up running as a medical student because it was the most efficient way to burn a bunch of calories and get back to studying. Don't neglect sleep, exercise, or eating a balanced diet. Most importantly, keep in contact with the ones you love – especially your parents, your spouse, and (if you have any) children. Studying is a very convenient excuse to avoid returning emails and calls, so resist the urge to use it. You will need these relationships to help support you during those trying times in both med school and residency. Plus, you will need people to practice your physical exams and blood draws on.

Run Away

Every so often get away from campus and visit your parents or some old friends. Get perspective on life. It's easy to become completely self-absorbed in the intense world of medical training and forget that there is a whole world outside of medicine to enjoy. Sometimes it's therapeutic to chat with someone about something other than the next anatomy exam or the Krebs's Cycle. Or to eat a meal without hearing tales of the grossest medical problems imaginable. Spend time talking with people who work in fields outside of medicine... as long as they're not ambulance-chasing attorneys.

Look Professional

This is not the Hard Rock Café in Las Vegas. You may want to consider getting rid of your chin or lip piercings, low cut tops, gauge earrings, funky hair, and Speedos. Patients expect their doctors to look mature and professional. Doctors expect the same out of their medical students. In the clinical years, many medical students have been graded down due solely to their inappropriate attire. Look the part and others will believe you in the role.

Wear Plastic Shoes

Take a tip from the nurses and buy a pair of plastic shoes, such as Crocs. Your shoes are going to come into contact with multi-colored bodily fluids, just like your blindingly white short lab coat. Crocs and other plastic/rubber slip-on shoes are comfortable, perfect for a night on-call, and easy to hose off after a direct hit from the afterbirth on your OB rotation.

Network

We encourage all medical students to take some time to network during their few weeks off in medical school. Meet doctors in the specialty you're considering by shadowing them in their offices and volunteering in clinics. At the beginning of your fourth year you will need at least one doctor in the specialty you choose to write you a letter of recommendation. The more you network the better chance you have to get a great reference. These references can point you toward the best residencies – sometimes chaired by your references' good friends. In medicine, who you know and what they say about you counts a ton.

Don't Take It Personally

Tony writes a lot about this in his book in Stitches. There is a definite hierarchy in the hospital. As a medical student you were probably at the top of your high school class, have four years of college under your belt, and are within a few years of getting an M.D. or D.O. So where do you lie on the hospital food chain? THE BOTTOM. While you will undoubtedly encounter physicians and nurses who treat you like dirt (Tony described a nurse who threatened to cut off his scrub pants in the middle of an operation, leaving him with only his Joe Boxers), do not take it personally. This, too, shall pass. Embrace the fact that you are a student, put your ego aside, and use your four years of medical school to learn as much as possible. You owe it to yourself, your teachers, and – especially – your future patients.

IMPROVE YOUR LISTENING SKILLS

**“A doctor should be a patient listener.”
“Speaking is one art, listening is hundred arts.”**

Listening is a primary communication skill essential for human learning and reported to be positively correlated with educational achievement. It is especially needed by medical students and medical doctors. Medical students should be able to extract knowledge from the lectures of their teachers who may be having different vocabulary, style, accent and pronunciation. Listening skill enables the doctor to explore fully the ideas and concerns of the patient during a healthcare encounter.

LISTENING

Communication is a two-way process of talking and listening of which listening is more essential and important. Different stages of the listening process. Listening allows you to make and keep healthy relationships. It makes people confide in you. Stephen Covey says in his *Seven Habits of Highly Effective People* “seek first to understand (through listening), then to be understood (through speaking).” Listening allows patients to talk without undue interruption thus helps doctors to concentrate on what the patient says and to understand their feelings as they speak. Be alert to verbal and non-verbal cues. To demonstrate your attention, use appropriate body language and facilitate comments. Allow pauses or silences. Leave time at the end of the interview to summarize what the patient has said and ask if they have anything to add. Some common pitfalls to be avoided while listening are: Not allowing the patient to tell their story in their own words, asking too many questions, unnecessary interruptions and thereby failing to pick-up important verbal and non-verbal cues.

STRATEGIES TO BECOME A BETTER LISTENER

Poor listening creates misunderstandings, waste of time and even allows for mistakes. Following are some key to effective listening:

1. Show understanding and acceptance by using non-verbal behaviors like tone of voice, facial expression, gestures, eye contact, and postures.
2. Take personal responsibility for understanding what you hear.
3. Concentrate and make good effort to focus on the person speaking.
4. Listen without interrupting, disagreeing or offering explanations.
5. Use body language to show that you are involved in the conversation.
6. Ask questions to be certain you are interrupting the message correctly.
7. Take notes as necessary.
8. Nod to let your teachers know you are following them.

MAKING THE MOST OF LECTURES

This study guide shows you how to make the most of lectures through the use of active listening skills and effective note taking techniques. These skills will help you produce clear, helpful notes that will be of use to you in all your study activities.

The purpose of lectures

Lectures are commonly used:

- ❖ to offer an overview of a subject - you will need to fill in the detail;
- ❖ to deliver detailed information on a subject - you will need to fill in the background.

Lectures provide you with a valuable resource. They can synthesis the views of several researchers and text books or provide new and unpublished information.

This guide shows you how to make the most of your lectures by following four main steps:

1. preparing for lectures;
2. listening in lectures;
3. taking notes;
4. following up lectures.

1. Preparing for lectures

Know your course

Find out how your lectures relate to the course as a whole.

- ❖ Do the seminars or tutorials prepare you for the lecture or do they follow up the content of the lectures?
- ❖ Are there opportunities to discuss the lecture content in your seminars?

Look in your module handbook for more information or ask your tutor.

Reading before the lecture

Find out if there is any recommended reading you can do in preparation for the lecture. Preparatory reading will make it easier for you to engage with the lecture content and provide you with a framework for making opinions and comparisons. When the lectures are linked in a series, you should also review your notes from the previous lecture.

2. Listening in lectures

Listening to the lecture should take priority over note taking. If you listen effectively you will have a better understanding of the lecture content which will enable you to write clear, helpful notes that will make sense to you after the lecture.

Listen for structure

As you listen to a lecture, try to focus on the structure of the lecture content. Sometimes the structure is laid out for you at the beginning of a lecture, either as a list of headings or as a potted summary of the content. Make a note of this structure straight away, it will give you a sense of direction, enabling you to anticipate points or take up the thread of information again should you get lost. During a lecture, a speaker may structure their material by using verbal signposts such as:

"I shall now discuss..."; "My next point is....."; "Finally...".

These signposts identify a new point and you can show this in your notes accordingly. Other sign posts include:

- ❖ pausing to indicate a new point or heading;
- ❖ summarizing what has been said prior to moving on.

There are other, less obvious linguistic signposts which can help you structure your notes; you will need to listen for these. Examples include:

"On the other hand...."; "Others have argued..." ; "Turning now to...".

Certain words and phrases will indicate that an illustration is being given:

"an example of this is..."; "this can be seen when...."; "evidence for this can be found in...".

Your ability to listen will improve with experience. You will be better able to spot digressions or additional examples and highlight these in your notes.

3. Taking notes

Avoid taking too many detailed notes. A dense transcript will be difficult to work with at a later stage. The following techniques will help you make structured, useful notes.

Using structure in your notes

- ❖ Use headings to order information.
- ❖ Give each point a new line or number it.
- ❖ Highlight examples and illustrations.
- ❖ Separate digressions from the main points.

Using your own words

Putting each point in your own words will help you understand and recall the lecture content.

Remember to:

- ❖ copy down important quotations or examples word for word;
- ❖ separate quotations and examples from your own words;
- ❖ record points you don't understand in the lecturer's words adding a question mark as a reminder to follow the point up later.

Using fewer words

- ❖ Reduce the number of words you use in taking notes: detailed notes are of little use in remembering facts and ideas.
- ❖ Use keywords to represent points or ideas briefly.
- ❖ Add brief details of any examples or evidence that support a point.

Using abbreviations

- ❖ Use standard abbreviations and subject specific abbreviations.
- ❖ Make up your own abbreviations for common words, but be sure to be consistent.
- ❖ Don't use so many abbreviations that your notes become a shorthand transcript; continue to use your own words.

Using space

- ❖ Show structure in your notes e.g. putting each point on a new line.
- ❖ Leave gaps for additions or corrections at a later date.
- ❖ Make notes easier to read and review by using space to separate the points.

Using colour and image

- ❖ Categorize points under colour coded headings.
- ❖ Highlight in colour any points you want to remember.
- ❖ Use images or diagrams as a quick way of describing a concept or idea.

You may want to consider using a diagrammatic style of note taking for lectures.

Using handouts

Lecturers use handouts to help you follow the lecture and to highlight important information. You can maximize the benefits of handouts by adding your own comments.

- ❖ Highlight keywords.
- ❖ Add colour to categorize information.
- ❖ Add notes in the margin.

Organizing your notes

- ❖ A4 paper stored in a ring binder with dividers is the most practical system for organizing notes.
- ❖ Begin each lecture with a clear heading of the lecture title, date and name of the lecturer.
- ❖ Number the pages clearly so they can be easily kept in order later on.

4. Following up lectures

Don't be afraid to ask a lecturer for clarification either in the lecture or afterwards. Use seminars and tutorials to clarify or discuss material from the lectures. Review your notes as soon as possible after a lecture. Make the most of your review by:

- highlighting points which seem particularly important or central;
- ❖ adding any details which you can remember from the lecture;
- ❖ showing links between points;
- ❖ correcting any mistakes;
- ❖ adding questions to highlight areas you don't understand or need further information on.

Overcoming problems

Failing concentration

You are much less likely to find your concentration straying when you use an active approach to note taking. Putting points into your own words, using space, colour and image, will make note taking a busy but interesting activity. If you do miss some points because your attention strays then just leave a space in your notes and check it out with the lecturer or another student later.

Being left behind

You may find that the information is being delivered too fast for you to write down. If points pass you by, then leave a space and compare your notes with another student's. Doing some background reading for the lecture will help you to keep up as the information will not be entirely unfamiliar to you.

Sometimes you can get lost because you don't understand the material that is being delivered. This may be the case for the occasional point or even for a large section of the lecture. Rather than giving up on the lecture, write a series of questions that you can try to follow up later.

