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Case report

Social media Facebook and You Tube usefulness in anatomy learning: experience at Sapienza University of Rome

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Abstract

Digital natives are growing up in a new media ecosystem, where the use of the net and social media is a daily practice. Even if there is a growing interest in the use of social media in university education, there is a paucity of outcome based, empirical studies assessing the impact of social media in medical education, in particular in the Human anatomy field. To facilitate human anatomy learning and teacher-student relation, a Sapienza university of Rome human anatomy teacher (HAT) created a professional Facebook profile (HATPFP) and a You Tube channel dedicated to human anatomy topics (HATYTC). In order to assess the usefulness of social media not only in human anatomy learning but also to get in touch with the human anatomy teacher, at the end of each course a survey was created than distributed to the students of health professions and medicine and surgery degree courses. Our data, the first referring to the Italian context, show a useful and positive opinion by most students on the use of social media Facebook and You Tube in the teaching of Human Anatomy. Although within the limits of an exploratory study, we have highlighted how social media can be an effective support for anatomy teaching by facilitating social interactions (in terms of time reduction, simplification, immediacy, less formality), improving learning (in terms of memorization and understanding of concepts: and notions of anatomy), and making students autonomous in their search for new knowledge of anatomy.

Keywords

Anatomy learning, facebook, you tube, digital natives, social media, distance learning.

Introduction

The term *Digital Natives*, was coined originally by Marc Prensky (2001), to identify a new generation of humans born after 1990 (they were also called N*et-generation* from Oblinger & Oblinger 2005, and *Millennials* from Tapscott, 1997). Digital natives have never known a world without computers, internet, video games, and mobile phones (Roberts, 2005). Internet and related technologies have a major influence on digital native's culture and development, in fact they are growing up in a new media ecosystem, where the use of the net and social media is a daily practice. University

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students, for some years now, belong to the generation of digital natives, their life is often characterized by the time spent on public transport to reach the university, during the journey students use their smartphone both to communicate with each other and to take advantage of multimedia content and surf the Internet. The distances and traffic of a large city sometimes make it difficult for students to meet a professor, especially if the teacher's office is far from the one where the lessons are held or from the hospital where they attend the wards. Sudden meteorological or socio-political events can lead to the displacement of lessons or exams to another date or place, the timely notification of such changes is essential to avoid unnecessary loss of time for students. Studies in literature (Siemens, Weller 2011; Manca, Ranieri 2013) state that social media have shown to have potential as learning environments, if developed within educational projects. According to several authors, using social media and new learning platforms allows the research of increasingly rich and complex materials and stimulates the creation of virtual communities. Moreover they call for a collaborative, reflective and metacognitive approach to study through the comparison of the objectives and content of educational activity (Cacciamani & Giannadrea, 2004; Scardamalia & Bereiter; 2004; Sthal, Koschmann, & Suthers, 2006; De Marco and Albanese 2009; Trentin, 2011; Varisco, 2000, 2008). Although these surveys show a growing interest in the use of social media in university education, there is a paucity of outcome based, empirical studies assessing the impact of social media in medical education (Magro et al. 2013; Sutherland and Jalali, 2017; Fisher et al., 2018). This is more valid as far as the anatomy education is concerned, in fact the research so far about the use of social media in anatomy education is limited and lacks comparative studies (Cytas, 2019).

Aim

To facilitate human anatomy learning (allowing students to study also on public transport), and to be able to communicate with their students (belonging to various degree courses located in various locations in the Rome area), quickly and effectively, a Sapienza university of Rome human anatomy teacher (HAT) created a professional Facebook profile (HATPFP) and a You Tube channel dedicated to human anatomy topics (HATYTC).

In order to collect the opinions of students belonging to various degree courses on the usefulness of the two social media in human anatomy learning and to get in touch with the human anatomy teacher, at the end of the course year a survey was created than distributed to the students through the HATPFP.

Materials and methods

The main structure of the human anatomy courses

The anatomy course topics are in line with the Italian core syllabus recommendations and international suggestions (McHanwell et al., 2007; Drake et al., 2009). Health professions anatomy course takes place during twelve-week in the first semes-

ter of the degree course first year. Medicine and Surgery anatomy course takes place during three semesters in the first and second degree course years. In both Health professions and medicine and surgery degrees students attend to lectures, workshops and practical laboratory classes. During practical classes, students work in small groups under teaching tutors supervision, using cadaveric prosection, plastinated specimens, plastic models, plastic bones, radiographs, MRI and CTI scans (Familiari et al., 2013).

