Review Article

Are good attributes of medical teachers more important than the learning style: a glimpse into the future of medical education and learning

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Abstract: Teachers in medical school have the golden opportunities to shape and change the future of medical discoveries, by inspiring new generation of medical doctors for research, education, and clinical trials. For some medical students, they can determine the choice of their medical subspecialty. A good teaching of best quality will be delivered when there is deep understanding of different educational learning theories that influence leaning. It is expected that medical education will focus on: integration of information between basics sciences and clinical sciences, changing learning structure and learning in community and remote settings, authentic curriculum (adding social and behavioural sciences) and students and student engagement. The concept of students; engagement with curriculum was endorsed by the General Medical Council (GMC) in 2011 and the Association for Medical Education in Europe (AMEE) in 2015. The four key principles that can be applied by medical teachers in their day to day teaching are based on the feedback, activity, individualisation, and relevance. Importantly, feedback provides basis for correcting mistakes, clarifying goals, and reinforcing good practices. The activity meant to indicate that student is actively involving in learning. Individualisation meant to be learning experiences that matches the need of individual student. The relevance of the materials taught (clinical, basic sciences and social and behavioural sciences, communication skills, professionalism and evidence-based medicine). Therefore, the role of the teachers may be more important than the leaning style, especially in medicine and in particular academic medicine. In this review, I will explain why the adoption of theories of learning style may decrease the potential of doctors to explore other beneficial options that add more diversity and success to their career and be part of the academic medicine. It is possible that the attributes of our good medical teachers can influence our progress in our medical career rather than the learning style.

Keywords: Medical education; learning styles, attributes of good teacher

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Attribute of good teachers

Good teaching depends on factors that associated with medical teacher, use of technology, ability of teacher to link medical problems with social and historical events (for example King George madness and porphyria) (1). Good teachers are always having passion for teaching and this why their students are motivated and their legacy will not be forgotten. Perhaps the famous quote from Stephen Covey-2002 (2) (author of the seven habits of highly effective people) illustrates the importance of passion in our careers "*If you can hire people whose passion intersects with the job, they won't require any supervision at all. They will manage themselves better than anyone could ever manage them. Their fire comes from within, not from without. Their motivation is*

internal, *not external*." I believe that passion is very import for medical educators and several books and publications were produced about passion and teaching. In medical school, it's very easy to know those teachers with passion for teaching and their reputation will speak volume about them. In addition, you cannot hide passion nor fake it. Fried defines a passionate teacher as: "*someone in love with a field of knowledge*, *deeply stirred by issues and ideas that change our world*, *drawn to the dilemmas and potentials of the young people who come into class every day*." (3).

There is general agreement in the literature that passionate teachers have major impact in overall students' development and accomplishment (3-5). Fried endorsed this notion and attributed this to the fact that when students attend with passionate teachers they take their studies more seriously and teaching become an inspiration for students (3). Fried also mentioned that passionate teachers are able to build trust and respect and this can make it easier for student to absorb and understand theoretical knowledge and then apply it in practical lives. Importantly, being passionate about teaching was regarded amongst two highest ranking for effective medical teacher (6). Perhaps one can ask question if passion is so important in medical education, how can I protect myself from burn out or stress related to workload or change in policy in medical school? Perhaps the answer from Stephen Covey (author of the seven habits of highly effective people) in which he explained the principle of self-renewal. In this principle Covey explained the importance of renewing four dimension of our nature: physical (exercise, nutrition, stress management), mental (reading, writing, visualising), spiritual and social and emotional skills. In large organisation like National Health Service (NHS) in UK many courses about emotional intelligence and resilience are widely offered to the staff (7).

Reassuring, as an anecdotal evidence most of the good teachers never retire, and this why their educational output was enormous. Therefore, they are profoundly admired due to their natural talent and their ability to bring the best out of their students. Beside the passion, medical teacher is expected to act as role model, led by example and bring their topic alive by showing it relevance to the current scientific, social and political events. Good teachers are aware that they need to be adaptable and flexible with educational needs of different students, beside they need to constantly update material and methods and also constantly collaborate with other medical teachers (8,9).

