Students design their own curriculum: An experiment to maintain students' enthusiasm

Tilemachos Zaimis[2], Anthoula Efstathiadou[2], Despina-Elvira Karakitsiou[3], Ioannis DK Dimoliatis[2]

Corresponding author: Mr Tilemachos Zaimis tilzaimis@gmail.com
Institution: 2. University of Ioannina, 3. Aintree University Hospital
Categories: Curriculum Planning, Medical Education (General)

Received: 22/11/2016
Published: 23/11/2016

Abstract

Believing that the most important factor for learning is learner’s enthusiasm, we suppose that designing their own curriculum will keep students' enthusiasm alive. Thus, enthusiastic students will be better learners.

We were curious about what would have happened if students had the opportunity to design their own curriculum. An online questionnaire, consisting of a main board with all courses and open questions, asked medical students and recent graduates to place all core and option courses in the semester they would like to be taught.

79 (8%) of all 993 Ioannina University Medical students participated; 46 (58%) were positive on deciding their own curriculum from the first year; 7%–85% (mean 49.4%) would like to study core courses, and 24%–95% (67.5%) electives, in a different semester.

Studying with a personalized curriculum was welcomed. Half of core courses and two thirds of optional were desired to be studied in a different semester than the current curriculum predicts. If all students had participated, the same, if not greater, dispersion would be expected.

It’s important to give students the opportunity to carve their own course curriculum, in order to keep and increase their enthusiasm, responsibility and accountability, and in order to match with their teachers’ enthusiasm.

Keywords: Curriculum; Curriculum: Planning; Curriculum: student-centered; Curriculum: personalized; Learner’s enthusiasm

Introduction
One of the most important factors regarding learning is learner’s enthusiasm (Kim & Schallert, 2014). Thus, the essence of a School is its students’ enthusiasm. Therefore, one of the greatest challenges of Medical Schools should be to keep the enthusiasm of the first year students until the end of their education. There are two types of studying: Studying to pass an exam and studying to learn. The first one is exhausting and the results are mediocre; the second one though is delightful and has wonderful results. It’s obvious which one of the two is more meaningful and productive. So, why do most students resort to the first type? After all, as Aristotle said “All men naturally desire knowledge.” (Tredennick, 1989) We tried to solve this mystery and we ended up realizing that the problem is the system of education itself and the very fact that it’s the same for everyone. Considering the fact that every individual student had his/her own personality, how is it possible that a specified and solid study curriculum is suitable for each and every one?

The second greatest challenge is the enthusiasm of professors/teachers regarding their research and teaching field. If professors were obligated to teach a course they did not have any interest into, that would be torture for both teacher and learner. Academic experience shows that tutoring and research keep up with each other; someone can’t be a good tutor if they are not a good researcher (Healey, 2005). It's obvious that professors can't sufficiently teach a subject that they don’t master or they are not passionate with (Thomas, 2007). But yet, the current educational system often obligates students to study a course or to study it at time when they are not at interested with it, only because "they have to" as the program predicts it. Medical students are also adults, so the postulates of education apply to them too ("andragogy" versus "pedagogy") (Squires, 2013); they can be forced to be taught but not to learn. Even if the students' comprehension, regarding the importance of courses, is inaccurate, the incompatibility of study curriculum and their beliefs is what actually weakens what we think as the most important factor in education: enthusiasm (Tseretopoulou, Stratou, Stavrinou, Souretis, & Dimoliatis, 2011).

Having all those theories in mind, we had the idea of performing a small experiment. With an online anonymous questionnaire, we asked medical students and graduates of Ioannina Medical School to place all courses in the semester they would like to be taught. Simple as that. It was already known, though, that students of all academic years would participate, so for instance a first year student would not be able to know the content of all courses. However, our goal was to simply figure out what was trending in the current curriculum.

It is certain that students should always undertake a course with which they are most passionate at a given time, which means that not only optional courses should remain optional, but also mandatory core ones should be transformed to optional regarding their position in the study curriculum. In this manner, the students decide upon the order of the mandatory courses and therefore take the responsibility of their decision. In the era of personalized medicament, personalized curriculum should be available today for tomorrow's doctors. (Glennys & Bligh, 1995)

The first one to introduce the term "individualized learning" was Helen Parkhurst, in the 1920's with the "Dalton Plan". This plan had 4 main objectives: To tailor each student's program to his/her needs, interests and abilities; to promote each student's independence and dependability; to enhance the student's social skills; and to increase their sense of responsibility toward others. (Parkhurst, 1920)

Giving the opportunity to design their own curriculum, we gathered data for further thinking.