The human anatomy teacher facebook profile (HATPFP)

The HATPFP was created as well as anatomy lessons in various degree courses started. During the first lesson in each degree course, the HAT showed a slide with all contact details: room phone, e-mail, and name of PFP and YTC. HATPFP was used by the teacher to share useful information, such as the lesson calendar (with related topics, specifying time and location), dates and location of exams, the presence of scientific seminars of possible interest to the students, the deepening of some anatomy issues, as well as the reference to the You tube channel.

The human anatomy teacher you tube channel (HATYTC)

You tube allows the viewing of thematic multimedia movies, facilitating their organization by topics using the playlist tool. This is a great utility to collect in an organized and consistent way videos from different sources. It is also possible to add to the videos themselves keywords and labels, making research faster and more targeted. HAT has created playlists divided by subject, containing videos taken from some scientific channels such as Anatomié 3D Lyon, Agorà Biomedical Sciences, UCD Medicine, Nucleus Medical Media, Neuromatìq, Great Pacific Media and VMV3D (Vision Medica Virtual 3D), associated with other videos uploaded by personal channels of university teachers of various nationalities. The videos are mostly in English, but also in Italian, French and Spanish.

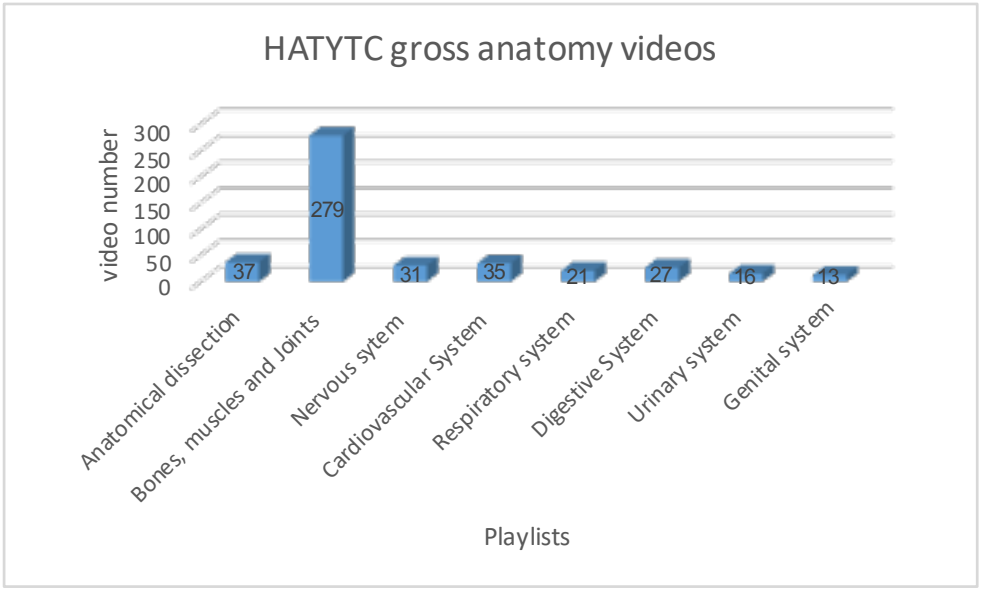
The You tube channel contains 459 human anatomy videos and 130 cytology, histology and biology videos. The videos are classified as reported in Graph 1 and 2.