Summary

- ❖ **Be prepared** - get to know the course structure and do pre-lecture reading.
- ❖ **Be organized** - have a system for storing notes and take a selection of pens and pencils to the lecture.
- ❖ **Listen for structure** - watch out for signposts that help you follow the lecture.
- ❖ **Be brief** - try using key words and phrases as much as possible so the emphasis is on listening and understanding.
- ❖ **Make note taking an active process** - summaries in your own words, make good use of space, colour, symbols and images.
- ❖ **Leave gaps** - if you miss a point, don't get further behind by panicking about it, just leave a space and check it out with another student.
- ❖ **Actively review** your notes after the lecture, making additions and corrections as you read.

Improving Your Reading Skills

Improving your reading skills will reduce unnecessary reading time and enable you to read in a more focused and selective manner. You will also be able to increase your levels of understanding and concentration. This guide shows you how to read with greater efficiency and effectiveness by using a range of different reading skills.

Reading for study

You already use a range of reading styles in everyday situations. The normal reading style that you might use for reading a novel is to read in detail, focusing on every word in sequence from start to finish. If it is a magazine you are reading, you might flick through the pages to see which articles are of interest. When you look in a telephone directory for a particular name, you purposefully ignore all other entries and focus your attention on spotting the name you want. These everyday reading skills can be applied to your studies.

To improve your reading skills, you need to:

- ❖ have clear reading goals;
- ❖ choose the right texts;
- ❖ use the right reading style;
- ❖ use note taking techniques.

Reading goals

Clear reading goals can significantly increase your reading efficiency. Not everything in print will be of use to you. Use reading goals to select and prioritize information according to the task in hand.

Reading goals can be:

- ❖ an essay or seminar subject;
- ❖ a report brief;
- ❖ a selected subject area;
- ❖ a series of questions about a specific topic.

Use your reading goals to help you identify the information that is relevant to your current task.

Choosing a text

You will need to assess the text to see if it contains information that is relevant to your reading goals.

- ❖ Check the date of publication. Is the information up-to-date?
- ❖ Read the publisher's blurb at the back or inside sleeve for an overview of the content.
- ❖ Check the contents page for relevant chapters.
- ❖ Look up references for your topic in the index.

If the text does not seem relevant, discard it.

Once you have selected a text you can use the following techniques of scanning and skimming to help you identify areas for detailed reading.

Scanning

Scanning is the technique you might use when reading a telephone directory. You pass your vision speedily over a section of text in order to find particular words or phrases that are relevant to your current task. You can scan:

- ❖ the introduction or preface of a text;
- ❖ the first or last paragraphs of chapters;
- ❖ the concluding or summarizing chapter of a text;
- ❖ the book index.

Skimming

Skimming is the process of speedy reading for general meaning. Let your eyes skip over sentences or phrases which contain detail. Concentrate on identifying the central or main points. Use this technique to:

- ❖ pre-view a selection of text prior to detailed reading;
- ❖ refresh your understanding of a selection of text following detailed reading.

Detailed reading and note taking

Once you have selected useful information, you can begin to read in detail. Note taking techniques provide a useful aid to reading. Use:

- ❖ **underlining and highlighting** to pick out what seem to you the most central or important words and phrases. Do this in your own copy of texts or on photocopies - never on borrowed texts;
- ❖ **keywords** to record the main headings as you read. Use one or two keywords for each main point. Keywords can be used when you don't want to mark the text;
- ❖ **questions** to encourage you to take an active approach to your reading. Record your questions as you read. They can also be used as prompts for follow up work;
- ❖ **summaries** to check you have understood what you have read. Pause after a section of text and put what you have read in your own words. Skim over the text to check the accuracy of your summary, filling in any significant gaps.

These techniques encourage an active engagement with the text as well as providing you with a useful record of your reading. Avoid passively reading large amounts of text, it does not make effective use of your time. Always use a note taking technique to increase your levels of concentration and understanding.

Increasing your reading speed

It is more important to improve your reading skills than your reading speed. Being focused and selective in your reading habits will reduce the time you spend reading. If, in addition to using a range of reading skills you want to increase your reading speed, then the following technique will be of use.

The average reading speed is about 240-300 words per minute. For the average reader, the eye fixes on each word individually.

It is easy for your eye to recognise 4 or 5 words in a single fixation without a loss of understanding.

The key to increasing your reading speed is not to increase the speed at which your eyes move across the page, but to increase the word span for a single

fixation. A simple way of developing the habit of taking in more than one word per fixation is to take a page of text and divide it length ways into three with two lines drawn down the page. Using a pen or pencil as a pointer, read each line of text by allowing your eye to fall only in the middle of each of the three sections, as indicated by your pointer.

Developing your reading speed

- ❖ Don't worry about how quickly you are reading but instead, concentrate on reading the line in only three fixations.
- ❖ As this becomes more natural, practice without drawing lines.
- ❖ Later, reduce the number of fixations to two per line.
- ❖ Once this increased word span becomes a comfortable habit, an increase in your reading speed will occur.

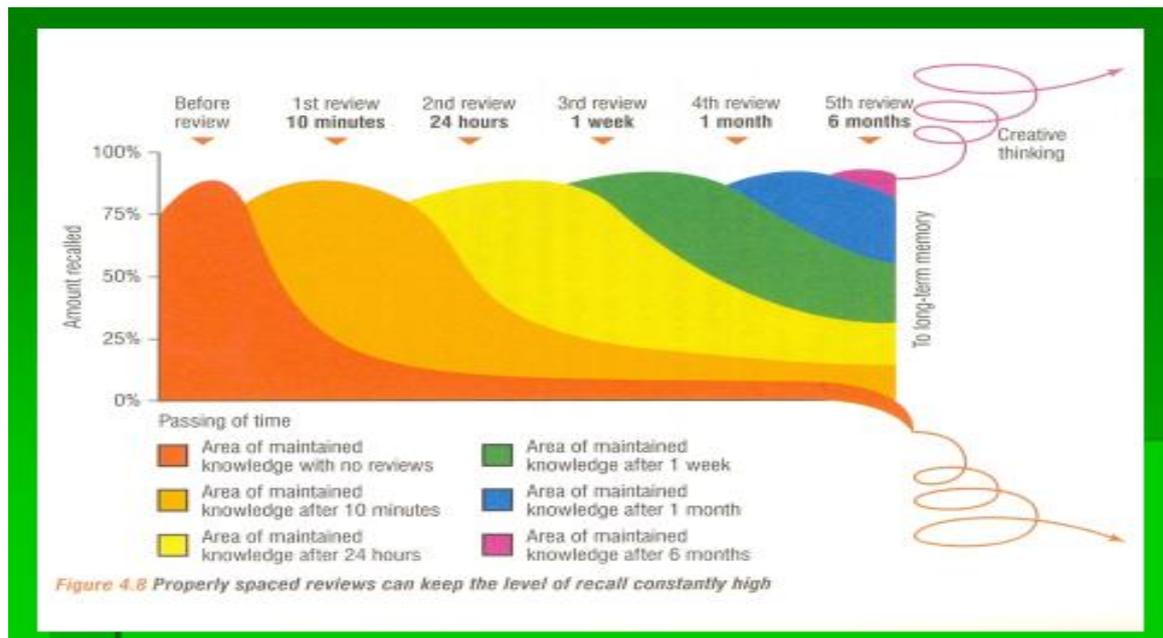
Summary

- ❖ Have a clear focus for your reading. Set your reading goals.
- ❖ Survey the text before you spend the time and effort involved in detailed reading.
- ❖ Scan and skim to select the text for detailed reading.
- ❖ Scan and skim after detailed reading to reinforce your understanding.
- ❖ Use a form of note taking whilst reading in detail, to keep you concentrating, aid understanding and provide you with a record of your reading.
- ❖ Using clear reading goals and a variety of reading skills is more important than increasing your reading speed.
- ❖ To improve your reading speed, don't increase the speed of the eye across the page, but increase the number of words the eye recognizes in a single fixation.

ENHANCE YOUR MEMORY SKILLS

Medical students go through a **Learning Cycle** many times during an academic session. This cycle starts from **Information Gathering Phase** proceeding to **Integration and Comprehension Phase**, **Memorization** and **Consolidation Phase** and the **Presentation (Test/Examination) Phase**.

Revision is a basic memorization skill. Five reviews are needed to store new information in the long term memory. First review should be on the same day just before going to sleep. Second on the next day, third on Sunday of that week; Fourth on one month after; Fifth review after six months and the information is stored in your long term memory.



Remember repetition is your friend. Five reviews store a new information FROM Short Term Memory (STM) in to your long term memory (LTM) i.e., STM →→ 5 Reviews →→ LTM. Students need to review what they have learned using one or more memory techniques on a regular basis. When reviewing, students use creative imagination and link new information with the older knowledge. “The more we learn, the more we remember. The more we remember, the more we learn.”

Students should learn other memory techniques and find out techniques which suits his mind. Mind Maps are a good reviewing technique. With practice students can master these techniques easily.

REVISION AND EXAM SKILLS

Revision is a personal, individual process

Revision must be one of the most individualized processes within academic life. Students begin it with:

- ❖ different sets of knowledge and understandings;
- ❖ different responses to the stress of the revision and exam period;
- ❖ different preferred revision techniques; and
- ❖ different psychological and life contexts into which to fit the revision.

While it is possible to get ideas from others and from books, about how to revise, you also need to get to know what your own personal strengths and weaknesses are. How much do you already know? How do you revise? What are the factors that usually cause problems for you in managing your revision?

Different stages of revision can fit with different contexts. Early on you may prefer to work individually; mid-morning, in silence, at home. Later, you may prefer to work mid-afternoon, interactively, in a café. The important thing is that you match the type of revision you are doing with the context in which you, personally, are able to do that best.

Taking control

It is easy to feel overwhelmed. You may feel that the task is too big, and that whatever you do you will not succeed. It is important to appreciate the size of the task, but it is also important to be realistic about what you can do in the time available. The revision and exam period will inevitably involve stress. You need to monitor this and, ideally, make it work *for* you not against you.

The key is to be realistic. Yes, you will have less free time temporarily. No, you will not have to go without free time completely.

