A Medical Curriculum Shaped by Medical Students
Dear EuroMeds enthusiast,

On behalf of Editorial Team, it is an honor for me to present the EuroMeds Autumn Assembly '19 Issue! Starting from now, you will be reading different aspects of the assembly's main theme:
As medical students, we are both “raw material” and “finished products” of medical education. We are even affected and effecting economics, sociology, politics of our nations, regions and eventually, globe. Starting from the 1950s, education methods, curriculum development, assessment & evaluation have been studied excessively in national/international communities. These unite with one of the most important aspects of education: student involvement. Starting from local authorities, students can “shout out” on their “fate”. In this situation, we will be discussing the key points of student involvement in our educational systems, our curriculums.

With this issue, I have come to end of my 2 years of EuroMeds adventure. I have always been passionate on publications starting from high school. I was 16 when I learned how to design, how to proofread. With starting medical school, I wanted do something about publications again and EuroMeds was the “stairway to heaven” for me. During these 2 years, I have worked in eight EuroMeds Issues. I have learned new things with each issue. I can say that EuroMeds has evaluated me while I was trying to evaluate it. I would like to thank everyone who I have negotiated with, associate editors, proofreaders, designers, chief editors, contributors and EEB members, for making this journey awesome for me.

While I am coming at the end of my words, I would like to thank İsıl, Helena and Simon for their overwhelming work, Sinead and Liza for their “eagle-eyes”, and Berkay for his aestheticism during whole year. I could not have done anything without you during the year. You people rock! I hope to see you somewhere in Europe one day. I would also like to thank Vice President of Capacity, Ece Çalışan for her understandings and supports during the preparations of the issues during the year and being a great “chief” for me.

I hope to see everyone in Europe someday. Hope you enjoy the Assembly. Κάντε μια υπέροχη μέρα με τους φίλους σας!

İhsan Selçuk YURTTAŞ
EMSA EuroMeds Chief Editor
European Medical Students’ Association (EMSA)  
Association Européenne des Étudiants en Médecine

is a non-profit, non-governmental organisation representing more than 150,000 medical students from over 90 faculties across Europe. Founded in 1990, in Brussels, it is the voice of students within the European Commission, the Council of Europe and the United Nations. The association provides a platform for high-level advocacy, projects, trainings workshops and international meetings. Its activities gather around Medical Education, Medical Ethics and Human Rights, Health Policy, Public Health, Medical Science and European Integration and Culture.

OUR VISION
Shaping a solidary and united Europe, where medical students actively promote health.

OUR MISSION
EMSA empowers medical students to advocate health in all policies, excellence in medical research, interprofessional healthcare education and the protection of human rights across Europe.

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SEPTEMBER 1-6, 2019
ATHENS, GREECE

Registration:
Representatives 12.05 - 28.05
Members 05.06 - 20.06

Topic:
A Medical Curriculum shaped by Medical Students

Pre-AA: 30.08 - 01.09
Post-AA Trip: 06.09 - 07.09

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Dear fellow medical students, this opinion essay is written to share with you my early worries in medical education and how my opinions about ‘What to know’ evolved over the past 3 years. I hope this article voices some common worries we have. Feel free to reach out to me if you would like to discuss these in more detail - I am looking forward to hearing what others think about the subject of medical education!

Studying! The Professional activity of any being with the title ‘Medical Student’, executed preferably on a regular basis in order to add 2 simple letters of the alphabet to the beginning of a name: MD. Studying can be a very satisfying activity if the person is interested in the topic in hand, or it can be a nightmare if one’s brain is rejecting the dull and uninteresting topic. And yet, regardless of the level of entertainment we get from studying a subject, we are expected to obtain certain amounts of knowledge so that we -in theory- grasp everything we need to know to practice medicine. One may feel even more desperate if they can recall the first days of their medical education when they did not filter which bits of information were not necessary to know by heart.

The Sad Reality: We are Expected To Learn & Maintain Impossible Amounts of Information

In the first couple of months of medical school, I was rather stressed about the big chunks of information being thrown at us on a weekly basis with limited time to study them. As a mountain of knowledge kept piling up, there appeared to be no opportunity for us to use...
any knowledge we obtained throughout the months. As a result, anything that entered my mind flew away very quickly. I could get one of the top grades in the classroom, and yet I probably retained little to no information from the first year of medical school.