Beside the above interpersonal skills, good medical teachers are expected to be competent in these areas. Preparing and giving lectures, small group teaching, teaching both practical and clinical skills, facilitating and managing learning, planning a learning programme, developing a learning resources, carry assessment, evaluating educational programme, able to use technology and multimedia and demonstrate an excellent communication skill (10). It worth mentioning, most of the current medical teachers have chosen to teach likely due to direct or indirect influence of inspirational teacher. In addition, Harden and Laidlaw concluded that to be a good teacher you do not need to be extroverted (11). Therefore, to be good teacher you probably need to be taught by good teachers and acquire their skills and passion rather than thinking it is all to do with genetic. When I was medical student, the curriculum of the medical school was problem-based learning (PBL) and community oriented (University of Gezira-Sudan). The medical school was one of the recognised centres for the World Health Organisation (WHO) in community education and medical education. I was able to attend different workshops in medical education organised by the WHO (12). This early exposure to medical education and public health and the excellent teaching by inspirational teachers in these two fields have shaped my interest and enthusiasm. This may explain in part my interest in medical education. Furthermore, beside my current work with my hospital in UK, I am also involved in different research and educational projects with my home country in Africa. I do respect the effort of those medical teachers and their ability to conduct research in low resource setting economy and their motivations mainly based from huge sense of responsibility and awareness towards their local people (social responsibility of the medical school). Perhaps one of the areas of future research is also to study the learning style of doctors in public health in low resources setting countries in different part of the worlds and the influence of their mentors in career progression. Good medical teachers can also help in experiential learning (learning through having experience). Malcolm Knowles have set the foundation of adult learning (Andragogy) and this was based on the following assumptions: (I) why they need to learn; (II) presence of motivation; (III) responsibilities for learning; (IV) objectives for learning; (V) benefit of learning and acquiring new skills; (VI) prior knowledge will ease process of new information (13). These observations of Knowles were lead to the birth of Kolb cycle of learning (14) (Kolb 1984). The cycle begins with learner feel the need for learning (concrete experience) and this lead to watching (observations and reflections), thinking

(abstract concept and generalisation) and this will ultimately lead to implementation or testing of implications of concept in new situations. The process of integration was thought to occur through elaboration, refinement and restructuring (15). To acquire new knowledge about complex subjects, good medical teachers need detailed information about the syllabus in order to arrange lectures and plan for experiential learning. These processes can also represent part of scaffolding (useful steps arrange by teachers to allow understanding of complex subject possible for students). Importantly, providing a student with list of intended learning and educational outcomes is one the powerful mean of scaffolding. Therefore, several researchers have elaborated in learning outcomes. The Bloom's taxonomy in 1954 was further refined by Anderson and Kratwohl 2011 (16). The summary of this work is that you need knowledge at the beginning of training then understanding, applying, analysing and then evaluating and creating. More simple approach for learning outcome was developed by Miller in which knowledge is base for competence and this will lead to good performance and this will lead to action (graduate will be part of medical profession) (17). Taylor and Hamdy suggested that teachers have the chance to encourage students to engage in reflection after feedback in what is called adult model learning in action theory. It is expected this process should allow the leaner to develop knowledge, skills and attitudes (18).

Perhaps one question will remain in the horizon after reviewing some theories and principles of experiential learning, is there any model or theory for lifelong learning for doctors? Daily and Landis (19) have postulated 10 steps for cardiologists who just completed training for what he called journey on becoming self-directed lifelong learners (these are also taken from Knowles but with more elaboration): (I) take initiative and responsibility; (II) recognise your own limitation and seek help from other colleagues when needed; (III) ask questions and seek answers [research, discussion and multidisciplinary meeting (MDT)]; (IV) develop habit of continuous learning and keep up to date with new information; (V) develop the habit of how could I have done better (critical reflection); (VI) set goals (publish paper, case report, contribute in guideline and teaching); (VII) share difficult cases with colleagues; (VIII) use educational opportunities (lecture to doctors in training); (IX) develop your mind in other areas like sport, reading or sightseeing; (X) learn with sense and meaning (in my opinion medicine is a speciality where you can develop a lot of social and behavioural interactions, ultimately this will make you walk in the face of earth with huge sense of humbleness).

It is clear from Kolb theory, Taylor and Hamdy Model and Knowles principles that reflection is shared and important factor in the experiential learning. In my own opinion, reflection should start before, during and after learning. For instance, learning about lumbar puncture during my early medical training, I found that guided reflection was an excellent way of learning how to do the procedure according to the local protocol. Therefore, as educational supervisor in my hospital I always use guided reflection to teach students about practical procedures.

Learning style

Systematic review by Coffield *et al.* suggested that more than 70 styles of leaning do exist (20). Therefore, using Honey and Mumford learning style classification that generated in 1992 which included 4 learning styles may raise the question whether we need to refine it as Anderson and Kratwohl refined Bloom's taxonomy generated in 1956 (21). The refinement of Honey and Mumford is also needed because this style of learning was first designed for business user and not for medical education (22). Furthermore, reading the areas of weakness described by Honey and Mumford after doing the questionnaire may falsely create an impression in the mind of doctors they are deficient in self-development. At the same time, you can be reflectors if you spend a lot of time in academic medicine, neurosurgery, neurology, paediatric or working in geriatric medicine where you need to be careful, through, methodical and importantly good listener. It is a nature of the speciality you are working in that will make you slow in decision and not jumping to conclusion. Importantly, in his book "*Thinking, fast and slow*" by Daniel Kahneman, 2012 (psychologist and Nobel prize winner economist) (23), he explained why in certain situation you need to act fast as in emergency medicine, while you need to be slow in thinking about sending 90 years old woman or man to his/her home with or without carers after he or she received treatment in Hospital. Daniel Kahneman explained what the confounding factors that will affect our brain when we decide choices related to business and personnel live. This was recently called human factors and lead to introduction of checking list that commonly used in Aviation, to be used in Medicine (24). Why Honey and Mumford classification

