A critical exploration of how computing technology can support the education of healthcare professionals in obstetrics and gynaecology: a case study of the Turkish health care system.
I hereby declare that this dissertation entitled ‘A critical exploration of how computing technology can support the education of healthcare professionals in obstetrics and gynaecology: a case study of the Turkish health care system.’ is entirely my own work and it has never been submitted nor is currently being submitted for any other degrees.
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## Contents:

Declaration ................................................................................. I - II

Acknowledgments ........................................................................ III

1. Abstract .............................................................................. VI

2. Introduction ............................................................................ 1

2.1 Introduction ......................................................................... 1

2.2 Background ......................................................................... 2

2.3 Aims & Objectives .............................................................. 4

2.4 Research Questions .............................................................. 4

3. Literature Review ................................................................... 5

3.1 Introduction ......................................................................... 5

3.2 Brief History of Computers in medicine ................................. 5

3.3 Importance of practice of Sonography (Ultrasound) ............... 7

3.4 Laparoscopy in obstetrics and gynaecology ............................ 8

3.5 Simulation centres ............................................................... 10

3.5.1 Benefits of simulation centres ......................................... 10

3.5.2 Downsides of simulation based learning ............................ 12

4. Methodology .......................................................................... 13

4.1 Introduction ......................................................................... 13

4.2 Philosophy .......................................................................... 14

4.3 Approaches .......................................................................... 14

4.4 Choices ............................................................................... 14

4.5 Strategies ............................................................................. 15

4.6 Research methods ............................................................... 15

4.6.1 Primary research .............................................................. 16

4.6.1.1 Structured interviews ................................................ 16

4.6.2 Secondary research ........................................................ 18
1. Abstract

The main purpose of this research is to gather information about computing technologies and their benefits in medical education of health care professionals in obstetrics and gynaecology. The medicine field is always progressing and the necessity of computing technologies are increasing in every field, the focus of the research is to show this necessity of computing technologies and why they should be used more in the educational life of healthcare professionals.

The research consists of both primary and secondary data. The primary data is collected from lecturers who medical doctors, and medical doctors who have lecturing past, from Turkey. The current usage of computer technologies in medical education in Turkey is analysed by the researcher to make suggestions that can improve the current system. The secondary date is collected from books, medical articles, research papers to support the findings.

The result is the current system in Turkey may produce decent doctors in their fields who are ready to do surgeries in worse conditions however, there is definitely a lack of educated doctors who can perform with computing technologies and the ones that are proficient with these technologies are often practiced and learned the procedures after their educational life.
2. Introduction

2.1 Introduction

Computers and computing technologies is being used every day in every field and they are evolving every year, becoming faster, better, stronger and cheaper which allows more fields and more people to use them. Turkey is almost a fully developed country however there are still areas, scientific fields that continues to develop becoming more available. Medicine and medical science is one of the areas where middle eastern countries used to be very futuristic and good at. Turkey is one of the countries that has well-known and acknowledged doctors. However computing technologies that are advance is too expensive for current economy in Turkey thus creating a situation for medical universities to stick with older technologies. There are other reasons for it as well such as medical system in Turkey is more oriented towards doctor talent rather than trusting the technology.

Computer technologies are all the techniques and application of the computer science in medical field. These are technologies such as ultrasound machines, laparoscopic cameras and devices, even the human models that are connected to an operating system which determines the required diagnosis, current disease and the treatment that is necessary for that human model. There are more technologies that are used in that are used in medicine however medicine has multiple fields, thus this research is written to understand the current situation better, exploring the computer technologies that are used in the field of obstetrics and gynaecology to limit the research to a certain medical field.

The research will start with examining the existing literature of computer technologies that are used in medical education. Afterwards, there will be data collected to solidify the knowledge that is gathered from the literature. The data will be collected from online interviews with medical doctors who are researchers, professors and lecturers in different prestigious universities in Turkey. The research focuses more on the benefits of computer technologies that are used in medical education rather than the medical operations, however understanding the benefits that it provides in medical operations to diagnose and treat is also important. The plan for the research is to review the literature about computing technologies that are
used for diagnoses such as Ultrasound practice during education, and the ones that are used for treatment such as laparoscopic procedures. These sections than will be compared with the data that is gathered from the interviews to provide more realistic situation that is current in Turkey’s health care system. The research will continue with the methodology that is being used, collect secondary data, report findings, and conclude the research. This plan is helpful for both the reader and the researcher since it allows them to keep track on what is being done and what will be done in next.

2.2 Background:

“The computer as we know it today had its beginning with a 19th century English mathematics professor name Charles Babbage. He designed the Analytical Engine and it was this design that the basic framework of the computers of today are based on.” (People.bu.edu, 2018)