If you find yourself feeling generally worried, give yourself 10 minutes to write down exactly what it is that you are worrying about. You are then in a better position to devise some strategies for addressing those specific concerns.

Quality above Quantity

It is important to focus on the *quality* rather than just the *quantity* of your revision. This means that, whatever time you do spend revising, you try to make sure that it:

- ❖ is quality time;
- ❖ with full concentration; and
- ❖ with the most appropriate revision method.

Just as recovery has to be built into physical training sessions to optimise the training effect of the effort, so breaks need to be built into the revision schedule to give the brain time to consolidate the learning.

Set a realistic, definite time to stop each revision session. This should help to maintain the quality of each session. **The session should be short enough to guarantee your full attention throughout.** You could:

- ❖ agree with yourself that you will exclude other distractions for that period of revision;
- ❖ decide your specific revision goals for that session;
- ❖ allow yourself to be totally focussed for that period, knowing that, when it ends, you can walk away.

Another way to use short specific time slots to do quality revision sessions is to look for opportunities to **mix revision productively with other activities.** For example:

- ❖ a bus or train journey could give you a defined and limited block of time during which you could rehearse in your mind an explanation of a topic;
- ❖ you could take an exam question or two on a walk or a run with you.

You could find that being outside and getting exercise will have a dual benefit of keeping fit and freeing your brain to think laterally around the topic in question.

Scoping the task

The earlier you can scope the size and characteristics of the revision task the better. Make a systematic list of exactly what you need to cover, and in what depth. This allows you to collect further information or resources to support your revision before you start the serious work. Make sure you have any information that is available on what is expected of you and, importantly, what you are *not* expected to revise.

Active versus passive revision

Active revision is much more effective than *passive* revision. Passive revision is associated with such activities as reading notes, and copying material. Active revision is concerned with **using** and **organizing** material.

Unfortunately, the basic revision technique, on which most other ideas are built, of: reading and understanding the material; ‘**reducing**’ it to a smaller amount of material in note form; reviewing this again; reducing it again perhaps to a list of bullet points ... can become a passive, time consuming exercise if you aren’t careful.

While this kind of activity may legitimately form the foundation of your revision, you need to make sure you do not spend huge amounts of time copying material in a passive way.

Active and passive learning can be compared with the concepts of *recognition* and *recall*. It is much easier to *recognize* someone’s name when you are told it, than it is to *recall* their name without any clues. Similarly, it is much easier to read through a page of notes and think, “Yes, I know this”, than it is to cover up the page and to give a talk on the topic.

“Revising actively implies making a real effort to understand what you are learning, rather than simply memorizing by rote. Even if your exams require you to remember a lot of facts, you are much more likely to retain detailed information if it is related to an underlying understanding. There are many ways to achieve this; here are some suggestions you might like to try:

- ❖ Looking for underlying themes or principles.
- ❖ Thinking about inter-relationships.
- ❖ Relating what you are learning to ‘real-life’ situations.
- ❖ Thinking how the solution to one problem may help you solve others.
- ❖ Organizing material into a hierarchical structure.
- ❖ Creating a diagram or chart to represent a topic.
- ❖ Looking for similarities or differences.
- ❖ Looking for points for and against an argument.
- ❖ Trying to really understand how formulae work.
- ❖ Critically evaluating what you are learning.
- ❖ Discussing topics with a friend.”

You could start by revising a couple of topics that you feel quite confident about. This could remind you of the level you need to aim for with the rest of the topics. It could also let you feel you’ve made a solid start.

Monitor how things are going

It is vital to monitor regularly how your revision is going, and to modify your plans accordingly. If you find that it is taking longer than you anticipated, there are several options:

- ❖ add in more revision sessions;
- ❖ change your revision style to become more efficient;
- ❖ if you really have to, then be more selective and reduce the amount you plan to do.

By monitoring your experiences in the early days of revision, it should be possible to modify your revision timetable for the remaining time so that it works most effectively for you.

Be ready to step up your revision techniques

You may find that revision techniques you have used very successfully in the past now need to be modified, extended, or changed in some way to cope with new challenges. Take a critical and honest look at your revision habits. If you find they are not up to the task ahead, find new ways of working. You may find you can make significant improvements. It may even feel as if you have created more time.

Memory techniques

In addition to reading, understanding, and making revision notes, you may feel that you need to use some specific memory techniques to remember collections of facts, or processes. Discover the potential of **mnemonics**. A mnemonic is a device by which you think of something quite easy to remember, which then prompts you to remember material that is more difficult to remember. A famous mnemonic based on the initial letters of words is ‘Richard of York Gave Battle in Vain’ for the order of the colours of the rainbow. Two musical examples are: ‘Every Good Boy Deserves Food’ for the names of the lines on the treble clef; and ‘Father Charles Goes Down and Ends Battle’ for the order in which sharps appear in a key signature.

Some disciplines have their own favourites. You can also make up your own mnemonics to help you remember list of ideas, questions, stages, dimensions etc. You could also **use a mnemonic to make sure you don’t miss out a crucial stage in a process, or a dimension of a problem.**

Similar to a mnemonic is the amazingly useful **list of simple questions** that you can use to practice lateral thinking around a topic: what? how? where? when? who? why? so what? This list can be useful within the exam to help you think around possible answers to a question, or possible essay plans to use.

When memorizing a lot of material, you will need to find a range of methods that suit you. Typical advice is to use **associations, diagrams, mind maps, narratives, colours, places** and so on, to link course content to memorable images or experiences.

Testing yourself

As you revise you could **create a list of questions relating to what you've just revised**. When you come back to that topic you could start by seeing how you do with those questions. This will highlight where you need to pay particular attention.

It's always a good idea to see how much you can remember about a topic **before** you look at your notes again. You could try allowing yourself time to think through as much as you can before returning to your notes. Thinking hard through a topic like this means that, when you finally check out your notes, you can quickly identify which elements you had forgotten about, and be ready to slot them firmly into your memory.

'**Mind maps**' or '**thought maps**' are useful if you want to find out how much you can remember on a topic. After you have written down everything you can remember, try to extend the map by adding more to each branch e.g.: a link, an idea, a query, extra description, references, a debate point, or a conclusion.

Explaining

A particularly effective way of engaging actively with what you are revising is to learn about a topic then to try to **explain it in your own words**. You don't necessarily need any audience except yourself. By trying to explain a topic you quickly discover which aspects you understand and remember well, and which you need to investigate and revise further. Be prepared to have a good go at the explanation before reaching for the answers.

Group work

Although revision is very much an individual process, it is surprising how much you can gain by working with others for some revision sessions, either in pairs or in larger groups. Some of the work is best done face to face, but some can be done using electronic communication. Ideas include:

- ❖ revising different but closely related topics in advance, then each giving a short talk on their topic, with the others asking questions;
- ❖ revising the same topic and coming together to talk about what you've learnt and what you can't understand/remember;
- ❖ creating practice exam questions as you revise and putting these into a collective pool of questions that you can all dip into;

❖ swapping mnemonics, you've made up.

When you ask someone else to explain something that you don't understand you will gain from their help. When someone else asks for your help, you gain by having to provide a comprehensive, clear and informed explanation.

Working with exam questions

If your exam will involve **tackling a problem, or doing calculations**, active revision is crucial. Passive revision would be to read through a completed calculation, or the solution to a problem, and to say to yourself, 'Yes, I can follow that'. Active revision involves working through a new question or problem on your own. For example:

in mathematics, it is not enough to follow through calculations: you need to practice doing them on your own;

in medicine, it is not enough to learn material by rote within each topic: you need to practice making links across topics;

in law, it is not enough to read through cases: you may need to find or create case studies to practice on;

in psychology it is not enough to read through examples of how statistical tests can be used, you need to try to work through them for yourself.

If essays are required, however, it is *not* best use of your time to practice writing full essay responses to exam questions. It may be useful to do this once or twice if you want to, to get an idea of the timing, but this is probably not the most efficient or effective way of using your revision time.

Skeleton essays

More useful than practicing writing full essays is to practice creating **essay plans, or 'skeleton essays'**. These are a bit like a site map for a website: they will include the main headings relating to the planned structure of your essay, and the associated sub-headings of examples, arguments, and references, etc, but the full content would not appear unless you wrote the full essay.

Allow yourself ten minutes to prepare a detailed plan for your essay, so that writing it would then be straightforward. You will thus have practiced the hard part of remembering and selecting information, and creating the best structure for its presentation, but will have taken only ten minutes.

Remember that there may be several ways to answer to a question, and you need to identify the most effective approach to take. Practice identifying the biggest turning point / the information of most consequence / the best examples / the most powerful evidence.

When you practice creating essay plans for exam questions, a four-stage approach can be useful:

- ❖ Squeeze everything you can out of the essay title to make sure that you fully understand it and that you are addressing each element of it.
- ❖ Brainstorm all relevant ideas onto paper, including references, examples, arguments, queries, links...
- ❖ Match up ideas to aspects of the title and organize them into the most powerful order.
- ❖ Squeeze out more ideas using a systematic approach of, for example, adding dimensions or asking why, where, who, what, where, when etc, or whatever questions are appropriate to your subject.

Timings in the exam

It is useful to plan how you will allocate your time within the exam. This is not necessarily relevant for exams where short answers are required. Where you will need to write essays, however, it is important to know how much time you can allocate to each individual essay.

Here is an example of a timing plan for a 2-hour exam: 13.00-15.00; where you need to write 3 essays.

13.00-13.05 = settling in; reading instructions; noting down your timings plan; making initial essay choices.

13.05-13.45 = essay 1: 5 minutes planning; 35 minutes writing

13.45-14.25 = essay 2: 5 minutes planning; 35 minutes writing

14.25-15.00 = essay 3: 5 minutes planning; 30 minutes writing

Make sure that you make as good an attempt as you can for ALL of your responses. In general, it is considerably **easier to get the first 50% of marks for each question than it is to get the second 50%**. So, for example, make sure that you make a significant effort for each essay rather than using too much extra time on your favourite ones.

With an essay-based exam it can be useful to begin with the question for which you can think of the most material. This can boost your confidence and get your thoughts flowing. In a paper with no choice of questions, it can be most productive to go through the paper answering all of the questions that you are sure of. This will stimulate your thoughts and help you recall information, putting you in a more active frame of mind for when you go back to the start and give more thought to the remaining questions.