When I got into the second year, I was extremely worried about not retaining large amounts of information. Now that I was in year 2, more important information was going to be taught. What if I could not retain this information either? What if in the future when I need to know about something I will not be able to recall it? Could I possibly harm my future patients by not knowing everything that was thought in the medical school? These questions made me very worried and pessimistic about my future work for a long period of time.

One specific event that took place in second year actually marked the point where my worries reached an alarming level. One of our Histology and Embryology lecturers had been asking the smallest of details in their exam questions for months. Some time during the winter, I filed a complaint against one of their exam questions. The question was asking why dark skin was dark. The correct answer the lecturer accepted claimed that there is reduced levels of melanin degradation in darker skin compared to paler complexion. I argued that, in fact, melanin degradation is equally efficient in all skin complexions and that darker skin color is a result of a higher melanin deposition to the upper layers of the skin. (My claim was supported by a good number of high-quality studies.) Of course, the lecturer did not accept the explanation I offered. ‘This is not how I taught you in class, you should have come and listened to the lecture’ was their petty explanation to me. As always, they continued by further complaining that we were very very bad medical students, and that every single thing they taught was very important for us. Moreover, they were immensely disappointed in us for not memorizing every single bit of information from the lecture. The 2nd year me took her impossible expectations of us too seriously. ‘I certainly can’t know everything that is being taught, maybe I shouldn’t continue’ was what I questioned over the course of the week following this event. The lecturer was not an MD, and she could not possibly know what information was absolutely necessary for a future doctor.

M.D.: Super-Terrestrial Beings

My fear of not knowing what I had to know was not merely fueled by this particular lecturer. It was also fueled by other professors. The society we live in want to imagine doctors as super-terrestrial beings that are always perfect. This illusion of perfection is present in many of the MD academics who lectured us, and only a very small number of them ever said: ‘I don’t know, let’s research that’. Most academics always gave answers to all questions, although sometimes the answers were not quite correct, so they answered the questions they knew the answers to instead of the questions being asked. Yet, we also have very rarely seen a doctor saying, ‘I have no idea’. So academics -MD or not- acted as if it was a taboo to not know everything.
After 50 minutes and 120+ slides used in a lecture, my classmates always pleaded me to ask the lecturer ‘What is important?’. I most often very kindly posed the dreaded questions ‘Well, what do we need to focus on? What is most important for us to know?’. The answer was nearly always ‘Everything, of course.’.

So We Can’t Actually Know Everything, Then What?

It took me 2 full years of medical school to finally realize that it was okay not to know everything by heart. Because, in reality, we will not use all the knowledge that is taught to us. We will dump almost 99% of the information to our subconscious mind, and we will perhaps never revisit that 99% in the next 6 years time. After accepting this reality, there are different attitudes one may gain:

1- You can make peace with ‘forgetting’ most of what you learn and keep doing your best anyways. You will make peace, because you know that if something is important, it means that you are actively using that information and if you are actively retrieving that information, then you know it. Even if you cannot recall the details of a subject, a specific disease name for instance, the subject has a place in your mind. You are aware that it exists. If you see a sign in a patient that can be pointing towards a disease, you will recall enough to know that something is not right and you will refer the patient. But for you to know what is normal and what is pathological, you should have studied the relevant subjects before hand.

The true purpose of a very extensive medical education is to place enough information to your subconscious to make sure you know when to take action!

You don’t have to be a cyborg with 10 terabytes of memory. But if you study hard, you will know everything you need to know on a subconscious level and be able to make the right decisions and notice what you need to notice during your medical practices. If you ask me, you need to properly study to retain the information for a long period of time. Yes, you will forget all of it even if you study it very hard or if you study it superficially to get a good grade in the exam. But the difference is that the superficial information you obtain will not sink to your subconscious.

2- The other approach you can gain is to be aware that you do not need to know everything by heart and that you will forget them anyways. So you study the past years exam questions and pass the class without learning very little. You will have to study everything for your specialty exam, or if your country does not have an exam you will never need to know all that stuff. Is there anything wrong with this approach? I have no idea. But it somehow feels wrong to me. Because if you only study to save the day, very little amount of information will sink to your subconscious.

Medical education is a long journey that may look scary at the beginning. The expectations imposed on us are most often unrealistic and far away from what is actually necessary.