After almost one century, first electronic digital computer was built in 1937 by Dr. John V. Atanasoff and Clifford Berry, and they called it Atanasoff-Berry Computer(ABC). In 1946, we got introduced to Electronic Numerical Integrator and Computer. “ENIAC was enormous. It occupied the 50-by-30-foot (15-by-9-metre) basement of the Moore School, where its 40 panels were arranged, U-shaped, along three walls. Each of the units was about 2 feet wide by 2 feet deep by 8 feet high (0.6 metre by 0.6 metre by 2.4 metres). With approximately 18,000 vacuum tubes, 70,000 resistors, 10,000 capacitors, 6,000 switches, and 1,500 relays, it was easily the most complex electronic system theretofore built.” (Encyclopedia Britannica, 2018) This was a computer was built by the United States government under World War II project. ENIAC was the first programmable general purpose electronic computer. This was a huge stepping-stone in the evolutions of computers, because ENIAC could work on directives such as “IF X> 15 GO TO LINE 45”. This logic gave ENIAC a huge advantage compared to the previous computers, Atanasoff-Berry Computer and Analytical Engine. Because, even it was designed for a sole purpose, it could have dealt with a larger scale of inputs thus had better and more accurate results.
According to an article in Asian Healthcare Management System, “Worldwide use of computer technology in medicine began in the early 1950s with the rise of the computers. In 1949, Gustav Wagner established the first professional organization for health informatics in Germany.” (Asian Healthcare Management System, 2018) this was the first introduction of computers to the medical field and it was called Health Information Systems. It was basically usage of computers to optimize the storage and process of information in medicine. Meanwhile in United states in mid 1950s with a guy called Homer Warner who was a cardiologist and a thinker. He teamed up with engineers to assemble a machine called “circuit” to monitor the heart rhythm, heart speed, blood pressure, cardiac results. Warner and his colleagues later on invented the monitoring systems that are still used in trauma rooms and in intensive care. This was the second stepping stone the computers. Afterwards, computer had been started to use in every field of medicine, from cardiology to obstetrics. “During the 1980s, computers improved dramatically. Graphic user interfaces and networking technologies to connect computers were adopted widely. These developments fostered a new need: the need for a data interchange protocol for health care.” (Ambinder, 2005) With each change within the computer technology medical field kept changing.

Nowadays computers are part of our life’s, we use them in every second of our daily life. When we travel, we use cars that has computers. When we work, we work on personal computers. When we want to communicate with someone, we use our “smart” phones. When we are sick, we first check the internet, then go to a hospital, and what happens? We get scanned by computers, monitored by them, mothers get ultrasound scans. The point is people became dependent to computers.
2.3 Aims & Objectives:

This is a research about the place of computers and computing technologies in the medical education of Turkish healthcare personnel. To critically explore this, aim of the research is the “Examination of computer technologies in obstetrics and gynaecology and their need in the education of new generations of doctors, nurses, and other healthcare staff”. This will provide an objective evaluation about the technologies that are useful in the medical practice.

There are 3 main objectives that should be researched carefully to accomplish the main goal of this research. These objectives are:

- Importance of Sonography (Ultrasound) practice and their current situation in Turkish medical universities.
- Importance of Laparoscopy and Laparoscopy practice
- Simulation centres and Simulation based learning

2.4 Research Questions

- What’s the history of computers, computer technology, and medicine?
- When did computer technology became a part of medical education?
- Is there enough ultrasound practice in Turkish medical education?
- Is there enough practice and emphasis on laparoscopy and minimal invasive surgeries in Turkey?
- What is simulation based learning, how important is it?
- What are the pros and cons of simulation based learning and simulation centres?
3 Literature Review

3.1 Introduction

In this section of the dissertation, history of computers and computing technology in obstetrics, practice of ultrasound techniques during education, laparoscopic practice during medical education, simulation centres and their utility in the medical education, will be discussed.

3.2 Brief history of computers in medicine:

Medicine is one the most important fields of applied science, and it constantly develops, changes and improves. In every country, a person needs to study more compared to other branches, hoping to become a medical doctor. Apart from the general medical knowledge there are a lot of specialties that needs to be mastered to avoid complications that may occur, and trying to learn all the knowledge of different fields of medicine is practically impossible. And each medical field have their challenges such as neurosurgery needs to be more delicate, precise while and emergency medicine needs a wider knowledge of diagnosis and treatments. On the other hand, fields such as obstetrics and gynaecology requires different knowledge and specialities to deal with different problems. Medicine is an applied science, this means it requires technology. According to the Oxford dictionary, technology is “the application of scientific knowledge for practical uses”. Until the era of computers, machines this scientific knowledge was not precise at diagnosis and was more focused on treatment. However, with the application of computing technologies in medicine, the procedures became faster, precise and less life threatening in most of the situations.

Computing technologies is constantly changing and advancing, thus the technologies that are used in medicine is always changing as well. There are fields like neuroscience, neurosurgery and cardiology that has started in 19th century, Obstetrics and gynaecology is a field that has been out there since the beginning of human history, since it is the medical field that is concerned with childbirth and midwifery. However, obstetrics became a medical field with the popularizations of doctors delivering babies in late 18th century. But according to “Kahun Gynaecology
Papyrus” that is kept in Petrie Museum of Egyptian Archaeology, there were studies about women’s health, such as gynaecological diseases, fertility, childbirth etc. This document dates to 1800 BC which gives a fair idea about how old is OBGYN. Thus, the field that has been out for almost 3800 years, had different impacts from the computing technologies that came out during the last century.