On the start line

When you are waiting to go into the exam room there is no point looking backwards over what you haven't covered; what you never understood; or what you thought you'd learnt but can't seem to remember. All you can influence now is the future. You are where you are: now you have to make the best of what you've got.

Athletes at the start of a race can't do anything about the training they missed. There is no point in worrying about whether they are less well-prepared than they had hoped. All they can influence now is what happens after the starting gun goes off. They need to concentrate fully on the race ahead, and use their training as best they can.

Go!

Here are some ideas to help you in the exam:

- ❖ Begin by checking very carefully the instructions of the exam paper. Highlight or underline the key instructions.
- ❖ Note down (and check) any timings plan you have prepared, so you have it to refer to, and to stop you spending too much or too little time on one question.
- ❖ Where there is a choice of tasks or essays, check out the potential of all of the options before making your decision.
- ❖ For an essay-based paper, it can be helpful to begin with the title for which you have the most to write. This can boost your confidence, and get you into the swing of planning and writing exam essays.
- ❖ Do not be rushed into starting to write your first essay. Remember to take adequate time to prepare a strong essay plan first.
- ❖ Even if you have already written a similar essay before, try to bring fresh energy on this occasion.
- ❖ Don't waste energy judging a question. You may think it's irrelevant, or boring, or badly phrased, but put those feelings to one side. Re-read the question to check if there was anything you missed.
- ❖ Respect the question. Take time to 'listen' to the question before thinking of the answer, rather than assuming that you know what the question will be. It may be slightly different from what you expect.
- ❖ Read all parts of a question before beginning to answer. In that way you can see how the examiner has divided the knowledge between the different parts of the question, so you can be sure to focus on the specific response needed for each part.

If there is a question you cannot answer, leave it and continue with the rest of the paper. Come back later to make your best effort with the question(s) you left out.

CONTRIBUTING TO SEMINARS AND TUTORIALS

Introduction

Seminars and tutorials are a vital part of most academic courses and give you an opportunity to discuss topics and issues with other students, teaching assistants and members of academic staff. This sort of critical debate and argument is very useful in developing your grasp and understanding of your subject. Benefits associated with seminars and tutorials include opportunities to:

- ❖ apply knowledge from your lectures and background reading;
- ❖ solve problems in a team to maximize your creativity;
- ❖ test your understanding and develop new insights;
- ❖ learn from other people's approaches and ideas;
- ❖ clarify any concepts that you might not have understood.

The success of a good seminar is not only based on its content (the subject knowledge explored) but also upon the way in which the seminar group works together. Students are often invited to take a lead role in the preparation of the seminar, chairing the discussion, solving problems or making a presentation to start the session. Learning through small group discussion will thus help you develop essential skills for later life, including opportunities to:

- ❖ practice expressing yourself;
- ❖ practice and develop your group skills (e.g. listening to and supporting others);
- ❖ prepare and deliver oral presentations.

This guide offers many practical strategies for successful group discussions, helping you to improve your own performance and play a full role within the group.

Step One - Preparation

It is important to come to each seminar or tutorial group prepared to take a full part in discussion. If you have a basic understanding of the topic you will be better able to participate in discussion and understand the material being explored.

- ❖ Begin by identifying the main issues to be discussed. This information should be in your module handbook(s) or be available from your course tutor.
- ❖ Carry out background reading/research to develop your understanding and interest.
- ❖ Make notes as you read, focusing your thoughts on the forthcoming topic.
- ❖ Keep track of useful examples or quotations as these will provide important evidence for discussion.

Develop both a broad understanding of the subject matter as well as a list of things that you're having difficulty with. These latter can form the basis for questions or contributions to the discussion.

❖ Make a list of points that you'd like to make or problems you'd like to find solutions to. Keep open minded though, as they might not all be relevant.

Remember, the key to successful discussion is for everyone to be fully engaged not for everyone to have fully developed ideas. A questioning approach to your preparation opens your mind and creates fertile ground for discussion and debate.

Step Two - Engaging in discussion

It isn't always easy to contribute to discussions, even if you have prepared thoroughly. Many students worry that they may have got something 'wrong' in their preparatory work and that everyone else has the 'right' answer. This is rarely the case. To help overcome nerves and anxiety, it is worth remembering the following points:

- ❖ don't wait until you arrive at the 'big idea': say something simple and often to help build discussion;
- ❖ share responsibility with the group: don't dominate or leave others to do all of the talking;
- ❖ be positive and respectful of other people's ideas.

With these principles in mind, try using the following strategies to help build your contributions to group discussions. They start with low stress approaches and build to full involvement.

Verbal/non-verbal acknowledgements

Show that you're a good listener by paying close attention to what is being said. Acknowledge other people's contributions by saying "yes" or nodding your head. Speakers find such signals reassuring as they show their ideas are being listened to and valued. These listening strategies will also keep you active and involved, giving a good starting point for more substantial contributions.

Agreements

Agreeing with a point someone has made can take your contributions to the next stage. Statements like "That's a good idea" or "I'd not thought of that" offer non-threatening speaking strategies. You can then build this to more complex levels of agreement, stating where and why you agree, for example: "Yes, it's important to realize that Kushner has been read out of context."

Observation

Try commenting on the discussion, showing other group members that you're aware of what's going on and are playing an active role in listening and shaping the argument. This can be particularly useful when trying to avoid distractions and keeping the discussion on course: "Haven't we moved away from the point that Manjit was making about ...?"

Presenting alternative views

Offering alternative points of view indicates a high level of involvement and can be a very effective way of helping to develop your own ideas and the ideas of others. Don't be afraid to disagree with someone, simply make sure that you do so in a constructive way. First express your disagreement by showing you understand the point that was being made and then explain why you disagree. If you are unsure as to why you disagree, try doing so with a question: "But doesn't that contradict with...?"

Involvement

This level shows very strong levels of engagement. In addition to all of the above strategies, the involved student will also try to make new points, leading the discussion into new ground: "I think we need to look more closely at the impact of...". The involved student will also try to bring other people into the discussion, inviting comment or drawing upon someone with relevant experience.

Using Openers

It can be difficult to begin making a contribution to the discussion, particularly when other group members are already contributing fully. Using a simple opening statement will get you started and draw people's attention to the fact that you want to speak. Examples include: "I think...", "I disagree,...", "That's a good point...", "Can I say that...?"

If the discussion is going really well, you might need to repeat your opening statement, even drawing attention to the fact that a particular point is being overlooked: "Hold on; haven't we ignored...."

Coping with Conflict

In some instances, discussions can become so lively that they lead to strong disagreement between group members. It is important to remember that discussion in an academic environment should remain objective and impersonal: ideas should be challenged, never people. If you feel your own anger levels rising, take a deep breath and stop talking for a while. If you see other people getting

angry try to play an active role in the group, intervening with some of the above strategies. Observation or agreement (as described on page 2) can be very effective ways of drawing attention to disagreement before it gets out of hand, for example: “We appear to be saying the same thing here”.

Step Three - Taking notes in discussion groups

It can be challenging to take notes and remain involved in the discussion at the same time. Sometimes you might not take any notes at all, relying on your follow-up work (see Step Four below) to capture any important ideas and references. If you do want to take notes, try to limit the amount that you write. Focus on significant points, questions or references so that these can be followed up at a later date. Successful note making strategies include:

- ❖ using a diagrammatical form of notes to map out the discussion with arrows linking ideas to show progression and relationships;
- ❖ keeping a record of who said what so that you can follow up any queries later in more detail;
- ❖ using key words and notation such as question marks (?) and exclamation marks (!) to priorities information quickly for later follow-up work;
- ❖ dividing your page into two columns, using the left hand column to record actual comments from the discussion and using the right hand column to record your own ideas and responses.

As you are only making brief notes, you will need to make sure that you follow these up whilst the session is still fresh in your mind.

Step Four - Follow-up work

One of the key things you will need to do after a seminar or tutorial is to go back to your notes and flesh them out in more detail. Remember that this shouldn't take the form of a lengthy transcript. Instead, try sketching out the ideas that you found most interesting and/or challenging, taking them further by developing your own thoughts and responses. If you have found the discussion to be particularly stimulating you might even wish to amend notes from other parts of your course (e.g. lectures or private study), including any new ideas and concepts accordingly.

At this stage, it will be important to make sure that you have clearly differentiated between your own ideas and those of others (authors, your tutor, fellow students). This will help you avoid plagiarism by acknowledging other people's work appropriately.

The follow-up stage is also a good time to set priority areas for further reading and investigation. Choose a reference to follow up in the library or highlight an argument that you'd like to validate by checking back through your

lecture notes. Develop your understanding of the topic further by tackling questions from a course text or past exam papers. You may want to identify individuals from the discussion group whose ideas you would like to discuss in more detail. Make the most of the discussion by using the session as a starting point for your own investigations and interests.

Conclusion

Seminars and tutorials provide important opportunities to stimulate your thinking and deepen your understanding. By engaging in debate and critical argument with others, or by working together to solve problems, you are developing your intellectual and critical skills as well as your group work skills. Such opportunities encourage you to apply, test and consolidate your own learning, helping you to become more familiar and confident with a particular subject area. Preparation beforehand, active participation during the session and effective follow-up work will help make the most of these learning opportunities.

TAKING MULTIPLE CHOICE EXAMS

Studying for a multiple choice exam requires a special method of preparation distinctly different from an essay exam. Multiple choice exams ask a student to recognize a correct answer among a set of options that include 4 wrong answers (called distracters), rather than asking the student to produce a correct answer entirely from his/her own mind.

For many reasons, students commonly consider multiple choice exams easier than essay exams. Perhaps the most obvious reasons are that:

- The correct answer is guaranteed to be among the possible responses. A student can score points with a lucky guess.
- Many multiple choice exams tend to emphasize basic definitions or simple comparisons, rather than asking students to analyze new information or apply theories to new situations.
- Because multiple choice exams usually contain many more questions than essay exams, each question has a lower point value and thus offers less risk.