Methods

An online anonymous questionnaire was piloted and asked medical students and graduates to place all courses in the semester they would like to be taught. The questionnaire consisted of a small introduction where instructions about
filling the questionnaire were given. Also, there was a link with the current curriculum program so every student could be informed about the current studying program. The questionnaire had boards with all 53 obligatory core courses and other boards with the 59 optional courses, in alphabetical order. Students were asked to place each course to the semester they prefer, regardless the total amount of courses each semester would have. Just to assist their decision, they were advised to keep a total workload of about 800 hours per semester. In order to keep things simple, we only gave them one question to answer and to keep in mind: "If every course was optional, which would you choose in every semester?" Moreover, there were closed questions about student's year of study and gender and the open questions: ‘Based on what criteria you made your choice’, ‘What would be the benefits and drawbacks of creating your own curriculum’, ‘Feel free to express any thoughts about the curriculum’ and ‘Would you like to choose the courses you will study from the first semester?’

**Results**

79 (8%) of all 993 Ioannina University Medical students participated; 6 of the first year, 4 second, 22 third, 5 forth, 19 fifth, 12 sixth, 11 recent graduates.

The number of students that placed each core course in a certain semester, from first (1a) to last (6b) is presented in Table 1. For example, in the first line, 61 (77%) students would like to study Biostatistics in the first semester, as the current curriculum predicts (green), and 18 (23%) in a later (yellow) semester: 12 in semester 1b, 3 in 2a, 1 in 2b, 1 in 1c, and 1 in 5b. In the seventh line, 23 (29%) students would like to study Biochemistry in an earlier semester (orange), 36 (46%) in the semester currently predicted by school's curriculum (green), and 20 (25%) in a later semester (yellow): 17 in 2a and 3 in 3a. In total (last two lines), from 3950 student preferences, 49.5% were in the currently predicted semester and 50.5% in a different one, 31.6% in an earlier and 18.9% in a later semester.

The percentage of students that placed each course earlier (orange) or later (yellow) than the current study curriculum foresees (green) is shown in Figure 1 for the core and Figure 2 for the elective courses. For example, 27% of students desire Physiology to be taught earlier (orange) and 10% later (yellow) than it is foreseen, while 63% prefer to be taught according to the current curriculum. In Figure 1, core courses, the total percentage of green (current) is 49.5% versus 50.5% of the "earlier" and "later" percentages. In Figure 2, elective courses, the total percentage of green is 32.7% versus 67.2% of the other two percentages.