One of the main methods used for diagnostics in obstetrics and gynaecology is ultrasound and according to article written by Tanya Lewis, “Ultrasound was first used for clinical purposes in 1956 in Glasgow. Obstetrician Ian Donald and engineer Tom Brown developed the first prototype systems based on an instrument used to detect industrial flaws in ships.” (Science, 2018). However, she also states that ultrasound wasn’t common in United Kingdom until 1970s. For a lot of cases this is true in both technology and medicine, an invention doesn’t mean that it will immediately be common or even sometimes trusted. Also, the invention, in this case ultrasound machine should be perfected to address problems and issues that are presented by the patient, which is to provide a diagnosis for the problems and check-ups. Nowadays, with the progression of technology obstetricians use ultrasound for diagnosis, check-up.

Some examples of Diagnostical use of Ultrasound:

- Chorionic Villus Sampling (CVS Test)
- Amniocentesis
- Percutaneous Umbilical Cord Blood Sampling (Cordocentesis)
3.3 Importance of practice of Sonography (Ultrasound)

In the published medical research paper that has been done by C.A. Burden, J. Preshaw, S. Grant, it has been stated that “Absolute deviation from the defined standards for all parameters was calculated. Preliminary data showed a significant difference between novice versus intermediate (p=0.004) and expert (p=0.012) in CRL1 measurements, demonstrating construct validity. With repetition accuracy of novice measurements and time taken approached expert levels demonstrating a learning curve. Growth scan preliminary data revealed greatest variability within the novice measurements and the expert group was significantly faster (p=0.002).” (Burden, Preshaw and Grant, 2011) For this research they prepared a team of 30 doctors with different skill levels, 10 of them were novice who had less than 10 ultrasound procedures performed, 10 of them had intermediate knowledge (20-50 procedures performed) and 10 of them were experts on the field who had at least more than 100 procedures performed. And as it can be seen from their results that the difference between the levels were significant. But the more important part was that with repetition, their accuracy and times approached to expert levels. Thus, their conclusion was “VRS ultrasound training has the potential to improve scanning skills of Obstetrics and Gynaecology trainees.” (Burden, Preshaw and Grant, 2011) This research is a prime example of how important is the practice of ultrasound.

Currently in one of the best medical universities of Turkey, Istanbul University Cerrahpasa Medical Faculty (Ctf.edu.tr, 2018), according to the current curriculum, students are only learning about Ultrasound, Ultrasonography in their first year as theoretically, and only have few practice lectures in their fourth year in Radiology and OB/GYN lectures/tutorials. After completing 6 years which is the required amount in a Turkish Medical University, they graduate as practitioners and then they start their specialities. For this total of 6 years, in the first four years, almost all the lectures are theoretical while the last two years are internship. Most of the practice that they learn about sonography is during this time, and it again depends on multiple conditions such as which hospital it is, how many cases do they get, how many equipment’s does the hospital have?

To address this situation, medical students have few option that they can do. First of all, they can spend overtime during their internships to gain more expertise on the
ultrasound machine. Another approach is to attend to Ultrasound/Sonography lectures in simulation centres. However, the main problem in the universities in Turkey is that there are not enough practice opportunities during their 6 years of medical education, and it is expected from them to do extra curriculum activities to reach intermediate / expert skill levels. But there is a upside to the situation in the Turkish universities, with every year there are more practice opportunities and more technological approaches in the universities. According to a research done by Gurkan Sengole and by M. Cem Ar, “Turkey ranks merely 31st worldwide for its participation in clinical and drug trials with 1746 trials and a share of 0.98% based on the 2015 data at ClinicalTrial.gov; however, it is one of the 6 countries showing a positive trend along with France, the UK, Spain, China and South Korea.” (Sengölge and Ar, 2016).

3.4 Laparoscopy in Obstetrics and Gynaecology

With new technologies that are improving and becoming available in smaller size resulted in one of the major improvements in patient diagnostics and treatment. Laparoscopy and laparoscope. Laparoscope is a thin tube with high-intensity lights and a high-resolution camera at the front. (Healthline, 2018) This allows doctors to make more accurate diagnostics, and do precision surgeries while minimalizing risks during operations. Minimal invasive surgeries are better and safer for patients and reduce the recovery time, also reduces the scars and cuts left after the operations. In the article that has been published by Mount Sinai Medical Center, they state that minimal invasive surgeries have benefits such as a few small cuts versus a large incision, less trauma to the muscles, nerves and tissues, less bleeding, less scarring, less trauma to organs, less pain and reduced use of narcotics, less hospital time, less effect on the immune system. (Msmc.com, 2018)

Laparoscopy is important for obstetrics and gynaecology, so to understand the current level of medical practitioners, a research has been done by Kolkman, Wolterbeek and Jansen. In this research there were 151 gynecologists, 124 (82%) responded, 46 (37%) male and 78 (63%) female. Mean age was 39 years (range 32–47 years). Respondents (73%) believed they were adequately trained during residency for basic laparoscopic procedures, but not for the more advanced
procedures (82%). Thus they concluded that while the basic laparoscopy is mastered during residency the advanced laparoscopy is not. (Kolkman, Wolterbeek and Jansen, 2006)

Laparoscopes are not just used in laparoscopy diagnostics, they are also used in hysterectomies, and also in every field of medicine. Generally, they are called laparoscopic surgeries. A few examples to the surgeries that performed in other branches are laparoscopic appendicitis removal, cholecystectomy, laparoscopic cardiac bypass surgery. Therefore, laparoscopy is now considered a new field in medicine.