Despite these factors, however, multiple choice exams can actually be very difficult and are in this course. Consider that:

- Because multiple choice exams contain many questions, they force students to be familiar with a much broader range of course material than essay exams do.
- Multiple choice exams also usually expect students to have a greater familiarity with details such as specific dates, names, or vocabulary than most essay exams do. Students cannot easily "bluff" on a multiple choice exam.
- Finally, because it is much more difficult for a teacher to write good multiple choice questions than to design essay questions, students often face higher risks due to unintended ambiguity.

To prepare for a multiple choice exam, consider the following steps:

- Begin studying early.

Multiple choice exams tend to focus on details, and you cannot retain many details effectively in short-term memory. If you learn a little bit each day and allow plenty of time for repeated reviews, you will build a much more reliable long-term memory.

- Make sure that you identify and understand thoroughly everything that your instructor emphasized in class.

Pay particular attention to fundamental terms and concepts that describe important events or features, or that tie related ideas and observations together. These are the items that most commonly appear on multiple choice exams.

- As you study your class notes and your assigned readings, make lists and tables.

Concentrate on understanding multi-step processes, and on ideas, events, or objects that form natural sequences or groupings. Look for similarities and differences that might be used to distinguish correct choices from distracters on an exam.

If your textbook highlights new vocabulary or key definitions, be sure that you understand them. Sometimes new words and concepts are collected at the end of a chapter. Check to be sure that you have not left any out by mistake.

Do not simply memorize the book's definitions. Most instructors will rephrase things in their own words as they write exam questions, so you must be sure that you really know what the definitions mean.

- Brainstorm possible questions with several other students who are also taking the course.
- Practice on sample questions, if you have access to a study guide or old exams.

ATTEMPTING SHORT ESSAY (ANSWER) QUESTIONS

Short-answer questions are **open-ended questions that require students to create an answer**. They are commonly used in examinations to assess the basic knowledge and understanding (low cognitive levels) of a topic. The answer is usually short, from few lines to one paragraph of about 150 words. Often students may answer in bullet form. Unlike MCQs, there is no guessing on answers, students must supply an answer. Short-answer questions can lead to difficulties in grading if the question is not worded carefully. Accuracy of assessment may be influenced by handwriting and/or spelling skills. Short essay (answer) questions enhance the writing ability of the students as they usually have to write meaningful sentences and paragraphs in an organized manner. Practice improves the writing skill and answering techniques.

What makes a good response to a short answer essay question?

Begin each answer with one or two sentences which summarizes your answer. If possible, phrase the statement so that it rephrases the question's essential terms into a statement (which therefore directly answers the essay question). ... Support your thesis with specific references to the material you have studied. Your answer should be well written and answer all parts of the question.

ANSWERING MULTIPLE CHOICE QUESTIONS

There are many strategies for maximizing your success on multiple choice exams. The best way to improve your chances, of course, is to study carefully before the exam. There is no good substitute for knowing the right answer. Even a well-prepared student can make silly mistakes on a multiple choice exam, however, or can fall prey to distracters that look very similar to the correct answer.

Here are a few tips to help reduce these perils:

- Before you begin taking the exam, enter all pieces of required information on your answer sheet

If you are so eager to start that you forget to enter your name and ID number, your results may never be scored. Remember: your instructor will not be able to identify you by handwriting or similar text clues.

- Always cover up the possible responses with a piece of paper or with your hand while you read the stem, or body of the question.

Try to anticipate the correct response before you are distracted by seeing the options that your instructor has provided. Then, uncover the responses.

- If you see the response that you anticipated, circle it and then check to be sure that none of the other responses is better.

- If you do not see a response that you expected, then consider some of the following strategies to eliminate responses that are probably wrong.

None of these strategies is infallible. A smart instructor will avoid writing questions for which these strategies work, but you can always hope for a lapse of attention.

1. Responses that use absolute words, such as "always" or "never" are less likely to be correct than ones that use conditional words like "usually" or "probably."

2. "Funny" responses are usually wrong.

3. Be very careful not to be trapped by double negatives.

4. Look for grammatical clues. If the stem ends with the indefinite article "an," for example, then the correct response probably begins with a vowel.

5. The longest response is often the correct one, because the instructor tends to load it with qualifying adjectives or phrases.
6. Look for verbal associations. A response that repeats key words that are in the stem is likely to be correct.
7. If all else fails, choose response (b) or (c). Many instructors subconsciously feel that the correct answer is "hidden" better if it is surrounded by distracters. Response (a) is usually least likely to be the correct one.

If you cannot answer a question within a minute or less, skip it and plan to come back later.

Transfer all responses to the answer sheet at the same time, once you have marked all questions on your exam. (If you try to do several things at once, you increase the probability of making a mistake. Saving the relatively mindless job of filling in bubbles until the last step reduces the probability of making silly errors.)

•Be sure that you have filled the appropriate bubbles carefully IN PENCIL.

Our instructor will probably never take a close look at your answer sheet, so if you fail to fill in bubbles completely or if you make stray marks, only the computer will notice, and you will be penalized. Erase any accidental marks completely. If you filled the wrong bubble, your answer is 100% wrong.

- Take the time to check your work before you hand over the answer sheet.

ASSESSING AND DOCUMENTING PROFESSIONAL ATTITUDE AMONG UNDERGRADUATE MEDICAL STUDENTS

Father's most important gift to his child is good manners. Prophet Muhammad ﷺ

Ultimate outcomes of undergraduate medical education is a doctor who has knowledge, skills, and professional attitude. Medical students had already partly formed professionalism attitudes before they started studying medicine. We, at medical college, just have to apprise or remind students that they have learned basic ethics/attitudes in premedical years. A scoring system is proposed to assess Professional Attitude of MBBS students. Positive or negative professional attitude/professional behaviour during the session will be closely monitored by the faculty. Positive behaviours increase the score; negative behaviours decrease the score. On the basis of this score, proper word will be entered in the relevant sentence on DMC or Character Certificate. Total Five year Marks: More than 85%= Excellent, 75.1–84.9= Very Good, 75%= Good, 70–74.9%= Fair, 65–69.9%= Satisfactory, Less than 65%= Poor. Assessment drives learning, so assessing students will guide their learning.

Keywords: Professional attitude, behaviour traits, MBBS students, PAS-Pak

Professional values, ethics, and attitudes are the characteristics that identify a professional as member of a profession. The relevant ethical requirements ordinarily set out five fundamental principles, i.e., integrity; objectivity; competence and due care; confidentiality and professional behaviour.¹ Medical education produces a doctor who has knowledge, skills, and professional attitude. A graduate should be polite, considerate, trustworthy and honest, act with integrity, maintain confidentiality, respect patients' dignity and privacy, and understand the importance of appropriate consent.² General Medical Council reviewed its 'Outcomes for Graduates' in 2018 and put 'Professional Values and Behaviours' at number one³ which were previously placed at number three in its document of 2009, i.e., Tomorrow's Doctors.

A professional student is punctual (to class and laboratory meetings), follows the teacher's instructions; respects private and public property; arrives appropriately dressed and ready to work, armed with his/her tools. A professional is observant and sees what needs to be done; is responsible and helps maintain a safe workplace with a civilized atmosphere. A professional always acts in a manner that reflects favourably on that community. A professional asks a question rather than risk making a serious mistake with an unfamiliar scientific instrument.^{4,5} Medical students had already partly formed attitudes toward professionalism before they started studying medicine. These attitudes were largely based on their own experience with the health care system and physicians.³ They develop their professional attitude further in medical

college.⁶ We, at medical college, just have to apprise or remind students that during twelve years of pre-medical education and five years of family training, they have developed basic behavioural/ethical traits. These behaviour traits were taught to them at school.⁵ When students' behaviour assessment is instituted they will learn ethical and social skills of a good medical student and law abiding citizen as 'assessment drives learning'. Extracurricular activities such as sports, debates, hospital voluntary service, politics, the arts or community service can build skills in leadership, responsibility, and cooperation.⁵

There is no formal system for assessing and documenting professional attitude of undergraduate medical students in Pakistan. We are proposing a system of Professional Attitude Score for Pakistan (PAS-Pak) for MBBS classes. While preparing this scoring system, important points considered were:

- It should be simple to use
- It should clearly convey to students which behaviours are considered 'positive' and which behaviours are considered 'negative'
- It should not increase the burden on faculty
- To decrease the inter-personal bias and to ensure inter-rater objectivity, all faculty of particular session will be involved to evaluate the students
- It can be utilized to clearly elaborate the words (Excellent, Very Good, Good etc.) in the existing 'Character Certificate' and/or the 'Detailed Marks Certificate (DMC)' issued by the college.

Professional Attitude Score (PAS-Pak)

Twenty Marks for each Professional year; hundred in total for five years' MBBS course. Twenty Marks each are allocated for all subjects in a Professional year. Head of the Department of each subject will calculate PAS-Pak for each student of the class during the session according to the given tables. The scores are then forwarded to the "In charge HoD" of the session (Senior most HoD of the session or as designated by the Principal of the College) who will calculate average of the session and report it to the Principal Office. On the basis of the total five year marks/score, proper word will be entered in the relevant sentence on DMC or Character Certificate. A Red Entry will be for: 1, Misbehaving with some teacher (Head of the department is authorized to give a red entry to student after investigation). 2, Punishment by the Disciplinary Committee. Each red entry will deduct 20 marks from the cumulative score at the end of the five-year session.

Total Five year Marks: More than 85% = Excellent, 75.1–84.9 = Very Good, 75% = Good, 70– 74.9% = Fair, 65–69.9% = Satisfactory, Less than 65% = Poor. 'During his/her stay at medical college, his/her professional attitude score was '

Calculation for first year MBBS Class

At the start of the first year MBBS class, each admitted student will have fifteen (15) marks which can be increased or decreased on the basis of their positive or negative professional attitude/professional behaviour/ ethical behaviour during the session, as mentioned in Table-1 and Table-2. Students will be closely monitored by the faculty and will report to the head of the department about their attitude/behaviour/ethics. Positive behaviours increase the score more than fifteen; negative behaviours decrease the score less than fifteen. Positive behaviours not covered in the tables given can be covered under the heading “Behaviour befitting of a good medical student” and negative behaviours not covered in the tables can be covered under the heading “Behaviour unbecoming of a good medical student”.