What to Absolutely Know

A big criticism goes to medical education here. Because our education does not make the most important
information shine bright. Because we are all by ourselves to decide what will be important in the future. If you ever used a USMLE (United States Medical Licensing Exam) High Yield book to learn the most important parts of a subject, you will notice that even what those books highlight are sometimes absolutely unnecessary and has no place in everyday medical practice.

I study in Turkey and our specialty exam is certainly not questioning the critical bits of information. In some cases, USMLE does not either, but it is somehow more humane. In the end, all medical students make up their own rules about what is important to know for the future. For me, signs of diseases, contraindications, red flags, disease etiologies, diagnostic modalities of choice, gross pathological signs, emergency situations are more important than cellular mechanics, drugs, details of a treatment, cellular pathologies that can be seen in a disease. Of course the one of the priorities to learn is influenced by the future career the individual desires. A person that desires to have public health major will have very different learning priorities than a person wanting to be a surgeon with a certain specialization.

What to Absolutely NOT Know

Studies show that doctors are less likely to retain information that they can easily google. (Of course you cannot play doctor with google knowledge! Don’t get your hopes high up!) For example, tumor staging in some specialties have very complex set of rules. Once a professor of mine said ‘Don’t memorise these, even I don’t know them, I have the stage definitions on my desk, I just check it from there.’ In the past, the internet was not a vast source of knowledge; today, it is becoming the external hard-drive of doctors and perhaps it is okay. Our brains are getting used to working in synchrony with the information they can obtain very fast from outside sources.

Another example of what one should not know is certain formulas for nephrology, because there are computer applications that do the calculations according to the formulas for you. (And they are error free!) But the lecturers will ask them in the exam, even if they cannot really recall the formula themselves. Why do they ask that stuff? I have absolutely no idea… I am still asking why.

Very detailed cellular biology can be interesting to study, because you might want to have an idea why a certain drug has an effect, or why the deficiency of an enzyme leads to a certain pathology. But be sure to not drown in enzyme cascades and cellular metabolisms. Knowing a cellular physiological event is only necessary when you actually want to do research about something relevant. And yet again, you will get this asked in exams. I think they want to be sure that they at least read or heard about these kinds of molecular-level events.

It is okay to have Merck Manual or Harrison’s Internal Medicine in your office and check it out even in front of the patient if you need to. You can tell them that you are not sure, and that you will need to check some resources before answering their question. But I think it is not okay to make up an answer, as some doctors are probably doing.

In conclusion: Medical education is a long journey that may look scary at the beginning. The expectations imposed on us are most often unrealistic and far away from what is actually necessary. For me, I am okay with doing my best to retain the information that I find important. If the information sinks deep below, I can reach out and retrieve it. My conscience, which wants to do the best to help her future patients, is at peace with this. The question of ‘What should I know’ is a question one should answer according to their own future aims.

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Stress, sleep deprivation and skipped meals are only a tiny percent of the factors that affect and influence medical students worldwide on a daily basis. However, the attention granted to these factors in terms of prevention and management is as low as possible. As a result, an alarming increase in mental instability and disease has been recently observed and taken into consideration at an European level. On the 2nd of May 2017, British Medical Journal published an article entitled "Medical Students and suicide" which expresses the struggle of most medical students during their 6 long years of academic burnout harshly but accurately. Numbers as high as 27.2% of the medical students participating in the research had declared sufferings caused by depressive symptoms with an 11 percent reported suicidal thoughts and initiative. Now, the common solution would be the identification of the triggering factors and their removal from these students life. But what happens when their everyday life becomes their trigger altogether? Should they change profession? Should they seek treatment? And from whom? Relatives, psychologists, friends, teachers? There appears to be no right or wrong answer up to this point, although an updated solution is in need in order to ensure a new generation of mentally stable and proactive doctors.

"We needn't forget that a depressed, anxious doctors is never going to perform at its finest."
Most students confess to feeling insecure and unworthy from an academic point of view while others simply cannot keep up with the high demands of their university teachers. The medical education system seems to be shaped in such a way that it is success driven no matter the price. The majority of students neglect the initial symptoms of exhaustion such as insomnia, sleep disorder, irritability and lack of concentration and tend to push their limits even more, especially during final exams, eventually developing a full on burnout syndrome. From my experience as a medical student, the amount of activities encouraging mental health among students are insufficient, sometimes nonexistent. It is common belief that one can and should overcome his or her struggles by themselves and that it is their duty to tend to their health, especially mentally. Therefore, the number of seminars or curriculum introduced specifically for the prevention and treatment of mental disorders is overshadowed by other activities and eventually put aside “until further notice”.