Students and degree courses

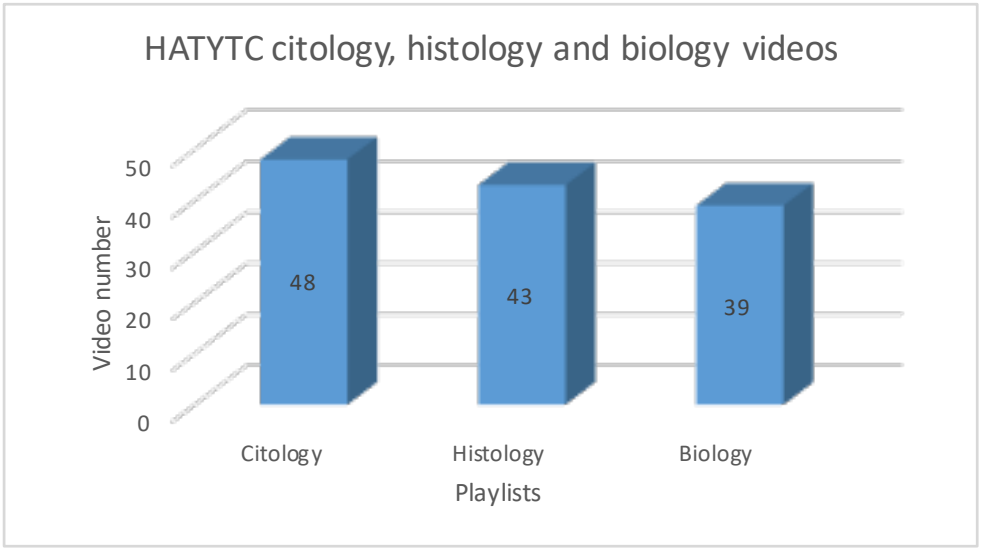
The students who participated in this survey belong to the following degree courses of the Faculty of Medicine and Psychology: Medicine and Surgery, Nursing, Obstetrics, Physiotherapy, Podiatry, Occupational Therapy, Orthopaedic Techniques, Psychiatric Rehabilitation Techniques. Their distribution is showed at graph 3.

The surveys

Two surveys were designed and then distributed. The first was a pilot survey and the second one was a multiple choice survey. The first one consisted in 21 questions, some with dichotomous answers and others with open answers, involving 25 students belonging to the Degree Courses in Medicine and Surgery. Students were recruited thorough a call on the HAPFP on voluntary basis. A qualitative content



Graph 1. Topics of thematic multimedia movies in the human anatomy teacher you tube channel (HATYTC).



Graph 2. The You tube channel also contains videos of biomedical basic sciences, such as cytology, histology and biology.

analysis (Graneheim and Lundman, 2004; Hsieh and Shannon, 2005) allowed us to identify the categories of answers to turn open-ended questions into closed-ended questions and select the most relevant questions to prepare a final multiple-choice

survey that would be distributed to a larger number of students. This second survey had an initial incipit (that constitutes the informed consent, in which the questionnaire is presented, the average filling in time is communicated, the privacy regulations are explained and a reference e-mail is provided for further questions or curiosities on the subject). The survey consisted of 15 multiple-choice questions divided into 5 sections. In the first section personal information were collected (age, gender and belonging degree course). The second section had explored the familiarity and use of a Facebook and You Tube account before enrolling at university. The third section concerned the use of HATPFP and the perception of its usefulness. The fourth section focused on HATYTC use and usefulness perception. The fifth section asks for an overall judgment of social media usefulness in anatomy learning.

The questionnaire was distributed as a Google Modules file to the students recruited by HATPFP.

Answers collection was between from June to October of the same academic year in which the students attended the lessons. Then the statistical analysis of the results was carried out.

Survey participation was anonymous, voluntary and free of charge. The Ethics and Research Committees of investigators Departments approved the research protocol of this study.

Results

First section: Students gender, age, attended degree course

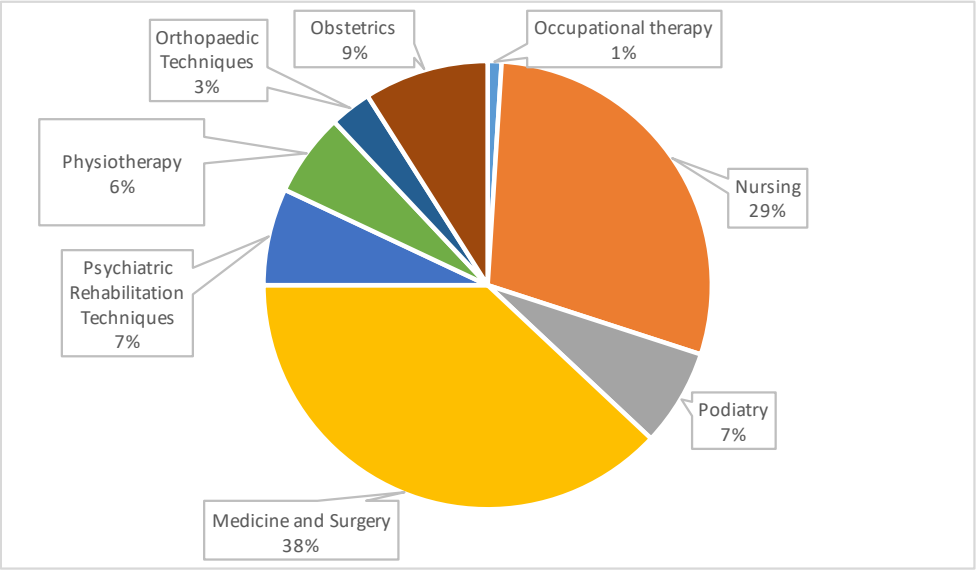
100 surveys were collected, 35% belong to males, 65% to females. Mean students age was 20,73±2,96 years. Most of the students who completed the questionnaires came from the courses of Medicine and Surgery (38%) and Nursing (29%). Students percentage for each degree course is listed in graph 3.