Table 1:
| Core Courses (sorted as curriculum foresees) | Students' preference; orange: earlier (E), green: current (C), yellow: later (L) |
|---------------------------------------------|--------------------------------------------------------------------------------|
| **Biostatistics** | E 61 E 12 E 3 C 1 L 1 |
| **Histology & Embryology** | E 41 C 20 E 16 C 1 L 1 |
| **History of Medicine** | E 62 C 8 C 6 C 2 L 1 |
| **Chemistry** | E 67 C 7 C 4 L 1 |
| **Foreign Language I** | E 72 C 3 C 3 L 1 |
| **Anatomy I** | E 46 C 26 C 7 L 1 |
| **Biochemistry I** | E 23 C 36 C 17 L 3 |
| **Medical Informatics** | E 38 C 32 C 5 C 2 L 1 |
| **Physiology I** | E 21 C 50 C 8 L 1 |
| **Foreign Language II** | E 9 C 63 C 3 L 1 |
| **Anatomy II** | E 1 C 44 C 28 C 6 L 1 |
| **Biology I** | E 53 C 11 C 15 L 1 |
| **Biochemistry II** | E 3 C 20 C 35 C 17 C 1 L 3 |
| **Medical Ethics** | E 34 C 19 C 11 C 1 C 6 L 2 |
| **Physiology II** | E 20 C 50 C 9 L 1 |
| **Biology II** | E 4 C 49 C 10 C 16 L 1 |
| **Medical Physics** | E 22 C 24 C 19 C 13 L 1 |
| **Histology & Embryology II** | E 33 C 24 C 20 C 1 L 1 |
| **Microbiology I** | E 1 C 23 C 22 C 28 C 1 C 2 L 1 |
| **Physiology III** | E 19 C 47 C 11 C 1 L 1 |
| **General Pathology** | E 1 E 6 C 10 C 53 C 3 C 4 C 1 L 1 |
| **Microbiology II** | E 1 C 2 C 24 C 20 C 28 C 2 L 2 |
| **Pathophysiology I** | E 2 C 9 C 55 C 3 C 7 C 1 C 2 L 1 |
| **Hygiene & Epidemiology I** | E 2 E 6 C 32 C 8 C 23 C 2 C 5 L 1 |
| **Pharmacology I** | E 2 C 4 C 49 C 3 C 10 C 1 C 1 L 1 |
| **Special Pathology** | E 1 C 6 C 12 C 50 C 5 C 4 C 1 L 1 |
| **Medical Psychology** | E 4 C 11 C 14 C 11 C 17 C 1 C 4 C 1 C 2 C 1 C 1 L 1 |
| **Pathophysiology II** | E 2 C 9 C 54 C 4 C 7 C 1 C 2 L 1 |
| **Hygiene & Epidemiology II** | E 2 C 5 C 33 C 8 C 23 C 2 C 5 L 1 |
| **Pharmacology II** | E 2 C 4 C 56 C 4 C 10 C 1 C 1 C 1 L 1 |
| **Surgery Semiotics** | E 3 C 12 C 40 C 8 C 12 C 4 L 1 |
| **Radiology** | E 2 C 2 C 15 C 5 C 10 C 2 C 8 L 1 |
| **General Medicine** | E 1 C 11 C 7 C 20 C 9 C 15 C 7 C 7 C 2 L 1 |
| **Dermatology** | E 1 E 5 C 5 E 42 C 11 C 11 C 4 L 1 |
| **Nursology** | E 1 C 1 C 10 C 40 C 16 C 8 C 3 C 1 L 1 |
| **Surgical Pathology I** | E 3 C 3 C 33 C 10 C 16 C 4 C 9 C 1 L 1 |
| **Radiology II** | E 2 C 2 C 15 C 3 C 46 C 4 C 7 L 1 |
| **Ophthalmology** | E 3 C 2 C 25 C 24 C 12 C 8 C 5 L 1 |
| **Surgical Pathology II** | E 3 C 4 C 33 C 9 C 16 C 4 C 10 C 7 L 1 |
| **Cataractology** | E 2 C 1 C 28 C 20 C 7 C 14 C 3 C 4 L 1 |
| **Cardiology** | E 1 C 5 C 6 C 85 C 25 C 6 C 1 C 12 L 1 |
| **Obstetrics Gynecology** | E 1 C 2 C 4 C 15 C 23 C 22 C 13 C 12 L 1 |
| **Neurology** | E 8 C 10 C 31 C 23 C 6 C 1 C 18 C 54 C 4 L 1 |
| **Orthopedics** | E 1 C 2 C 8 C 12 C 30 C 17 C 8 C 1 C 1 C 23 L 1 |
| **Urology** | E 2 C 1 C 14 C 25 C 21 C 7 L 1 |
| **Pulmonology** | E 1 C 5 C 7 C 36 C 17 C 11 C 2 C 13 C 53 C 13 L 1 |
| **Physiological Child** | E 1 C 4 C 2 C 4 C 6 C 32 C 9 C 25 L 1 |
| **Psychiatry** | E 1 C 2 C 1 C 12 C 12 C 23 C 3 C 11 C 1 C 28 C 19 C 12 L 1 |
| **Intensive Treatment** | E 1 C 5 C 6 C 23 C 18 C 14 C 12 C 53 C 26 L 1 |
| **Forensic** | E 1 C 3 C 2 C 8 C 27 C 17 C 13 C 7 C 59 C 20 L 1 |
| **Pathology** | E 6 C 1 C 6 C 1 C 38 C 1 C 27 L 1 |
| **Pediatrics** | E 3 C 4 C 11 C 4 C 32 C 25 C 22 C 57 L 1 |
| **Surgery** | E 5 C 4 C 13 C 4 C 29 C 24 C 26 C 53 L 1 |