Suicide seems to be the final stage for medical students overcome by their depression and anxiety as stated by recent studies. At which point can one decide it is time to intervene and do something for these students? And how can we easily identify those who struggle and are in need of help? I believe for these types of questions we should be seeking answers and practical solutions. For a plan to be set in place, first, we need to acknowledge these students for what they are and slowly become as stress and exhaustion creep in, and that is patients. We train for 6 years to successfully diagnose and treat patients, but when it comes to medical students, they seem to be categorized as a different entity. They care for others and forget about themselves. BMJ managed to get a hold of some students and have them explain what drove them to the point of depression and suicide. Almost all of their confessions ended up by stating that medical school was the root of all their problems. When did something they fought for during their teenage, and maybe earlier, years and dreamed of for many time become their nightmare? The answer is quite simple, from my perspective, the perspective of a medical student herself. We, as students lack three things: knowledge, financial support and emotional support, as I will shortly get into all of them.

Knowledge is what we need in order to understand how stressful, selfless and sometimes unsatisfying the job of a doctor is. Many high school graduates turn to medical school in hopes of finding their inner Dr. Grey from “Grey’s Anatomy” or better yet, picture themselves as a rebel Dr. House. Unrealistic scenarios of how their lives as doctors will look like make them apply for medical school wrongfully, unable to fully comprehend the sacrifice medical school and later on medical life implies. Financial support is without a doubt a serious cause of distress for medical students as they cannot handle a job and study at the same time. They rely solely on their family’s support or on scholarships. In my country, for example, Romania; students have to keep up their good grades in order to obtain financial support from the government and are constantly competing against others. This resulted in many cases of toxic competition, lack of social interaction and excessive anxiety for those who couldn’t afford the medical school taxes. Emotional support is what I consider to be a turning point for all medical students; depending on its existence students receive the help and treatment needed or sink deeper into their mental disorder. It is also the point I strongly believe we should be focusing most on. Care and support is what we all, as humans, need in order to realise that we don’t have to face all of our problems alone. Better support groups at the university, a better advocacy for mental health and medical health education included in our curriculum are some of the long term solutions that need to be implemented as soon as possible.

We needn’t forget that a depressed, anxious doctors is never going to perform at its finest. Caring for struggling medical students means ensuring a bright future for the medical system with an improved quality of life for both doctors and patients.

Work Cited:
1, 2 BMJ 2017;357:j1460 - Flavia Munn, freelance journalist - Medical students and suicide
Space exploration advances in the recent years are accompanied by the development of a meticulous level of care briefly known as space medicine. Space medicine encompasses aspects of preventive medicine and rehabilitation given that space medicine specialists are involved in the selection of astronauts and in their treatment after landing back to earth. However, space medicine is mainly telemedicine. Flight surgeons hold check-up interviews on a regular basis with the astronauts working in the International Space Station. They are also trained to deal with a wide range of extraterrestrial urgent situations from infections to trauma.¹,²

In the frame of space exploration through human long term missions, space telemedicine faces the challenge to evolve providing the astronauts with an even higher level of healthcare services. At the same time, several researchers have suggested that advances in space telemedicine can be implemented on earth as well. This suggestion is based on the similarity of a space mission and a remote terrestrial community. It appears also as a promising framework for future research.³

What do the International Space Station and a remote village in Nepal have in common? According to Sullivan et al, they share a lot including isolation, remoteness to tertiary care centers, resource scarcity, difficult
(and expensive) emergency transfers, limited access to physicians and specialists and limited training of medical and nursing staff.\textsuperscript{4,5,9} In this article we are going to elaborate on evolving applications of space medicine that could be used in terrestrial telemedicine. Moreover, we are going to reflect on the future perspective of a joint research and implementation culture between space and terrestrial telemedicine.\textsuperscript{4}