Calculation for 2nd, 3rd, 4th and Final Year Classes

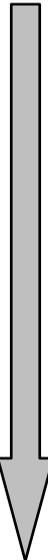
At the start of the session, all students passing in first attempt will have baseline of 15 marks. Students passing in supplementary examination will be at 14 (minus one), students passing as detained students will be at baseline marks 13 (minus two).

Table-1: Positive Behaviour traits/Attitude

University position in last professional exam	2 marks
Published a research paper during the session	One mark
Class tests; First position 2 marks; second one marks; third 0.5 mark	0.5–2 marks
Worked in arranging college convocation 1 mark	One mark
Respecting and behaving according to the local cultural traditions	One mark
Took position in Qirat, Na'at or Debate competition 1 mark	One mark
Served in the hospital volunteer service for helping the students	One mark
Donated blood during this session	One mark
Attendance more than 85%, 2 marks; 76%–84%, one mark	1–2 marks
Behaviour befitting of a good medical student (HOD)	Plus 1
At the start of the Session	15 marks


Table-2: Negative Behaviour Traits/Attitude

At the start of the Session	15 marks
Behaviour unbecoming of a good medical student (HOD)	-1
Misbehaved with a teacher or college staff	-1
Missing one test minus one; two tests minus 2	1-2
Delay in vacating hostel room after new allotment	-1
Throwing waste in college premises	-1
Punished by a teacher on breaching discipline in the classroom etc.	-1
Quarrelled/misbehaved with fellow students	-1
Caught cheating in a test minus one	-1
Damaged college property minus one	-1
Not respecting and not behaving according to the local cultural traditions	-1



LEARNING ENVIRONMENTS FOR UNDERGRADUATE MEDICAL STUDENTS

Learning Environment for Medical Students is defined as everything that happens within the classroom, department, university, Teaching Hospital, or outside, that is essential in determining the success of undergraduate medical students. Learning environment for undergraduate medical students has two major areas: Medical College, and Teaching Hospital. Each one of them has many components. Each component has its own learning style, dynamics and rules to follow. Each learning environment provides students an opportunity to interact with peers and teachers, to have frequent feedback, to apply their learning in other situations, and to experience diversity. Classroom/Lecture Hall, Laboratory, Museums, Tutorial Room, College Auditorium, College Library, Play Grounds, Patient Bedside, Outpatient Department, Operation Theatre, Demonstration Room, Community Health Centre, MCH Centre, Vaccination Centre, and even the Examination Hall are all parts of learning environment of an undergraduate medical student.

Keywords: Learning environment, Medical students, Teaching Hospital, Medical College

Learning environment refers to the diverse physical locations, contexts, and cultures in which students learn. Learning environment for medical students is defined as everything that happens within the classroom, department, university or teaching hospital or outside the medical institution that is essential in determining the success of undergraduate medical students.^{1,2} The term also encompasses the culture of a school, its presiding ethos and characteristics, including how individuals interact with and treat one another, as well as the ways in which teachers may organize an educational setting to facilitate learning, e.g., by conducting classes in relevant natural ecosystems, grouping desks in specific ways, decorating the walls with learning materials, or utilizing audio, visual, and digital technologies.² An engaged learning environment increases students' attention and focus, promotes meaningful learning experiences, encourages higher levels of student performance, and motivates students to practice higher-level critical thinking skills.³

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Medical College:

In the medical college, there are many learning environments. The most well-known place in the medical college is Classroom or Lecture Hall which is meant for Large Group Teaching and Interactive Session. Rules to attend a classroom are very familiar to all of us as we are attending classroom from our childhood. Second very important place for learning is Departmental Laboratory. In Physiology, Biochemistry, Histology, Pharmacology, Pathology and Histopathology there are specified laboratories where students learn to develop manual skills and learn to use different medical equipment. Without an overall, students are not allowed to enter the laboratory. Students are required to learn how to handle human secretions which are potentially infectious and hazardous. There are museums in Anatomy, Pharmacology, Community Medicine and Forensic Medicine Departments where different types of learning materials are present. In Anatomy museum, models of different body parts and bones are displayed for the learning of the students. In Pharmacology museum, different drugs, medicinal herbs and instruments for preparation and dispensing of drugs are exhibited for students. In Pathology museum, diseased organs and body parts are present to show students the gross pathology of different diseases. There are tutorial rooms in the college for Small Group Discussion.

Library is an essential part of a medical college. It is a rich source of learning materials for students. It contains books on different medical subjects and specialties, medical journals, digital books and journals. High standard medical colleges have access to Higher Education Commission (HEC) Digital Library which is an excellent resource to access thousands of books and journals online. Attending the Library requires obeying its decorum like maintaining silence and switching off the mobile tone. There is a College Auditorium for Seminars, Conferences, Clinico-pathological conferences (CPC), Debates and convocation. As 'healthy mind lives in a healthy body', there are Play Grounds in the college for indoor and outdoor games. They are also the learning environments for medical students. Apart from the Physical Fitness and exercise, students learn teamwork and undergo behaviour training, i.e., showing graceful and courteous behaviour while they win and show tolerance and undertake self-accountability when they lose.

Teaching Hospital:

In the teaching hospital, there are different wards for different clinical specialties in which relevant patients are admitted for indoor hospital care. This is a special learning environment that has its own dynamics and rules. Patients are the learning resource for the students but students should learn basic medical ethics and counselling/history taking skills before dealing with the patients. Not only patients are there but also physicians and nurses are the stakeholders with whom the students should learn to behave and interact. 'Bedside' is the best learning place for medical

students to learn History taking, Physical Examination, Differential Diagnoses, Medical Investigations, Definitive Diagnosis, and Patient Management and Treatment. There are Demonstration Rooms in each ward where clinical cases of that specialty are presented to the students and history taking, physical examination and diagnostic process are discussed with the students.

Out-Patient Department is another very important place in the teaching hospital where medical students learn different aspects of ambulatory care. Students take history, perform physical examination and prepare case for discussion with their medical teacher for learning.

Operation Theatre is a special learning environment for medical students. Here the students are required to wear masks, cover their heads with a cap and wear aseptic clothing or overall before entering the operation theatre. They are told not to touch any object in the theatre with their hands.

Vaccination Centre is also present in the teaching hospital. Students visit this center to learn about the vaccination program being run in the country and they learn different aspects of Preventive Medicine.

Community Health Centre and MCH Centre are also the learning environments for medical students which are located away from their teaching institution. Medical students visit Community Health Centre (Basic Health Unit or Rural Health Centre) during their Community Medicine tour program to be familiar with the Health Delivery System practiced in the country. In Pakistan, Maternal Mortality Rate (MMR) and Under 5 Mortality Rate are still higher, and Mother and Child Health is top priority program. MCH Centre tour is a well-focused component in Community Medicine.

Examinations are very important learning opportunities for the students. Examination hall has very different environment than the normal learning environments. In the examination hall, students learn Time Management when they allocate time for answering the questions. They also learn to use the precise writing skill when answering an extensive question in a short time. They also learn to use explanation skill in answering a question when answering material is short and the time is sufficient. During viva voce examination, students learn Communication Skill and to work under stress. During OSPE and OSCE students learn practice and patient dealing skills.

A MEDICAL DOCTOR IS A LIFELONG LEARNER

Basic education arouses a desire to carry on learning. The more education you have, the more education you want. UNESCO

A doctor undergoes diverse learning phases during his life in which there are different learning styles, resources, techniques and requirements. In fact, a doctor's life is a learning continuum.

Pre-medical Student: FSc Pre-Medical is an intermediate program that comes after matriculation. FSc Pre-Medical means the pre or initial, inter-level studies, associated with the medical field. The word FSC stands for Faculty of Sciences which is a two-year course offered almost in all colleges. FSc (Pre-Medical) is the first step towards the medical field for those who aim to become a Doctor.¹ In pre-medical classes, there are prescribed course and prescribed textbooks for each subject. A teacher teaches the subject from the prescribed textbook. So, students learn from a textbook in each subject. After FSc or A-level, a student has to pass an entry level test to get admission in to a medical college. After the successful completion of Inter (FSc Pre-Medical or A-level) the aspirants may go for various fields which include MBBS (Bachelor of Medicine and Bachelor of Surgery), BDS (Bachelor of Dental Surgery) and Emerging Biological Sciences.² In FSc Level, student is a **teacher-directed learner**.

Medical / Professional Student: In a medical college, student is a professional student. He is expected to acquire a large amount of knowledge through Lectures, recommended books, Computer based materials (CD's, Internet), Research journals and Senior students. There are many important differences between the pre-medical and medical studies. One of the major differences is that there are no prescribed textbooks in medical college and the course or syllabus is in the form of topics. Topics can be learned from the recommended books. Students should know the most recent and comprehensive knowledge about these topics. So, teachers always recommend the latest editions of books. Usually more than one book is used to study one subject. The second difference is that the knowledge gained even in first year of MBBS should be remembered throughout life. So, the students should learn memory techniques like making notes, mind maps, mnemonics etc. The Third very important difference is that students have to master many manual skills and skills to use medical equipment. Fourth difference is that students should remember that all knowledge of all medical subjects is going to be applied to a single human body – the patient, to solve his problem. That means student should not only be able to integrate concepts within a subject

but should also integrate concepts studied in various subjects. Remember that MBBS is one course of five-year duration.³ In first two years of medical college, students learn to integrate basic sciences (Physics, Chemistry) with basic medical sciences (Medical Physiology, Medical Biochemistry etc.). In the meantime, students learn to integrate basic medical sciences with the Clinical sciences (Medicine, Surgery etc.). Medical teachers facilitate the students in this horizontal and vertical integration. During MBBS course, student has become a **Self-Learner** or **Self-directed Learner**. Efforts are made during MBBS program that the graduates should be able to exhibit the habits of a lifelong learner.