**Figure 1**

TOTAL PREFERENCES; n: 1250 1955 745

TOTAL PREFERENCES; %: 31.6 49.5 18.9
Figure 2

| Core Courses Distribution of Preference |
|----------------------------------------|
| Foreign Language | Chemistry | 35 | 15 |
| History of Medicine | Histology & Embryology | 46 | 11 |
| Physiology | Biostatistics | 52 | 22 |
| Anatomy | Biochemistry | 58 | 10 |
| Physiology | Medical Ethics | 59 | 11 |
| Anatomy | Biology | 67 | 9 |
| Physiology | Biochemistry | 63 | 19 |
| Anatomy | Physiology | 61 | 13 |
| Physiology | Microbiology | 57 | 8 |
| Histology & Embryology | Medical Physics | 72 | 13 |
| Anatomy | Physiology | 71 | 22 |
| Physiology | Pathology | 70 | 16 |
| Pathology | Physiology | 67 | 41 |
| Physiology | Pharmacology | 71 | 11 |
| Pharmacology | General Pathology | 61 | 10 |
| General Pathology | Dermatology | 72 | 11 |
| Dermatology | Special Pathology | 52 | 15 |
| Special Pathology | Surgical Pathology | 52 | 11 |
| Surgical Pathology | Nephrology | 51 | 13 |
| Nephrology | General Medicine | 42 | 13 |
| General Medicine | Radiology | 53 | 33 |
| Radiology | Otorhinolaryngology | 52 | 13 |
| Otorhinolaryngology | Ophthalmology | 53 | 35 |
| Ophthalmology | Radiology | 53 | 35 |
| Radiology | Psychiatry | 49 | 15 |
| Psychiatry | Physical Medicine | 35 | 10 |
| Physical Medicine | Pulmonology | 38 | 16 |
| Pulmonology | Urology | 30 | 11 |
| Urology | Orthopaedics | 30 | 9 |
| Orthopaedics | Neurology | 66 | 9 |
| Neurology | Obstetrics & Gynecology | 47 | 9 |
| Obstetrics & Gynecology | Cardiology | 51 | 10 |
| Cardiology | Surgery | 67 | 9 |
| Surgery | Pediatrics | 72 | 15 |
| Pediatrics | Pathology | 82 | 15 |
| Pathology | Forensic Medicine | 75 | 15 |
| Forensic Medicine | Intensive Treatment | 67 | 9 |
Discussion

Even though only 8% of the students participated, their preferences do not meet. Half of core and two thirds of elective courses should be moved to another semester than it is currently foreseen. Not all students agree even on the position of Biostatistics (only 77%); one of them, whatsoever, wanted the course at the fifth year of his/her study.
Why should we force students like them to study a course they don’t desire at a certain time?

In any case, even if only one student is not satisfied; if not enthusiastic or passionate, the study curriculum should be considered. A study curriculum is good if it can handle the extreme situations: We believe that, if the students were able to attend courses they are passionate with at any semester, there would be non-un satisfied, no failure, no absenteeism. They would show more desire, they would show up at every lecture and would have an active participation in the educational experience the university provides. The word "failure" would start to fade over time. After all the student is more than a listener. (Karakitsiou, et al., 2012) As a result, it is reasonable to expect that the coincidence of two enthusiasms, the learner’s and the teacher’s, would generate miracles.

As mentioned before, in order to fill the questionnaire, the students were given one question to keep in mind: "If every course was optional, which would you choose in every semester?" This question contains two major keys in making the curriculum ideal: it is personal and according to one’s needs; and the student has the freedom and control over their educational experience. This way, the student decides the position of every course and takes the responsibility of their decision.

The sample consists of students from all the years of study, but it still remains small and not randomly selected; the questionnaire was completed only from volunteers and we don’t know who they are. However, we believe that even if all students and graduates had participated, the results wouldn't change much; on the contrary they would be more diverse, as more white cells in Table 1 might also be fulfilled with some answers.

Another fact is that the early year students were not as experienced as the older ones, concerning the courses they had to be taught. They had to place some courses in their study curriculum of which they were unaware. However, students search using the internet or the current study guide provided by the university or asking older students. The main way though, to face problems like this is the third objective of the Dalton Plan "To enhance the student's social skills." (Parkhurst, 1920). Students need to seek for help from the older and more experienced ones, starting from the subject matter of each course. With those two alternatives, the student starts searching for him/herself in order to make a wiser choice according their study curriculum. This is the inception of the enthusiasm, which is required to stay high. It seems that there are no good or bad, right or wrong preferences. A preference is a preference. At every semester, the student needs to study their most preferred course at the certain time and not wait until a preferred course be available according to the study curriculum. That's a major way to maintain their enthusiasm and increase their passion. After all, it is the student that is educated, and no one can learn contrary to their desire. As Leonardo da Vinci quoted: "Study without desire spoils the memory, and it retains nothing that it takes in." (Leonardo da Vinci Quotes, 2014) On the contrary, a student learns more sufficiently when they study the course they are most interested in, at any given time. And they take on the responsibility of their choices. Future thoughts: perform new study with bigger sample size (better; include only graduates), measure enthusiasm when students design their own curriculum.