Second Section: Familiarity and use of a Facebook and You Tube account before enrolling at university

The results of the second section show that all the students examined belong to the generation of digital natives, and that the use of social media facebook and you tube is part of the common practices already in high school. In fact, 98% of students had a Facebook profile before entering university, and 99% of students declared the personal use of You Tube before entering university.

Third Section: The use of HATPFP and the perception of its usefulness

The results of the third section show that most of the students (84%) used HAPTFP, and the main motivation was (it was possible to choose more than one option) to have information about the examination modalities (68, 6%) followed by news about the videos published in the you tube channel (46,5%). The request for explanations on topics dealt with in class and the requests for material to deepen some chapters were placed on an equal footing (38.4%). The request for information on the integrated



Graph 3 Students attending degree courses.

course in general (23.3%) and information on seminars of possible interest to students (15.1%) were the options that received the least interest. 94% of students consider HATPFP to be a useful overall means of communication with the teacher, especially for its speed (75.8%), ease of use (63.7) and informal mode of communication (Table 1).

Fourth section: HATYTC use and usefulness perception

The results of the fourth section show that about two thirds of the students (71%) used HATYTC, of whom almost all (97%) say that HATYTC is a useful tool for learning anatomy. Analyzing the reasons for this opinion, it emerges that about half of the students (52%) believe that watching videos facilitates both the understanding and the memorization of anatomy. The understanding of the three-dimensional structure of the organs and the ability to visualize the concepts studied are around 17.4% and 15.3%, only for 13.3% of the videos implement the content of textbooks, while 2% indicate the other voice. It is very interesting to note that the use of HATYTC pushes students to autonomously search for other video material (63%) both of anatomy (49.2%) and of related subjects (39.7%) (Table 2).

Fifth section: Overall judgment

The fifth section asks the student to express an opinion on the usefulness of the two social media in the study of anatomy. HATYTC was the most voted (38%) followed by the statement Both (30%). HATPFO received 21% of the votes. Only 11% of students declared both social media useless in anatomy learning (Graph 4).

Table 1. The use of HATPFP and the perception of its usefulness

Did you use HATPFP?	Yes	84 %
	No	16%
If Yes, What did you use it for? (it was possible to select all applicable items)	To ask HAT for examination details	68,6%
	To request for explanations on topics dealt with in class	38,4%
	To get information about seminars	15,1%
	To get information about video published in the HATYTC	46,5%
	To acquire materials and files for deepening the lessons	38,4%
	To have explanations on some topics	23,3%
Do you think HATPFP is a useful way to communicate with the anatomy teacher?	Yes	94%
	No	6%
If yes, for what communicative characteristic? (it was possible to select all applicable items)	Fast communication	75,8%
	Informality of communication	31,9%
	Ease of use	63,7%

Discussion

The literature shows that university students have differing views on the educational usefulness of social media. In some studies the data reveal that students would prefer to use social networks (i.e. facebook) only for social purposes without attributing formal teaching purposes to them (Selwyn 2009; Madge et al. 2009; Wise et al., 2011). In others, the results are the opposite, because the greatest opportunities for sharing teaching materials, mutual support and relationship building are highlighted (Bosch 2009). According to Roybler et al. 2010, students are in fact more inclined to use Facebook alongside classroom work than teachers, who prefer the use of more traditional technologies such as the use of e-mail. Since in the literature there is no survey on the Italian reality, we wanted to verify the usefulness of HATPFP and a HATYTC in the study of human anatomy at some degree courses of the Faculty of Medicine and Psychology of the University La Sapienza in Rome.