“Operative laparoscopy, however, requires a high degree of technical skill and training. The use of small instruments and imaging systems that provide magnification allow for the high degree of precision that can be achieved with laparoscopic surgery.” (Swanton and Vulliemoz, 2012) What is the current coursework in a good Turkish medical University?

In another prestigious Turkish University, Istanbul Medical Faculty, medical students only spend the second term of their fourth year in obstetrics and gynaecology, and they receive minimal amount of knowledge about laparoscopically done operations in OB/GYN. (Istanbuliptp.istanbul.edu.tr, 2018) Again, it all depends on their hard work and participations in their intern years. This has multiple downsides such as if there are not a lot of laparoscopy operations during their intern years, they graduate with low level of laparoscopy skills. While in prestigious universities such as Istanbul Medical Faculty, or as in Istanbul University Cerrahpasa Medical University, where medical students graduate with above average skills, in more rural areas that have hospital universities they don’t receive as much as cases and it results in lower expertise and experience in laparoscopy.
What is simulation? “Simulation is an educational technique that allows interactive, and at times immersive, activity by recreating all or part of a clinical experience without exposing patients to the associated risks. The number and range of commercially available technologies used in simulation for education of health care professionals is growing exponentially. These range from simple part-task training models to highly sophisticated computer driven models.” (Maran and Glavin, 2003)

What are simulation centres? Simulation centres are places where medical students or medical doctors can come and practice on plastic human bodies. “The main goal of the Simulation Center is to improve safety within patient care. Current and future health care professionals “practice on plastic” honing their skills, refining advanced techniques and learning valuable social interactive tools for delivering important news to patients. This translational research becomes vital for creating the gold-standard in patient safety and medical teaching.” (McMacken, 2018) There are different types of models that participants can work on. There are plastic models for human anatomy and organs, such as brain model, hearth models, pelvis model with organs and muscles, uterus and vagina models (Models, 2018). There are also more sophisticated computer driven models, there are even simulations in virtual reality which allows medical doctors to work in an environment where they can even receive feedback from the models that they work on.

3.5.1 Benefits of Simulation centres

“Medical simulation education creates a convenient, safe and efficient environment for both medical students and physicians. It allows educators to control the environment and ensure that desired learning objectives are met while permitting increased student autonomy without incurring patient safety risks.” (Medical simulation-based education improves medicos’ clinical skills, 2013) There are four different parties that benefits from simulation centres. First one is the medical students, second one is the patients, thirds one is the education and lecturers, last one is the hospitals and faculties.
Simulation centres provide a safe environment for the new doctors which reduces the risks, and stress that can happen in new medical students’ first operations. In their book, J. A. Dent and R. M. Harden relates on this issue with “However, this first year as a doctor is seen by many to be a stressful and difficult year, and people have often expressed the idea that they have been ‘thrown in at the deep end’ with little idea of what to expect in the working environment as a result of their undergraduate training.” (Dent and Harden, 2013) This is one of the most benefits that students learn from simulation centres, defeating stress. Directly being affected by the medical students, patients gain a lot of advantages, since their medical care health professionals can learn better how to recognize and to treat rare, complex, clinical problems. (Good, 2003)

Education wise, simulation centres provides another place to work and improves practices that have been thought in medical universities in Turkey. “Simulation-based learning can help mitigate this tension by developing health professionals’ knowledge, skills, and attitudes while protecting patients from unnecessary risk. Simulation-based training has been institutionalized in other high-hazard professions, such as aviation, nuclear power, and the military, to maximize training safety and minimize risk.” (Ziv et al., 2003) Like in other fields medicine requires a lot of practice to master, and with the lectures that are being given in universities, it is almost impossible to master it with just the practice that a student can get from their intern years. Thus, simulation has a beneficial impact on learning and education. Lastly, from universities and medical faculties point of view, they can always hire or rent the simulation centres instead of buying all the expensive equipment that are required for a good education. This allows universities to reduce costs.
3.5.2 Downsides of Simulation based learning

Simulation based medical education requires different education environments, different education tools, thus resulting in a more expensive education, also it requires more time to plan, prepare, and also practice. Succession of simulation based learning also depends on lecturers’ and faculty’s motivation and then their literature knowledge, experience and their interaction with the industry, medicine. During the construction of simulation centres, there are few factors that should be taken in to consideration: expenses, simulation models, will it improve the education, what will it cost to students, and how long does it take for a student to complete a session. Also, it should never be forgotten that simulation based learning can never replace the practical learning, it can only support it. And simulations never guarantee adequate education, it only depends on participants. “The few comparison studies that exist, either randomised or retrospective, show that choice of setting does not seem to influence individual or team learning.” (Sørensen et al., 2017)
4. Methodology

4.1 Introduction

“Seeking through methodical processes to add to one’s own body of knowledge and to that of others, by the discovery of non-trivial facts and insights.” (Sharp, Peters and Howard, 2007)

A solid research methodology is required to fully understand how the data required for “A critical exploration of how computing technologies can support the medical education of healthcare professionals in obstetrics and gynaecology: a case study of Turkish health care system”, is collected, analysed and discussed.

(Saunders, Lewis and Thornhill, 2007)
4.2 Philosophy

As a research philosophy, pragmatism has been chosen to address the research questions that has been presented. The main reason for pragmatism is that this research requires a mix of positivism approach where its objective however uses quantitative research strategy, and of interpretivism where it uses qualitative research strategy however it is more subjective. The approach needed for this project is to have a philosophy that uses qualitative research method and be as much as objective possible.