Space telemedicine is based on communication systems that allow direct communication and real time transmission of measurements and tests data. Besides the evaluation of the results, efficient guidance for various procedures including CPR and microoperations is needed.\textsuperscript{4} The high cost or the practical reasons that do not allow the transportation of a severe case to an adequate terrestrial facility underline the need for direct communication. In terrestrial settings this feature will may be possible through 5G internet applications.\textsuperscript{7} The application of 5G on earth with all the advantages and disadvantages that are already widely discussed and transferring this discussion in space will add even more controversy. However addressing the matter of 5G in both terrestrial and extraterrestrial context will possibly facilitate solutions, counteractions or alternatives.\textsuperscript{5,9}

In space missions an astronaut is usually appointed as Crew Medical Officer (CMO). The Crew Medical Officers receive practical training in key medical concepts in the model of ATLS. In terrestrial remote communities it is common that a medic, usually a general practitioner, is expected to take care of all the patients with the remote support of specialists. The concept of Crew Medical Officer can be further disseminated in such communities by training individuals to detect life threatening conditions and assist in a wide range of medical procedures.\textsuperscript{4,7}

Telemedicine can also have an educational dimension in such settings. Training courses could be delivered remotely for revision or extra skills acquiring purpose. Hence, lifelong learning appears as an achievable goal for both extraterrestrial and terrestrial CMOs. Making this training as interactive as possible and assessing the level of practical skills acquisition are pivotal in both cases.\textsuperscript{5,6}

Although many new skills can be taught and obtained, other skills such as conducting an echogram or leading a needle require long time training and specialization. It is a challenge for space and terrestrial telemedicine to enable remote specialists to conduct such procedures, regulating every single parameter and angle as they wish instead of guiding inexperienced user. Time and even lives could be saved this way!\textsuperscript{7,9}

All in all, telemedicine faces a twofold challenge to evolve. Echoes from space and urgent calls from Earth shape a list of needs that ought to be addressed in the proximal future. Space telemedicine is supported by generous funding but has minor chances of being evaluated in big scale due to the limited number of astronauts. On the other hand, millions of isolated or remote communities worldwide would be glad to receive novel telemedicine approaches and report on their efficacy. Last but not least telemedicine has the privilege of being served by a multidisciplinary workforce consisting of scientists eager to combine high tech and state of art medical knowledge. In the future joint space and terrestrial telemedicine research can reach innovative outcomes with a positive impact on earth and who knows where else.\textsuperscript{7,9,10}
In the course of history, medical education has zeroed in on two main principles: instilling knowledge from the biomedical sciences and making students acquainted with clinical practice and hospital settings. This medical model has served us relatively well up until now. Over the last few years, nevertheless, medical education has been receiving even more attention. Truth is, that the voices doubting the effectiveness of our current educational model have been proliferating. Oftentimes, many of us have come to the realization that certain aspects of the education we receive are gradually becoming outdated. As our working environment changes at an unprecedented rate, so do the qualities that a good physician should embody. Hence, it is about time the future of medical curricula was brought into the discussion.

This article serves as a preliminary attempt to envision the future of medical education and discuss which factors will most definitely shape the medical curriculum. More specifically, the main focus will be laid on three factors: student involvement, innovative technologies, and soft skills development.

Student involvement

As of now, the situation in terms of student involvement in many medical faculties around the globe is far from ideal. More often than not, students' opinions are not expressed...
or taken into serious account when it comes to molding the medical curriculum. Therefore, strengthening the proactive role of medical students should be an utmost priority in a future medical curriculum.

It is redundant to say that student bodies (such as student boards and electives of each year’s class) are the cornerstone for active student involvement. Equally valuable are also numerous organizations who provide knowledge and tools related to medical education (i.e. studies, guidelines etc.). In this regard, the role of administrative staff and professors’ committees should be mainly advisory - making up for the students’ lack of experience - and on no account condescending. Unfortunately, in many cases, students’ requests are disregarded and faculty members incline towards imposing themselves.

Another issue at hand is that student participation remains an uncharted territory. Despite that, plentiful of initiatives and actions have been developed and can quite easily be put into use. For instance, a rather simple and practical way to achieve active student participation is via mandatory end-of-course evaluations. A thoughtfully planned evaluation form gives each student the opportunity to voice their criticism and overall feedback on the instruction they receive, be it physical facilities (i.e. laboratories, campus) or human resources (i.e. adequately trained personnel). Following up on the students’ input and propositions, the faculty is able to take them into consideration when planning any curriculum changes.