Since both media are already used by students, we can say that HAT's use of HATPFP and HATYTC is not an unknown practice but rather fits into virtual habits and places already familiar to students. We therefore believe that linking teaching to communicative and cognitive practices already widespread among students can be very effective both in improving teacher-student communication and in improving

Table 2. HATYTC use and usefulness perception.

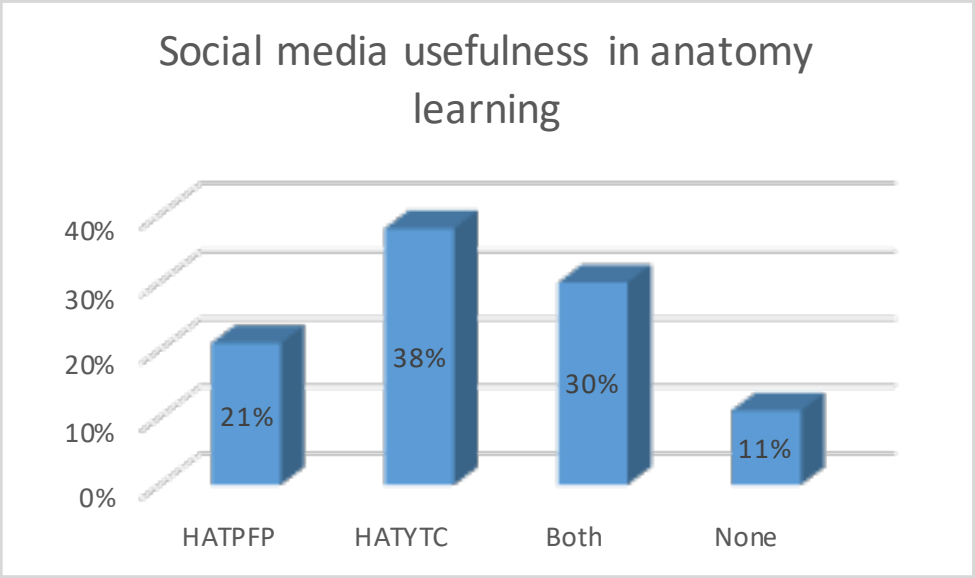
Did you use HATYTC?	Yes	71
	No	29%
Based on your experience, do you think that HATYTC is a useful tool to support anatomy learning?	Yes	97%
	No	3%
If yes, why? (choose only the answer that best reflects your opinion)	Because videos allow to easily visualize the studied concepts	15,3%
	Because videos implement textbook content	13,3%
	Because videos allow to understand the three-dimensional relationships between organs	17,4%
	Because videos facilitates anatomy understanding and memorization	52%
	Other:	2%
After viewing the material on HATYTC, did you search for other teaching material on you tube by yourself?	Yes	63%
	No	27%
If yes, what kind of material did you look for? (choose only the answer that best reflects your opinion)	More Anatomy Videos	49,2%
	You tube channels related to other subjects (e.g. biology, histology, general pathology,embryology)	39,7%
	Other:	11%

the way students study. This result therefore confirms the general data on the digital Native generation also at Italian level on this specific population of students.

The results obtained by the third section therefore confirm what Anderson (2009) said, which underlines how social networks such as Facebook can encourage students to share themes and interests usually excluded from the typical interactions of traditional courses.

Our results of the fourth section therefore shows that HATYTC has functioned as a sort of 'forerunner' for the autonomous search for in-depth material on the web, not only for anatomy, but also for other areas of medicine, thus promoting the acquisition of an autonomous and transferable method of study, a transversal competence and continuous learning.

The analysis of data belonging from fifth section shows that the two media are used for different purposes: HATYTC is appreciated for its effects on learning, while HATPFP for communication and relation with the teacher. This result shows an important distinction to be aware of when designing the didactic uses of technolo-



Graph 4. Student opinion on the usefulness of the two social media in the study of anatomy.

gies; this result warns us that the properties of different media are linked to different functions in the educational process (i.e. social networks such as facebook to communication functions, social media such as youtube to information-conscious functions) and how it is appropriate to think of heterogeneous configurations or ecologies of media rather than a single technology (Heath and Luff, 2000; Suchman, 2007; Alby and Zucchermaglio, 2008).