4.3 Approaches

“deductive means reasoning from the particular to the general. If a causal relationship or link seems to be implied by a particular theory or case example, it might be true in many cases. A deductive design might test to see if this relationship or link did obtain on more general circumstances” (Gulati, 2009)

As an approach, a deductive approach should be taken for this research since the theory, thesis is that computer technologies support the medical education of health care professionals. The research could have been done in an inductive approach as well, however to research depends on the idea that certain technologies is used in medicine and these must be beneficial or at least their benefits outvalues their downsides.

4.4 Choices

To fully achieve aims and objectives that are presented in previous sections, a mono qualitative method has been chosen. There could have been quantitative methods (Questionnaires) like stated in the ethics form (Appendix B), however after re-
examining the data that can be gathered from questionnaires they are not important for this research since if a questionnaire is presented to current medical students their opinions and answers could not be used to determine the current situation and if they are useful in their future professional lives.

4.5 Strategies

For this dissertation, a qualitative research strategy is needed instead of a quantitative strategy since the research requires well qualified doctors, lecturers and participants. The main focus of this project is the computer technologies that are used obstetrics and gynaecology and the participants should have decent understanding of OB/GYN and have either experience or knowledge in education and lecturing.

4.6 Research Methods

“Data collection is a process of collecting information from all the relevant sources to find answers to the research problem, test the hypothesis and evaluate the outcomes.” (Research-Methodology, 2018) The data collection can be separated into two major titles: Primary Research and Secondary Research. A thesis or a dissertation cannot be completed with only one type of research otherwise it would inadequate to answer the research questions in an objective matter. In her research, Dr Emma Smith suggest that combining secondary and primary data results in a higher quality research outputs. (Www2.le.ac.uk, 2018) For this project, as primary data collection method, structured interviews have been chosen to understand the current situation of computing technologies in medical education, in Turkey.

To fully grasp the history and current usage of these technologies a detailed secondary data research has been done in the literature review. The main reason for it is to understand the situation in the world and what is necessary for next
generation of doctors to be successful in obstetrics and gynaecology and what is the place of computers in it.

4.6.1 Primary Research

“Primary research is new research, carried out to answer specific issues or questions. It can involve questionnaires, surveys or interviews with individuals or small groups.” (LLP, 2018) In a research primary data is always important to have otherwise, using only secondary data may not result in most recent and relevant data or results. Primary research always has a positive side to it however, having more data does not mean that it is an information that is necessary or relevant to the subject. In this dissertation paper which is a critical exploration of how computing technology can support the education of healthcare professionals in obstetrics and gynaecology: a case study of the Turkish health care system, there are certain primary research methods that cannot be used, for example using a questionnaire may sound good in a subject related to education, however the data gathered from questionnaires would be insufficient compared to data gathered from interviews, or focus groups. For this dissertation, researcher decided to do structured online interviews to gather relevant information about the current situation in Turkish health care system.

4.6.1.1 Structured Interviews

There are few different interview styles that can be done for primary research purposes. Interviews can be categorized as Structured Interviews, Unstructured Interviews and Semi Structured Interviews. Unstructured interviews are generally considered the most time-consuming form of interviews since they have no questions prepared prior to the interviews and they may sometimes considered unprofessional. “The researcher comes to the interview with no predefined theoretical framework, and thus no hypotheses and questions about the social
realities under investigation. Rather, the researcher has conversations with interviewees and generates questions in response to the interviewees’ narration." (Zhang and Wildemuth, 2018)

“A semi-structured interview is a qualitative method of inquiry that combines a predetermined set of open questions (questions that prompt discussion) with the opportunity for the interviewer to explore particular themes or responses further.” (Pritchard, 2018) Semi Structured Interviews generally considered better of all the three interview methods that are presented. The main reason for this is that there is already basis with prepared questions and interviewer may ask additional questions to further clarify, analyse and if necessary further expand the answers.

“Structured interviews are, essentially, verbally administered questionnaires, in which a list of predetermined questions are asked, with little or no variation and with no scope for follow-up questions to responses that warrant further elaboration.” (Gill et al., 2008) Structured Interviews has decent and well-prepared questions; thus, it presents more straightforward and easier data analysis. The researcher can easily compare and contrast the answers provided by the interviewees. Also, researcher like in this dissertation case, can hand out the interview questions so that interviewees can answer them when they have free time. This generally provides more detailed answers since the interviewees have more time to think about the questions and do a little bit of background research if it is necessary.

Why did the researcher choose structured interviews? The interviews had to be done with Turkish professors, lectures and doctors therefor there was a time difference and the interviews had to be done in an online environment. There was also another factor and difficulty that participants presented, they are all in top positions in their positions whether being a professor in a prestigious university, or being a gynaecologist, they are very busy people that generally work from 9 am to 7-8 pm. This resulted in a time schedule where there was not enough time for to do a proper semi structured interview since semi structured interviews can take around one to two hours to finish. Therefor structured interview questions are presented to participants, which are derivative and explorative.
4.6.2 Secondary Research

“Secondary research is a type of research has already been compiled, gathered, organized and published by others.” (Thehartford.com, 2018) Why is it important? Secondary data allows researchers to mainly solidify their research by presenting already existing data and researched done on the subject matter. This adds objectivity and critical thinking to their research.