Lifelong Learner: The term lifelong learning was initially featured in 1973 in the report of a UNESCO body, the International Commission on the Development of Education, linking-up lifelong learning with the idea of the learning society.⁴ Lifelong learning of human beings lasts literally ‘from cradle to the grave.’ Interestingly, the Holy Prophet Muhammad ﷺ commanded his followers to “Seek knowledge (learn) from cradle to the grave”⁵ more than fourteen hundred years ago. There is an increased need for newly qualified doctors to commit to lifelong learning to keep up to date with developments in medical practice. Some employers, stakeholders and academics also suggested that lifelong learning was of specific value.⁶ So, a doctor has to learn throughout life to remain updated. Healthcare is an ever-changing field of practice with advances in medicine, expanded evidence sources, new treatment options, and changing governmental regulations and models of care. Lifelong learning is not an option in healthcare, it is required by healthcare workers to remain relevant and continue providing safe, effective patient care.⁷

So, a doctor undergoes different learning phases with different learning styles and requirements. As pre-medical student, he is a teacher-dependent learner with a limited course content and prescribed textbooks. As a medical student, he is expected to acquire a large amount of knowledge through multiple resources and multiple recommended books. During MBBS, teacher is acting as facilitators and student as self-learners. After MBBS and as postgraduate student, he remains a self-learner and his self-directed learning upgrades him to a lifelong learner. During his practice as a doctor, he learns through his experience and becomes an **experiential learner** throughout life. Our teachers told us repeatedly that “A doctor remains a student throughout his life. If he ceases to be a student, he dies.” UNESCO’s report of the International Commission on Education for the Twenty-first Century states, “Basic education, if it achieves what it sets out to do, arouses

a desire to carry on learning. The more education you have, the more education you want.”⁸

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MEDICAL STUDENTS' E-LEARNING DURING COVID-19 LOCKDOWN

E-Learning is 'learning utilizing electronic technologies to access educational curriculum outside of a traditional classroom'. During COVID-19 lockdown, the idea of e-learning is being debated rigorously to guide the medical students at their homes. In Pakistan, many believe it to be simply providing the instructional material to the students on college website which they can access through internet. It is a very efficient way of delivering courses online. Due to its convenience and flexibility, the resources are available from anywhere and at any time. Everyone can take advantage of web-based learning. Medical faculty try to transform a student in to a 'self-learner', i.e., one who can read the book comprehensively and can extract what is relevant and important and inculcate this knowledge into his or her behaviour. Apart from economic restraints and other limitations like unavailability of internet in remote areas, our teachers are not well-versed with this instructional methodology. A doctor has knowledge, attitudes and skills which he applies to treat patients. What we can or want to impart through e-Learning is 'Knowledge' and the other two traits, attitudes and skills, cannot be imparted through e-learning. Other aspects of a medical students' training like interpersonal skills and teamwork, communication skills and behavioural skills cannot be learnt through e-learning or tele-learning. Nevertheless, e-learning modalities are widely integrated in medical education. During the lockdown due to COVID-19, whatever type and to whatever extent e-learning is used, it is a better alternative.

Keywords: Medical students, e-Learning, COVID-19, Teaching methodology, Medical education

E-Learning is a type of distance learning. By definition e-learning is 'learning utilizing electronic technologies to access educational curriculum outside of a traditional classroom'.¹ There are different types of e-learning: Computer Managed Learning (CML), Computer Assisted Instruction (CAI), Synchronous Online Learning, Asynchronous Online Learning, Fixed E- Learning, Adaptive e-Learning, Linear E-Learning, and Interactive Online Learning. Advantages of e-learning are: It is a very efficient way of delivering courses online; Due to its convenience and flexibility, the resources are available from anywhere and at any time; Everyone, part time students or working full time, can take advantage of web-based learning.² Students are usually attracted to this type of learning experience and according to teachers practicing this mode of instruction report a very high percentage of attendance of students although making online lessons and assignments are extra

burden on teachers.

In these days of COVID-19 lockdown, the idea of e-learning is being debated rigorously to guide the medical students staying at their homes. Although, in Pakistan many believe it to be simply providing the instructional material to students on institutional website which they can access through internet, there are a wide range of e-learning modalities used in medical education. E-learning is not a course delivered via a DVD or CD-ROM, video tape or over a television channel; it is interactive in that the learners can also communicate with the teachers or other students in the E-Learning is a type of distance learning. By definition e-learning is 'learning utilizing electronic technologies to access educational curriculum outside of a traditional classroom'.¹ There are different types of e-learning: Computer Managed Learning (CML), Computer Assisted Instruction (CAI), Synchronous Online Learning, Asynchronous Online Learning, Fixed E- Learning, Adaptive e-Learning, Linear E-Learning, and Interactive Online Learning. Advantages of e-learning are: It is a very efficient way of delivering courses online; Due to its convenience and flexibility, the resources are available from anywhere and at any time; Everyone, part time students or working full time, can take advantage of web-based learning.² Students are usually attracted to this type of learning experience and according to teachers practicing this mode of instruction report a very high percentage of attendance of students although making online lessons and assignments are extra burden on teachers.

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Regarding attitudes, we know that students entering medical college have their characters or attitudes partly formed, yet they are still malleable and can improve their professional attitude during the course of their professional training. Students, primarily, learn professional attitude from the faculty. They also learn from the policies and decisions of college administration, college traditions and ceremonies, and the scientific, technical and ethical atmosphere created in unison by all staff and administration of the institution.⁶ Parameters to assess the unprofessional attitude (misconduct) of students may be repeated absenteeism, dishonesty, e.g., marking proxy, unreliability, e.g., not submitting assignments on time, disrespect to others (students, faculty, or other staff), disobedience to administration or teachers.⁷ Hence teaching and assessment of attitudes need direct student- teacher interaction and supervision.

Likewise, medical-lab skills and clinical skills cannot be perfectly taught through e-learning or tele- learning means. The laboratory skills in pre-clinical subjects, and clinical skills in clinical subjects, are usually taught in a three stage process of observation of a demonstration, practice under supervision, and independent practice until perfect.⁸ All this needs a direct supervision in addition to a simultaneous background theoretical knowledge. Other aspects of a medical student's training like interpersonal skills and teamwork, communication skills and behavioural skills (student-teacher, student-student, student-staff, and student-patient) cannot be learnt through e-learning or tele-learning.

In spite of all limitations mentioned above, during this lockdown period due to COVID-19, whatever type, and to whatever extent e-learning is used, it is a better alternative because 'something is better than nothing.' This situation also uncovered the need to include these modern technologies to be included in the training programmes of medical teachers.

HOW TO CONSULT A RESEARCH ARTICLE FROM A MEDICAL JOURNAL?

INTRODUCTION

Knowledge is increasing day by day. Research generates new knowledge. Research is reported in the form of research articles which are published in research journals. Medical research is published in medical research journals.

WHAT IS RESEARCH?

Research is a systematic investigation towards increasing the sum of knowledge.

OBJECTIVES OF RESEARCH:

Research is done either to find out new facts or to prove/disprove the already known facts. So respectability is a very important feature of research.

PHASES OF RESEARCH

Any research work undergoes following phases:

1. **Planning Phase:** In this phase an extensive literature search is carried out about the research topic and Study Design or Research Protocol is finalized. Data collection instrument or Research Proforma is designed. Objectives of research are formulated.
2. **Data Collection Phase:** This is the actual process of research. Using research proforma collects individual observations.
3. **Data Analysis Phase:** Data collected during the data collection phase is in the form of individual observations. This data is analyzed by utilizing various statistical methods. The data is transformed into various tables, charts, diagrams and / or graphs.
4. **Data Presentation Phase:** Paper presentation in a research/scientific conference or oral poster. Research article published in scientific Journal. Thesis or dissertation. The results of any research work are presented in the form of research report or research article or if the research work is performed to acquire some degree, it is presented in the form of a thesis/ Dissertation.

FORMAT OF RESEARCH ARTICLES

There is international consensus on the format of medical research articles. Now a day almost all medical journals publish articles written in the same style which is based on the —Uniform Requirements for Manuscripts Submitted to Biomedical Journals, 5th edition, 1997.

WHY THESE RESEARCH ARTICLES ARE CONSULTED?

To update knowledge; to know about the methodology of some research; to critically examine the article for publication.

COMPONENTS OF A RESEARCH ARTICLE / PAPER / REPORT

For our convenience, we can divide an article into HEAD, BODY and TAIL.

HEAD (HAS) H = Heading A = Authors & Addresses S = Summary or Abstract.

BODY (IMRAD) I = Introduction M = Methods or materials & methods or subject & methods R = Results A = Analysis D = Discussion

TAIL (Reference)

HEAD (H A S) H = Heading or title. It should be concise and informative. A = Authors with addresses. First Author, Co-Authors and Corresponding Author. S = Summary or abstracts, it states purpose of study, basic procedures, main finding and principle conclusions. Abstract may be a —structured abstract.

BODY (I M R A D)

I = Introduction WHY DID YOU START:

What is the problem, what is magnitude or the problem, what is known about the problem at the time of research, what are gaps in the existing knowledge about the problem, what is the need for the present research and what are the objectives of present research are described in this part of the article? It shows that: i) The present study is a natural outgrowth of previous research, ii) Present study is needed to fill the gap in existing knowledge.

M = Methods or Materials & Methods or Subject & Methods.

WHAT DID YOU DO? What material or population was studied? What were the criteria for inclusion or exclusion of subject? What laboratory methods or tests were used? What statistical methods were utilized to analyze the data?

R = Results: WHAT DID YOU FIND?

This part of the article describes the findings of research keeping in view the objectives of research. Results are described in the text and some —Tables‖ , —Graphs‖ , —Diagrams‖ and —Charts‖ are also formed. Results are statistical; analyzed and they are mentioned in statistical terms e.g., mean, standard deviation, P-value or significance. These are calculated by statistical methods. (See Annex-I) A = Analysis Analysis of results using statistical methods.

D = Discussion: WHAT DO THE RESULTS MEAN?

Comparison of the findings of present research with the findings of research of other workers is given. It is discussed that how our findings similar or different from findings of other workers? Why they are similar or different? What is the conclusion of present research, if any? What are recommendations for further research, if any?

TAIL (References)

They are numbered and are in the order in which they are mentioned in the text. There are specified rules for writing references. One method is given below: Authors name – title of the article – name of the journal – year of publication – volume No. – page numbers (first – last).

IMPORTANCE OF PARTS OF RESEARCH ARTICLE

Index Medicus, Medline and **Medlip** are important sources of information for a research scholar. They provide information about Head of the article. Index Medicus: is a list of medical research articles which is published by the National Library of Medicine (NLM) of USA. It provides information about title of article, Authors names and addresses and reference of the journal with page numbers. Indus Mdeicus is published monthly and Cumulated index Medicus is published annually.