of style of learning my increase risk of human errors and decrease participation in academic medicine in hospitals? simply reading the areas of weakness associated with activist, reflectors, theorist and pragmatist may lead to impression that "*it is me and my genetic makeup and the way I brought up and this why I do this mistake*". For instance, intensive care and emergency physicians, they need to be ready to take action and act quickly (activists) but because they told by Honey and Mumford they are weak in consolidation and follow through they stopped participating in academic medicine (reflectors style). On the other hand, academic physician or surgeons are perceived are not good clinicians in ward or theatre, according to Honey and Mumford classification they are not assertive and not acting quickly. Therefore, we have created and introduced our own mental glitches that limits horizons for doctors ("*Thinking, fast and slow*" by Daniel Kahneman).

In my own opinions all doctors are capable of multi-tasking since medicine is profession that deal with social, behaviour, environmental, physiological, psychological and pathological changes. I believe that there is no limit for medical doctors' achievement unless they are slowed by physical disability, illness or subjected to prejudice. To give more support for my discussion that we need to refine Honey and Mumford classification, is fact that we have not yet learned from the style of learning of thousands of doctors who have changed their speciality or those who choose to do another career or those dedicate their time for management and leadership (25). Perhaps one thing we all agree with it, Honey and Mumford is style of learning was first designed for business user, learning about business is always learning about risk, profit and business expansion, while in medicine there is one noble option: saving life and make your patients better. Perhaps one benefit of Honey and Mumford style of learning is that doctors can be activists, pragmatists, reflectors and theorists according to clinical, managerial, academic roles. Importantly, they are able to switch between these styles according to the need. Not because it is their genes, but because it is skills and it can be passed on.

Johnson *et al.* identified four dimensions of learning style (active-reflective, visual-verbal, sequential-global, sensing-intuitive) (26). One limitation of their study was the fact that it was conducted in 48 college students and caution is needed in drawing any conclusion suggesting the superiority of any of these learning styles. In addition, Massa and Mayer have shown that verbalizers (learn better with verbal methods of learning) and visualizers (learn better with visual methods of learning) did not differ on the learning test. They have concluded that verbal learners and visual learners will benefit in the same way from all sort of teaching that contain different multimedia styles (27). The styles of teaching of the teachers are also other important factors that can influence our learning. For instance Mohanna *et al.* [2007] identified six types of teaching styles: (I) adaptable and flexible teacher; (II) sensitive and student centred teacher; (III) curriculum teacher; (IV) formal teacher; (V) big conference teacher; (VI) Ad-hoc teacher. Mohanna *et al.* concluded the best style of teaching is adaptable and flexible teacher (28). Therefore, it is obvious to conclude that students who taught by adaptable and flexible teachers during their learning, are likely to have positive learning experience. In absence of research, it's extremely premature to suggest that our learning style is likely to be influenced or may evolve over years by our passion and desire to learn and solve the mystery of complex issues.

Conclusions

In the era of new technology and sophisticated communications, very little was done to design curriculum, new methods of learning and new style of learning using current technology in order to inspire our medical student to join academic medicine. The current evidence from the literature suggests that good teachers will have positive impact in educational outcomes for medical students and doctors in training. While, most of the studies showed that there was no difference in educational outcomes among students with different leaning styles. Importantly, styles of teaching of the teachers are also other important factors that can influence our learning, especially adaptable and flexible teacher (28). Perhaps medical teachers in academic medicine can use their skills and attributes to attract more medical students to join academic medicine. The numbers of doctors joining academic medicine are in decline across the globe. Many recommendations were made and most of these have concentrated on postgraduate MD/PhD programmes, research in sub-specialty fellowships, and other approaches later in clinical training (29) (Martin, 1991). It is without doubt that MD-PhD programme provides medical students with a golden chance of early exposure to learn from research environment (30-32). This again may provide these graduates with golden chance to be adaptable and flexible

teachers in the near future, in order to attract more medical students to join academic medicine.