Currently in this research, secondary research consists of four main areas which were written in literature review, these are history of computers and gynaecology to understand the background, and three technical areas where computer technologies are important and why these areas important for obstetrics and gynaecology. There are few advantages and disadvantages of using secondary research.

4.6.2.1 Advantages:

Ease of Access

One of the many advantages of doing secondary research is the ease of access to the previous researches that has been done. While five to ten years ago all the secondary research was acquired in libraries or with buying books and waiting them to be mailed. However, with the increase of technological advancements and with websites such as google scholar, or Cardiff Metropolitan University’s DSpace previous dissertations as well as research papers and articles are within the reach with a click of a button.

Low cost to acquire

Right now, to access a certain data became a lot easier however there are still differences cost wise between doing a primary and secondary research. While doing
a survey or an interview does not cost much, there are other methods such as case studies, focus groups that costs time and money. But, doing a secondary research generally results lower costs with either reaching the information that is available online which in most cases doesn't cost any money at all or with buying second hand books that costs few pounds.

Clarification of Research Question

Like in this dissertation, secondary data is generally used prior to the primary data to clarify the research questions that are presented before. Doing a secondary research allow primary research to be more focused, and sometimes it allows researcher to shed some information on the subject to primary research participant. During the fully structured interviews a question was presented related to a research done by Burden, Preshaw and Grant. With the secondary research, researcher was able to present this question while explaining an already existing data to extrapolate ideas from participants.

Answer of Research Question

In some cases, doing a secondary research may provide answers to the research questions. This benefits researcher in time and cost, and allow him/her to answer the questions without the need of a new primary data collection. It may also answer some research question better than primary research such as history development of a subject, scientific field. In this dissertation, secondary data answered and presented the history of computers, obstetrics, gynaecology and respectively usage of computers in obstetrics and gynaecology.
4.6.2.2 Disadvantages

Quality of Research

Doing a secondary research doesn’t only have benefits, there are some disadvantages to it as well. Quality of research, validity of research may present as one of those disadvantages. Since the origins of the existing data may be questionable, the secondary research must be scrutinized to provide a decent validity to the data used. A simple way to increase the quality is to increase the number of sources to provide a data that is approved by not just one but many previous researches.

Not Specific to researcher’s needs

There is one other downside of using secondary data, in many cases, the secondary data available can’t always provide an exact answer to the research question that is presented. Therefor a more suited secondary data must be researched and this may cost in time.

Incomplete information

There are some cases on internet that provides a portion of the research that is done however ask money for the full research and this is currently becoming more and more common. This may result in an incomplete information.
Not Timely

Another point that must be considered for secondary research is how recent is the secondary data? There are a lot of research papers and journals that are published for gynaecology and obstetrics and computer technologies that are used in this field, but they are from 1970s, this presents a problem because back in 70s, these technologies were just coming up and it is a good historical point on the subject however not relevant to current situation of computer technologies in obstetrics and gynaecology since technology progress on a very fast based timeline.

4.7 Ethics Approval

In order to avoid many ethical issues that may occur during primary research, an Ethics Approval Form is required by the Cardiff Metropolitan University. This ethics form need to be completed and approved before any primary research data collection starts.

The Ethics Approval Form requires other documents such as Structured Interview Questions, participant consent form, participant information sheet. All the documents mentioned above can be find in the appendix.
5. Findings and Discussion

5.1 Introduction

In this section, primary research method will be shown and discussed to provide an understanding of how does computer technologies support medical education in obstetrics and gynaecology field, and it will focus on the education in Turkey, by discussing the experience of participants. “Qualitative research uses analytical categories to describe and explain social phenomena. These categories may be derived inductively—that is, obtained gradually from the data—or used deductively, either at the beginning or part way through the analysis as a way of approaching the data.” (Pope, Ziebland and Mays, 2000) The categories that are mentioned are driven by the interview questions that has been asked and will be fully discussed on the next sections of this dissertation.

5.2 Research Method and Interview Questions

“Qualitative data analysis is essentially about detection, and the tasks of defining, categorizing, theorizing, explaining, exploring, and mapping are fundamental to the analyst’s role.” (Huberman and Miles, 2009)

Structured Interview questions is being used as main primary data collection method. Like mentioned on the methodology section there are few reasons that structured interviews are being used as research methods. First, what is necessary to have a satisfactory data for computer technologies in obstetrics and gynaecology in Turkey. A defined history and what are the technologies generally used in this field. This question is answered in literature review with a detailed history on computer technologies in obstetrics and gynaecology.
Why literature review is important? “It not only surveys what research has been done in the past on your topic, but it also appraises, encapsulates, compares and contrasts, and correlates various scholarly books, research articles, and other relevant sources that are directly related to your current research. Given the fundamental nature of providing one, your research paper will be not considered seriously if it is lacking one at the beginning of your paper.” (Kim, 2018)

And the second part is to understand their place in Turkish health system, there are few mentions of how much they are used in current teaching system in some Turkish universities in literature review. However, to fully understand interview are held with professionals in obstetrics gynaecology, and simulation centres.