Limits of the study

Among the limits of the study we can list the following: 1) it is a study that concerns a practice used by a single teacher, it would be interesting to do other studies that also involve other anatomy courses taught by other teachers who use the same educational practice; 2) it is an exploratory study for which survey items could have been analyzed further, for example, taking into account the affiliations of students to different degree courses; 3) the students who answered the questionnaire belong to a specific category of students: this on the one hand places limits on the possibility of generalizing the results, on the other hand gives an account of their ecological validity and applicative utility in terms of feedback for the educational design of the course in question.

Conclusion

The use of HATPFP and HATYTC by teachers and students in the study of anatomy has been positively perceived in several international studies (Cho, Hwang, 2011; Craig et al.2010; Drake et al. 2009 Jaffar 2014, Topping 2014). Our data, the first referring to the Italian context, document that the use of social media Facebook and You Tube in the teaching of Human Anatomy has been perceived by most students as useful and positive. Although within the limits of an exploratory study, we have highlighted how social media can be an effective support for anatomy teaching by facilitating social interactions (in terms of time reduction, simplification, immediacy, less formality), improving learning (in terms of memorization and understanding of concepts: and notions of anatomy), and making students autonomous in their search for new knowledge of anatomy and access to other information resources in other areas of medicine.

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Supplemental material

The Pilot study survey

	Question	Answer
1	Which degree course are you enrolled in?	
2	How old are you?	
3	Please indicate your gender	Male -female
4	Did you already have a Facebook profile before entering university?	Yes/no
	If the answer to question 4 is YES answer questions 5 and 6	
5	Did you use it only for personal contacts (friendships, cultural interests, etc.)?	Yes/no
6	Did you use it for contacts with high school teachers?	Yes/no
7	Did you ever use You Tube before entering university?	Yes/no
8	Did you use it only to display content?	Yes/no
9	Did you use it to view content and upload videos prepared by you?	Yes/no
10	Did you use HATPFP?	Yes/no
11	What did you use it for? List the main uses (open answer)	
12	Do you think HATPFP is a useful way to communicate with the anatomy teacher?	Yes/no
13	Why? (open answer)	
14	Do you consider HATPFP to be a useful way of promoting anatomy learning?	Yes/no
15	Why? (open answer)	
16	Did you use HATYTC?	Yes/no
17	Do you think that HATYTC is a useful tool to promote the learning of anatomy?	Yes/no
18	Why is that? (open answer)	
19	After viewing the material on HATYTC, did you search for other teaching material on you tube by yourself?	Yes/no
20	If yes, which one? (open answer)	
21	Which of HAT social media was most useful in anatomy learning?	HATPFP/ HATYTC/ both/ none

The multiple choice survey

Section		Question	Answer
First	1	Which degree course are you enrolled in?	
	2	How old are you?	
	3	Please indicate your gender	Male -female
Second	4	Did you already have a Facebook profile before entering university?	Yes/no
	5	Did you ever use You Tube before entering university?	Yes/no
Third	6	Did you use HATPFP?	Yes/no
	7	If Yes, What did you use it for? Select all applicable items	To ask the teacher for examination Details To ask the teacher Lesson details (place/ time) To get information about seminars To get information about video published in the HATYTC To acquire materials and files for deepening the lessons To request for explanations on topics dealt with in class
	8	Do you think HATPFP is a useful way to communicate with the anatomy teacher?	Yes/no
	9	If yes, for what communicative characteristic? (select all applicable items)	Fast communication Informality of communication Ease of use
Fourth	10	Did you use HATYTC?	Yes/no
	11	Based on your experience, do you think that HATYTC is a useful tool to support anatomy learning?	Yes/no
	12	If yes, why? (choose only the answer that best reflects your opinion)	Because videos allow to easily visualize the studied concepts Because videos implement textbook content Because videos allow to understand the three-dimensional relationships between organs Because videos facilitates anatomy understanding and memorization Other:
	13	After viewing the material on HATYTC, did you search for other teaching material on you tube by yourself?	Yes/no

	14	If yes, what kind of material did you look for? (choose only the answer that best reflects your opinion)	More Anatomy Videos youtube channels related to other subjects (e.g. biology, histology, general pathology, embryology) Other:
Fifth	15	Which of HAT social media was most useful in anatomy learning?	HATPFP/ HATYTC/ both/ none