Innovative technologies

The advent of technology has truly redefined every aspect of everyday life, including education. As generations succumb, it is also quite potent that advanced technologies become an indispensable element (not just an extension) of education in the foreseeable future. Thus, it would be rational to examine - as a further step - the ways through which novel technologies are going to be applied to the training of future doctors.

In an era of technological development and enormous data influx, many physicians find themselves overwhelmed and unable to effectively reach decisions - a condition known as infobesity. In order to cope with the substantial amount of data, future doctors need to be introduced to applications, such as Big Data platforms. These softwares will enable them to obtain knowledge and process extensive quantities of information without having to deal with information overload. It should be also noted that early access to these innovations is anticipated to facilitate research.

In the interim, simulated reality technologies provide us with up-and-coming means for developing flexible, educational programs geared towards each student’s individual needs. Within the next few years, simulated reality is destined to become a major part of medical education and training. This, of course, is not coming as a surprise. Emerging technologies such as Virtual, Augmented and Mixed Reality enable features that otherwise medical students would not have access to otherwise: team-training and intra-experience feedback, immediate qualitative and quantitative evaluation, or training in a realistic and controlled environment. Using the appropriate equipment (which in some cases can easily be a typical smartphone), every student can enjoy additional advantages such as self-paced studying and a better insight into human anatomy and physiology. Put into other words, simulated reality could truly revolutionize medical education by converting the “see one, do one, teach one” model to a more personalized model of high efficiency. In conclusion, utilizing such learning aids is could maximize the efficiency of learning in the short term and eliminate errors in medical practice in the long term. And, ranging from laparoscopic surgical simulators to the Anatomage Table, applications of simulated reality technologies are already being gradually incorporated in various universities around Europe.

As our working environment changes at an unprecedented rate, so do the qualities that a good physician should embody. Hence, it is about time the future of medical curricula was brought into the discussion.
Soft skills development

Reflecting on the past, we come effortlessly to the conclusion that the doctor-patient relationship has undergone radical changes. On the one hand, doctors have abolished their so-far paternalistic role. On the other hand, patients are more informed and eager to acquire a higher level of health literacy. Therefore, today’s physicians, let alone future ones, are expected to possess not only exemplary knowledge but also soft skills. When examining various aspects of a physicians work environment, it is rather apparent, how decisive emotional intelligence and interpersonal communication skills (i.e. leadership qualities, social influence) prove to be: an ever growing number of doctors agree upon the necessity of traits such as active listening skills, conscientiousness, work ethics, and empathy for building a relationship of mutual trust with any patient. Not to mention of course, the importance of good bedside manners and approaching any patient as a human being and not as “a list of medical problems and medications”. Furthermore, novel treatments are predominantly based on a more holistic perception of human body mechanisms. This very fact deems it necessary for future physicians to constantly communicate and efficiently collaborate with other professionals in their workplace. Last but not least, we need to bear in mind that physicians belong to a field of excessive competitiveness and alarmingly high occurrence of burnout syndrome.

With all these variables in mind, the “why” of soft skills in modern medical curricula is quite easily explained. With respect to the “how”, though, things are not as clear cut. Soft skills originally had no place in our conventional subject-oriented medical curriculum. Still, some resourcefulness and “thinking outside the box” could make up for our relative lack of “hands-on” experience in this field. One possibility could be, for instance, utilizing Virtual Reality Simulators to cultivate problem-solving abilities and critical thinking. Another aspect not to be omitted, is familiarizing future health professionals with strategies to cope with stress and its debilitating symptoms. In this way, future doctors will live up to what it is expected from them, without sacrificing their mental stability.

Together towards a brighter future

It is rather clear that our medical curricula need to strike out on a new path. Alongside with knowledge; technology, soft skills and, most importantly, students themselves will play a cardinal role in medical education. Nevertheless, it is almost impossible to predict what the future holds. Only one thing is for certain: times change. And so should medical education. Thus, what we as students of the present can do is to advocate for our rights to decide our curriculum and stay informed on new developments. Through careful planning and determination, we will achieve our goal for a medical education system fit for its purpose: preparing not just good, but great physicians.
It is well known that every educational programme has its own goals, achievements and objectives in order to reach the ultimate goal which is the reason of education itself. As medical students, ultimate goal of our education is “advancing science and its application to serve the ultimate goal of relieving human suffering”. This ultimate goal brings us multiple applications to be learned and behaved in our daily life. Here comes the definition of curriculum: systematic approach to educational programmes in terms of knowledge, skills and attitudes.