There are few difficulties in making online interviews with Turkish Professors and health care professionals. One of them like mentioned in methodology, is the time difference. “Structured interviews are fairly quick to conduct which means that many interviews can take place within a short amount of time.” (McLeod, 2018) Another problem is the language difference, to make the interviews easier for them a fully translated version of the interview questions has been sent to them. And most of the responses were in Turkish, later they were translated to English by the researcher to provide better cohesive work. There are also few factors of not using a translator which was “The translator always makes her mark on the research, whether this is acknowledged or not, and in effect some kind of ‘hybrid’ role emerges in that, at the very least, the translator makes assumptions about meaning equivalence that make her an analyst and cultural broker as much as a translator.” (Temple and Young, 2004) And since the translation and the research is done by the same person that impact of the translator is minimalized.

There are total of 10 interview questions, these questions are generally two or three-part questions to extract more information from the interviewees. Because, the questions are given to them in order to minimalize time conflicts. Even with given interview questions, some of the participants could not make time and they either couldn’t give any answers at all or gave very short and not useful answers.
5.2.1 Participant Background

“Demographic information provides data regarding research participants and is necessary for the determination of whether the individuals in a particular study are a representative sample of the target population for generalization purposes. Usually demographics or research participant characteristics are reported in the methods section of the research report and serve as independent variables in the research design.” (Salkind, 2018)

In order to understand the development and usage of the computer technologies in medical education, in Turkey, an understanding and statistics of participant background is important. In the case of Turkish medical education, all the participants come from Istanbul University however from different faculties, which provides different database. There are total of 6 interviewees, these are: Prof Dr Faruk Buyru, Dr Ismet Gulum Atilgan, Dr Aysen Reside Alkis, Prof Dr Cihat Sen, Ecem Onaran. Majority of the participants finished their medical universities around 80-90s period and became medical practitioners then continued their studies under obstetrics and gynaecology.
As it can be seen in the figure above, 3 people studied and graduated at 80-90s, 1 professor was older and studied during 70-80s and one doctor was younger who studied in 90-00s, and Ecem Onaran who graduated as a biomedical engineer and she also holds a physiology master’s degree in more recent years. By comparing just their background a short hypothesis can be made, “With the progression of technology and thanks to the prices becoming cheaper more universities adapting towards more computer technology based systems.” This hypothesis has a correct resulting however it is also important to investigate the real reason behind the differences in computer technologies that are used in education.

5.2.2 Computer Technologies that was used during participants education

In order to examine and compare the information from previous years a question has been asked to interviewees about their practice or encounters with computer technologies during their education. “During your medicine education, which computing technologies did you use and which of them do you used further on your professional life? How were their impacts?” General response for this question was that they did not use it a lot. As stated by him, the older professor Prof Dr Cihat Sen did not have experience with computer technologies during his medical education in early 70s, but this is understandable considering that computer technologies were not common in 70s and even then, they were quite expensive to incorporate in to an existing medical education system. S. Campell states in his article that “The history of sonography in Obstetrics and Gynaecology dates from the classic 1958 Lancet paper of Ian Donald and his team from Glasgow.” (Campbell, 2018) Thus having a technology getting incorporated to Turkish Medical education right after 10 years was a bit soon, because even if usage of sonography was super common in 60s, having professors to focus on ultrasound and have a decent knowledge to pass on to the medical students in early 70s was almost impossible.
However, when examined the other response to this question it can be deduced that with passing years in 80s, computer technologies became part of medical education, such as doctors and hospitals started use computers to store patient data, as well as they started to use it for calculations. Prof Dr Murat Yayla states in his answer that when he was a medical student there wasn’t any computer technologies in medical field in Turkey, and when timeline is checked it is understandable since he graduated in 1981 and his medical education started in 1975. Because computers during 1960s even the cheapest ones costed 15 000 USD and with inflation it is around 125 000 USD in current economy and also it should not be forgotten that during that time dollar was quite expensive compared to Turkish lira, one American dollar was 8-9 Turkish lira in the 60s and Turkey had 2 military coup d’état respectively in 60 and 71, thus purchasing and bringing one computer would costed quite expensive, and then there is the repairs, maintenance of the computers as well.

However, other doctors from the same era such as Prof Dr Faruk Buyru, Dr Aysen Reside Alkis and Dr Gulum Atilgan states that they the chance in their intern years to work on computers, since they graduate few years later. During their years they could work on computers for saving patient files, as well as updating and accessing those files.

For ultrasound, the situation was a bit different since while computer had different technology behind them with memory and processor, sonography had a different technology which did not required same technology as computers. However, all of the participants state that they did not have chance to work with ultrasound in their practitioner medical education years, but they all had experience during their medical specialty years when they were trying to become obstetricians or gynaecologists.

Another important technology that is used in obstetrics and gynaecology is laparoscopy like stated in literature review. The fact that laparoscopy is relatively new technology compared to sonography explains the difference is the medical experience that the interviewees had on. “Thirty years ago Clarke described the first laparoscopic ligation and resection whilst Kurt Semm—regarded as the ‘father of gynaecological laparoscopy’ described a variety of pelvic procedures (including hysterectomy) accomplished laparoscopically in 1980, a full ten years before laparoscopic cholecystectomy” (Miskry, 2003) Thus, unless the doctors from 90s and
before continued their education during millennium to become professors in their fields, they did not have any experience with laparoscopy. But as it is stated that it is relatively new technology not just for Turkey, but for whole world.