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References

1. Cox TM, Jack N, Lofthouse S, et al. King George III and porphyria: an elemental hypothesis and investigation. Lancet 2005;366:332-5.
2. The 7 Habits of Highly Effective People 2016 Calendar. Lincolnshire, USA: Acco Brands USA Llc, 2015.
3. Fried RL. The Passionate Teacher: A Practical Guide. Boston: Beacon Pres, 2001.
4. Kushman JW. The organizational dynamics of teacher workplace commitment: a study of urban elementary and middle schools. Educ Adm Q 1992;28:5-42.
5. Rosenholtz SJ. Teachers' Workplace: The Social Organization of Schools. NY: Longman White Plains, 1989.
6. Rampa SH. Passion for Teaching: A Qualitative Study Procedia. Procedia Soc Behav Sci 2012;47:1281-5.
7. Event in the tent, Milton Keynes University Hospital NHS foundation trust-UK. Available online: https://intranet.mkuh.nhs.uk/2590-event-in-the-tent-2018-bookings-now-open, accessed on 2/5/2018
8. Harden RM. International medical education and future directions: a global perspective. Acad Med.2006;81:S22-9.
9. Hesketh EA, Bagnall G, Buckley EG, et al. framework for developing excellence as a clinical educator. Med Educ 2001;35:555-64.
10. Srinivasan M, Li ST, Meyers FJ, et al. "Teaching as a Competency": competencies for medical educators. Acad Med 2011;86:1211-20.
11. Harden RM, Laidlaw JM. Essential skills for a medical teacher. NY, USA: Elsevier, 2017:15-6.
12. Elsanousi S, Elsanousi M, Khalafallah O, et al. Assessment of the social accountability of the faculty of medicine at University of Gezira, Sudan. East Mediterr Health J 2016;22:258-66.
13. Knowles MS. What is andragogy? The Modern Practice of Adult Education: From Pedagogy to Andragogy. Cambridge, New York, NY: Association Press, 1980:40-62.
14. Kolb DA. Experiential learning: experience as the source of learning and development. Englewood Cliffs, NJ, USA: Prentice-Hall, 1984.
15. Norman GR, Schmidt HG. The psychological basis of problem-based learning: A review of the evidence. Acad Med 1992;67:557-65.
16. Anderson LW, Kratwohl DR. A taxonomy for learning, teaching and assessing: A revision of Bloom's taxonomy of educational objectives. New York: Longman, 2001.
17. Miller GE. The assessment of clinical skills/competence/performance. Acad Med 1990;65:S63-7.
18. Taylor DC, Hamdy H. Adult learning theories: implications for learning and teaching in medical education: AMEE Guide No. 83. Med Teach 2013;35:e1561-72.
19. Daily JA, Landis BJ. The journey to becoming an adult learner: from dependent to self-directed learning. J Am Coll Cardiol 2014;64:2066-8.
20. Coffield F, Moseley D, Hall E, et al. A critical analysis of Learning Styles and Pedagogy in post-16 learning: A systematic and critical review. Available online: https://elearningindustry.com/critical-analysis-of-learning-styles-pedagogy-post-16-learning
21. Bloom BS, Engelhart MD, Furst EJ, et al. Taxonomy of educational objectives: The classification of educational goals. Handbook I, Cognitive domain. New York:

Longmans Green, 1956.
22. Honey P, Mumford A. The Manual of Learning Styles Peter. London: P Honey, 1982.
23. Daniel Kahneman. Thinking, Fast and Slow. New York: Farrar, Straus and Giroux, 2011.
24. O'Connor P, Reddin C, O'Sullivan M, et al. Surgical checklists: the human factor. Patient Saf Surg 2013;7:14.
25. Newman P, Peile E. Valuing learners' experience and supporting further growth: educational models to help experienced adult learners in medicine. BMJ 2002;325:200-2.
26. Johnson GM, Johnson JA. Learning Style and Preference for Online Learning Support: Individual Quizzes versus Study Groups. Orlando, FL, USA: ED-MEDIA 2006 Proceeding, 2006:1861-8.
27. Massa LJ, Mayer RE. Testing the ATI hypothesis: Should multimedia instruction accommodate verbalizer-visualizer cognitive style? Learn Individ Differ 2006;16:321-35.
28. Mohanna K, Chambers R, Wall D. Developing your teaching style: increasing effectiveness in healthcare teaching. Postgrad Med J 2007;83:145-7.
29. Martin JB, Training physician-scientists for the 1990s. Acad Med 1991;66:123-9.
30. Sutton J, Killian CD. The MD, PhD researcher: what species of investigator? Acad Med 1996;71:454-9.
31. Maudsley G. Do we all mean the same thing by "problem-based learning"? A review of the concepts and a formulation of the ground rules. Acad Med 1999;74:178-85.
32. McClellan DA, Talalay P. MD, PhD training at the Johns Hopkins University School of Medicine, 1962-1991. Acad Med 1992;67:36-41.

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