The written curriculum has the theoretical approach to what teachers want to achieve and practical curriculum should have compatibility with high percentages. As a general overview, non-compatibility can bring a new counter-curriculum as there is always chance for it even in high compatible situations. In order to achieve the high-compatibility, developing education: new techniques, materials, physical and virtual interferences are studied. But as a starting point, we will be setting our time machine to 1998.

Education sociologists Peyton and Peyton, had came with

*Education: enlightening experience*
*Oxford Dictionary*
a basic understanding for every possible educational programme: a curricular cycle. Each cycle involves development through needs assessment, design and implementation phases. After this, outcomes are reviewed and evaluated against the original needs assessment. At the end, comparison will lead us to evaluation, for possible minor and major changes.

Needs change by expectations in academic and sociologic settings. If yesterday’s expectations have achieved or they are not beneficiary anymore, the curriculum and its sub-studies should be eradicated. Thus, teachers/educational staff should have sense, ability and awareness to get through with non-functional studies. If needs are changing rapidly in the target settings, teachers should have greater perception skills for a dynamic curriculum which can be beneficiary for a longer term. As summary, a dynamic curriculum should seek research, human resources management and eventually, change.

In order to evaluate an existing programme or develop a new programme, these stages should be completed as listed below:

- Observe and understand the setting which curriculum will be applied.
- Define the needs of teachers and learners
- Determine the aims and expected outcomes of your curriculum.
- Identify educational ideas: techniques, materials, behaviors etc.
- Accept the general structure of curriculum: general outcomes, main topics, key assessments etc.
- Train teams who will work on detailed structure of the curriculum.
- Implement and refine programme
- Develop a proper evaluation strategy
- Take feedbacks: Is our programme meeting our goals?

Each bullet point above can be explained in multiple pages but in this article, our aim is to cross this stages with student involvement.

There is a common understanding that stands “medical students are both raw materials and products of medical education”. With this idea, “student involvement” phenomenon has been founded and improved since 1980s. A great guideline from Adam Fletcher has shown up to literature in 2003 and thanks to that, we can now understand and review student involvement applications in a better way.

Meaningful Student involvement is engaging students to educational processes in order to achieve better strengthening both their commitment to learning and educational processes itself. We can examine student involvement in two different perspectives which are involved in educational process:

- For medical students, being able to express their ideas might help them think that they are also treated in, they are not excluded in organizations which effect their fates. This sense strengthens their “institutional loyalty” which is important for increasing human resources in any institutions. Also increased social, academic and cultural outcomes will effect students’ life-long critical thinking abilities as they are also a stakeholder of the decision making and long-term evaluation processes.

- For teachers and
educational staff, being able to raise cross-connections with every member of the institution may help filling the academic gaps in school and providing safer environment. “Institutional loyalty” and its outcome is also a variable in the teacher/educational staff perspective.

Now here comes the epicenter of this article: Student Involvement Ladder. This ladder can hold the main frame for further inspections on this topic.

We can describe first three step for clarification. Smallest number has the least participation.

3) Tokenism: Students have right to speak, but rights are limited and/or students do not know how to speak.

2) Decoration: Students are not reasons, but they are not considered as a part and adults lead the processes.

1) Manipulation: Students are seen as reasons of problems.

At the top of the ladder, educational actions are initiaed by medical students and sharing is at its highest level.

There are no sharp initiatives for matching curriculum development stages and student involvement ladder. Hence, there are suggested and applied actions to consider but the main concern is students should always integrated and socialized with each other for decision making and this should always be in democratic methods.

These examples can be considered for involvement:

- Student councils and student representation in academic councils. This initiative can be seen at its best in accreditation processes.
- Local student organization memberships. EMSA takes a great advantage with its understanding and studies in “advocacy”. In addition, this initiative takes the highest level in the student involvement ladder.
- Project development: Students can drive developmental studies in local, national and international levels. A little advice can be given here: "A missing part is always an opportunity for who seek perfection.

As this is a ladder, it will be harder to get from zero to higher steps and impossible to the top step. Students should always be aware of their position in this ladder and work appropriately for reaching one step upper each time. Also, training and research in both of these topics are essential for an efficient advocacy in local level.
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