Conclusion

We believe that, the first key factor to optimize the students' performance and their learning experience is the personalized curriculum, which seems to have been warmly welcomed by the majority of students, as the best way to correspond to the needs, interests and abilities of all students. Otherwise, there will always be a few or a lot of them that will be forced against their will to learn. Every student should choose the courses they prefer to study at any semester, irrespectively of their entrance cohort. Moreover, we think that by giving medical students the opportunity to design their own study curriculum in line with the student-centered personalized era, their enthusiasm will be
increased. There is no better way to inspire individuals than allowing them to take the responsibility of their actions. We should give students the opportunity.

Take Home Messages

- Learner’s enthusiasm is the most important factor for learning.
- A personalized curriculum is in line with the learner-centered era.
- Giving medical students the opportunity to design their own study curriculum keeps, if not increases, their enthusiasm to study medicine.
- Students’ opportunity to study both core and elective courses on the semester they prefer would increase their responsibility and accountability.
- Keeping students’ enthusiasm alive during all years of study would match with and increase their teachers’ enthusiasm, generating win-win learning miracles.

Notes On Contributors

TILEMACHOS ZAIMIS is a fifth year Medical Student at the University of Ioannina, Greece, interested in medical education and looking for ways to optimize the learning experience during and after the completion of Medical School.

ANTHOULA EFSTATHIADOU, (MD), interested in medical education, epidemiology and translational research.

DESPINA ELVIRA KARAKITSIOU is a Foundation Year 2 Doctor in Liverpool, UK with interest in Medical Education, Palliative Medicine and exploring new teaching methods and learning options.

IOANNIS DIMOLIATIS, medical doctor (MD, Athens), master of public health (MPH, Nottingham), master of medical education (MMedEd, Dundee), PhD in Greek population mortality (Ioannina; Greece), strongly interested in medical education and in quality of life and death, Associate Professor of Hygiene and Medical Education, University of Ioannina Medical School, Greece.

Acknowledgements

We have no declarations of interest.

Bibliography/References

Glennys, J., & Bligh, J. (1995). The changing context of undergraduate medical education. Postgraduate medical journal 71.837, 397-403. Retrieved from http://goo.gl/WYQPzF

https://doi.org/10.1136/pgmj.71.837.397

Healey, M. (2005). Linking Research and Teaching to Benefit Student Learning. Journal of Geography in Higher Education, 183-201.
Karakitsiou, D., Markou, A., Kyriakou, P., Pieri, M., Abuaita, M., Bourousis, E., Dimoliatis, I. (2012). The good student is more than a listener - The 12+1 roles of the medical student. Medical Teacher, 1-8. Retrieved from http://goo.gl/M7PLiO

Kim, T., & Schallert, D. L. (2014). Mediating effects of teacher enthusiasm and peer enthusiasm on students’ interest in the college classroom. Contemporary Educational Psychology, 134-144. Retrieved from http://goo.gl/Tzc6Qm

Parkhurst, H. (1920, May). The Dalton Plan. The Times Educational Supplement. Retrieved from http://goo.gl/3afaKJ

Squires, G. (2013). Education for adults. In Culture and processes of adult learning (pp. 87-108). Routledge.

Thomas, J. (2007). Teaching with Passion. Education Digest: Essential Readings Condensed for Quick Review 73(3), 63-65. Retrieved from http://eric.ed.gov/?id=EJ798961

Tredennick, H. (1989). Aristotle in 23 Volumes. p. 980a 21. Retrieved from http://goo.gl/KZSAmN

Tseretopoulou, X., Stratou, A., Stavrinou, P., Souretis, G., & Dimoliatis, I. (2011). Students do not consider all subjects to be equally relevant - A method for quantifying relevance; implications for curriculum timetabling, teaching and learning, and student assessment of teachers. Archives of Hellenic Medicine 2011, 28(2), 227-233. Retrieved from http://goo.gl/ikxbIC

Appendices

Declarations

The author has declared that there are no conflicts of interest.

This has been published under Creative Commons "CC BY 4.0" (https://creativecommons.org/licenses/by-sa/4.0/)

AMEE MedEdPublish: rapid, post-publication, peer-reviewed papers on healthcare professions’ education. For more information please visit www.mededpublish.org or contact mededpublish@dundee.ac.uk.