Medline: (on CD-ROM) is the electronic counterpart of the Index Medicus. Medline also provides abstract of the article alongwith other information about research article.

Medlip: is Medical Literature in Pakistan. This is the same type of book as is Index Medicus. The College of Physicians & Surgeons Pakistan (CPSP) publishes this book yearly. This book provides the same type of information as is given in Index Medicus for research in Pakistan.

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Books Available as PDF:

1. Research Design-Qualitative, Quantitative and Mixed Method Research 2014
2. Medical Statistics from Scratch 2014
3. How to Write Better Medical Papers 2019
4. Introduction to Research (Urdu) 2007 Tehseen Iqbal
4. A Practical Guide for Health Researchers WHO EMRO 2004
5. QUANTITATIVE SOCIAL RESEARCH METHODS 2007

MBBS COURSE OUTCOME

A medical graduate student, upon successfully qualifying in the M.B.B.S examination:

1. Diagnose and manage common health problems of the individual and the community on the basis of clinical skills based on history, physical examination and relevant investigations.
2. Achieve competence in practice of holistic medicine, encompassing, preventive, curative and rehabilitative aspects of common diseases.
3. Perform emergency and routine surgical procedures including normal delivery, CPR etc. to save the life of patients.
4. Appreciate rationale for different therapeutic modalities and prescribe safe and essential drugs keeping in view of their common side effects and cost effectiveness on the part of the patient.
5. Diagnosis, manage and rehabilitate patients suffering with mental disorders, alcoholism and non-therapeutic uses of drugs.
6. Observe and follow medico-legal responsibilities in medical practice as per laws of land and medical ethics as a whole.
7. Lead/Work efficiently with the health care team at primary, secondary and tertiary levels and implement related National policies.
8. Show a strong habit of lifelong learning, and is committed to continuous improvement of skills and knowledge.
9. Have personal characteristics and attitudes required for professional life such as personal integrity, sense of responsibility and dependability and ability to show concern for other individuals.

MEDICAL PHYSIOLOGY COURSE OUTCOME

At the end of the courses, the student should be able to:

1. Attain comprehensive knowledge of the normal functions of the organ and systems of the body to facilitate an understanding of the physiological basis of health and disease.
2. The student will be able to explain the interactions between different systems for well-coordinated total body functions.
3. List the physiological principles underlying pathogenesis and treatment of disease.

MEDICAL BIOCHEMISTRY COURSE OUTCOME

At the end of the courses, the student should be able to:

1. Attain the understanding of scientific basis of the life processes at the molecular level and various metabolic activities such as digestion and assimilation of nutrients.
2. Understand the maintenance of body fluid and pH balance.
3. Understand the biochemical basis of environmental health hazards.
4. Understand the principles of various conventional and specialized laboratory investigations and instrumentation.

HUMAN ANATOMY COURSE OUTCOME

At the end of the courses, the student should be able to:

1. Attain comprehensive knowledge of the gross and microscopic structure of human organs and body parts and their correlation with anatomical basis of disease presentation.
2. Mark the topography of the living anatomy so that they should understand newer imaging techniques and interpretation of Computerized Tomography (CT) Scan, Sonogram etc.
3. Understand anatomical basis of some common clinical procedures i.e., intramuscular and intravenous injection, lumbar puncture, kidney biopsy etc. and surgical procedures.

STUDENT GUIDE TO MEDICAL PHYSIOLOGY

i. What is physiology and why is it important to you as a future physician?

- Physiology is the study of the body's function - from molecules to the whole organism.
- Physiology applies fundamental principles of physics and chemistry to the understanding of the body's function and regulatory mechanisms.
- Physiology also is an approach to analyzing the mechanisms responsible for producing a healthy individual. As such, Physiology is not just a body of facts but is an ordered analytical process. Our objective is to show you how to think with a physiological perspective.
- One of the key concepts in physiology is *homeostasis*, which includes all the mechanisms by which the body maintains its normal healthy state. Negative feedback is an important component of these regulatory mechanisms.
- Physiology is critical to understanding both Medicine and Surgery. Physiologists utilize much the same analytical process to study normal function that physicians and surgeons use to diagnose and explain disordered function. You will use your knowledge of physiology every day in your clinical practice.

ii. What are the overall learning objectives for this course?

Students should be able to:

- Explain physiological mechanisms by applying basic principles of physics and chemistry.
- Describe the fundamental mechanisms underlying normal function of cells, tissues, organs, and organ systems of the human body,

commensurate with the requirements for a physician providing primary care to patients.

- Explain the basic mechanisms of homeostasis by integrating the functions of cells, tissues, organs, and organ systems.
- Apply knowledge of functional mechanisms and their regulation to explain pathophysiology of common diseases.
- Effectively solve basic problems in Physiology and Pathophysiology, working independently and in groups.
- Identify and utilize appropriate reference resources, both on-line and in print, to clarify and expand knowledge of Physiology and Pathophysiology.

iii. What should you do to be successful in learning physiology?

- Utilize and master all the learning objectives included with each handout.
- Success in learning physiology requires active studying at a level far exceeding that in other courses. Active learning includes active listening and taking notes in lectures; drawing, labeling, and manipulating graphs and following all the steps in flow charts; knowing key variables in equations, summarizing physiological processes; solving assigned problems and those in the book; and self-testing objectively prior to the exams. On-line exams will be made available at the end of each block of material to illustrate styles of questions.
- **Keeping up-to-date is critical** given the volume of material, its pace, and the fact that physiology is highly conceptual. Also, thorough understanding of prior lectures is required for understanding subsequent lectures. Read the assigned material ahead of time. A systematic and regular study routine is vastly superior to the "cram before the test" approach. Use the materials provided by the faculty as your primary source of information and utilize others only when needed to help you understand concepts that are difficult for you. Resist the temptation to regularly use several sources; you don't

have time to read all of them. A recent poll of students who made “Honors” disclosed that they consistently spent between 3-4 hours per day studying physiology and that they would not leave the material until they were certain they understood every aspect thoroughly.

- **Caution: don’t take the information for granted.** Many students are lulled into a false sense of security because physiological mechanisms appear to be so logical. Students often believe, erroneously, that because the explanations make sense, they know and understand the subject matter. Students with these attitudes usually have difficulty on examinations. You know physiology if you can utilize the principles to solve problems and answer questions and can explain the material clearly to others using graphs, equations, and/or diagrams. Study groups and tutors are useful for more objective assessments of your skills.

iv. What will you learn about the clinical applications of physiology?

- Some lectures will begin with a brief clinical problem, which will provide a framework for integrating the basic physiological mechanisms into the context of disease.
- Clinical correlations and/or patient oriented problems will be presented during each block. All clinical material will be covered on examinations.
- Problem-based learning sessions (PBLs) will feature application of basic principles to understand clinical content. Key material from these sessions will be covered on examinations.

v. Which textbooks are recommended?

- RG Carroll, *Problem-Based Physiology*, Saunders-Elsevier, 2010.
- Guyton & Hall, *Textbook of Medical Physiology*, Saunders-Elsevier, 2012.
- Sherwood L, *Human Physiology*, Saunders-Elsevier, 2016.

vi. What is the course policy on attendance?

As per policy of the University of Health Sciences (UHS) Lahore, 85% attendance is required. No compromise on this policy.

Physiology Course MBBS First Professional

Theory Topics (They will be examined by SEQ and MCQ questions and Long Viva)

1. Homeostasis and Cell Physiology
2. Nerve and Muscle Physiology
3. Blood Physiology
4. Respiratory Physiology
5. Physiology of the Heart
6. Physiology of Circulation
7. Skin and Body Temperature Regulation

Practicals(They will be examined by OSPE, Practical Performance and Viva)

1. Study of Microscope
2. Estimation of Hb
3. Determination of ESR
4. Osmotic Fragility of RBC
5. Study of the Neubaur chamber
6. WBC Count
7. RBC Count
8. Platelet Count
9. ABO & Rh Blood Groups
10. DLC Slide Preparation
11. DLC Count
12. Exam. of Arterial Pulses
13. Exam. of Jugular Venous Pulse
14. Recording of Blood Pressure
15. Bleeding Time, Clotting Time
16. ECG Recording
17. ECG Examination
18. Determination of Vital Capacity
19. Examination of Chest
20. Triple Response
21. Recording of Body Temperature
22. CPR

Table of Specification for First Professional MBBS

Serial No	Topic/Chapter	No. of MCQs	No. of SEQs
1	Basic and Cell Physiology	02	01
2	Blood	09	02
3	Nerve and Muscle	09	02
4	Skin and Body Temperature	02	0.5
5	Cardiovascular System	14	02
6	Respiratory System	07	01
7	Human Responses in Varied Environments	02	0.5
	Total	45	09

Physiology Course MBBS Second Professional

Theory Topics (They will be examined by SEQ and MCQ questions and Long Viva)

1. Special Senses
2. Nervous System
3. Endocrines
4. Reproduction
5. Urinary System
6. Digestive System and Liver

Practicals(They will be examined by OSPE, Practical Performance and Viva)

1. Field of Vision
2. Colour vision
3. Ophthalmoscopy
4. Visual Acuity (Far vision)
5. Visual Acuity (Near vision)
6. Near Point and Near Response
7. Tuning Fork Tests
8. Audiometry
9. Exam. of Taste Sensation
10. Exam. of Sense of Smell
11. Exam of DC-ML System
12. Exam of AL System
13. Exam. of Cranial Nerves 1-6
14. Exam. of Cranial Nerves 7-12
15. Exam. of Superficial Reflexes
16. Exam. of Deep Reflexes
17. Cerebellar Function Tests
18. Pregnancy Test
19. Specific Gravity of Urine
20. How to read a medical research paper from a medical journal

Table of Specification for Second Professional MBBS

Serial No	Topic/Chapter	No. of MCQs	No. of SEQs
1	Body Fluids and Kidneys	08	02
2	Nervous System	12	02
3	Special Senses	06	01
4	Endocrine System	08	02
5	Reproductive System	06	01
6	Digestive System and Liver	05	01
	Total	45	09



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