5.2.3 Computer Technologies that participants use in their lectures

“When you are teaching, are you using any kind of computing technologies including the more non-technical ones such as simple human models? And what are the purpose of these technological devices?” This is the next question in the interview to understand the current technologies that lecturers and professors teach in their classes during the educations of new generations. All of the participants state that when they are teaching they are mostly using personal computers as well as learning tools such as projectors, PowerPoint, Word, related videos and other visual tools. They are stating that visually seeing the surgery in a class room while learning it theoretically is important to understand the procedure. Professor Dr Cihat Sen answers the question by stating the importance of Ultrasound in obstetrics and gynaecology. He states that they focus more on ultrasound rather than other devices, and computers. He teaches the usage of ultrasound for diagnosis and intervention. “Gynaecological endoscopy is a surgical discipline which uses optical instruments specially designed to help diagnose the most frequent female disorders and pathologies such as some infertility problems, small vaginal haemorrhages or endometrial polyps among others.” (Eugin, 2018)

Another important technology that is used in medical education is the human models whether they are connected to computers or not, all the doctors state that they use human models where they don’t have enough cadavers for students to operate on. Dr Aysen Reside Alkis states that using human models for birth and complications increase the visual understanding of her midwifery class of Bilim University. This allows her students to work on a model while listening to instructions as well as give them opportunity to use the knowledge and theories that they learned in their theoretical classes.
Lastly, Dr Faruk Buyru says that with laparoscopy and robotic surgery becoming the next surgery method for most of the complications that happens in obstetrics, the practice of these surgery methods becoming more important and thus he says with each new year he focuses more on teaching laparoscopy and robotic surgery in obstetrics and gynaecology. Also, during his interview he stated that with the usage of new computer technologies the complications that can occur during operation happening less, the recovery time is reducing and quality of the overall experience of the patient is increasing.

“The smaller incision size also reduces the risk of pain and bleeding after surgery. When a large incision has been made, patients usually require long-term pain relief medication while the stitch-line heals. With laparoscopic surgery, the post-surgical wound is much smaller and the healing process much less painful.” (Dr Ananya Mandal, 2018)

5.2.4 Computer Technologies to prepare for surgeries

“Have you ever used any kind of computing technology devices other than simple human models, such as virtual reality headsets and computer simulations or any kind of augmented reality devices to perform surgeries or simple operations? If yes, how was the experience?” The main purpose of this question is to determine if the participants did ever used any kind of simulation or virtual reality based simulations before surgeries. Waited outcome for this question was that no one would have used these technologies since the technologies are relatively new compared to other technologies, however only Dr Murat Yayla stated that he did not work with any kind of simulation technology.

Prof Dr Cihat Sen acknowledges the benefits of working on these technologies and gave few examples of simulations that he worked on, these are “Telescopc Surgery”, “Laparoscopy”, “Hysterectomy”. Dr Aysen Reside Alkis also stated that she
joined in to hysterectomy simulation works and they were important on gaining knowledge and especially gaining practice on procedure.

Ecem Onaran, who works in a simulation centre agrees that most of the doctors they receive prefer to work on laparoscopy arthroscopy rather than working in a virtual reality environment and she states that the main reason for this is the physical touch that they get in a human – simulation model and how the tissues are realistic. And she also adds that according to surveys that they do after simulations, doctors states that they like to work on the simulation since it has the most realistic tissue. Some doctors prefer to practice on the simulations rather than cadaver since the warmth and rigidity of the body is more realistic so any procedure is very close to working on a live tissue.

5.2.5 Simulation Centres in Turkish Universities and Cities

“Recent years have witnessed tremendous advances in computing power, networking technology, robotics, and artificial intelligence. These advances have fuelled the development of high fidelity simulators for training teamwork skills in aviation, health care, the military, and nuclear power. High fidelity simulation is particularly popular among trainees who assume that because it replicates the “look and feel” of the actual work environment, it will also provide an efficient and valuable learning experience. In fact, this belief has become so pervasive that many within the training community have begun to use the terms simulation and high-fidelity simulation almost synonymously.” (Beaubien, 2018)

Turkey’s current population is around 77 million, even though the majority of the population lives in one of the three major cities (approximately one third or one fourth of the population), there are still larger amount of people living outside of these cities. Unfortunately, Turkey’s economy is not at the same level in every city, as an example Istanbul is as developed as any metropolitan city in the world, however, a smaller city such as Bursa (it is considered one of the biggest industry cities in Turkey) does not have the same opportunities in medical field. According to Ecem Onaran, there are only 5-6 simulation centres that are in Universities in Turkey, she
states that she would love to see more simulation centres which would increase the experience of the next generation of medical students.

It should not be forgotten that the simulation centres used other than education as well. They can be used as evaluation centres to determine the level of experience of graduating doctors, or to determine if those doctors have enough knowledge on the subject that is presented. In short, they can be considered as examination centres with more tools and equipment under their belts. Another purpose of simulation centres is for developing new surgeries, operations and even drugs. Human models can help to plan, and develop new surgeries on a theoretical basis, however simulation centres can create an environment closer to actual operation with complications to test these new methods or even the psychology of the doctors.

Another issue with simulation centres in Turkey, is the current lack of supporting staff in simulation centres. This issue must be resolved and should be started thought in universities if possible under their majors probably during masters’ degree level.

In the last years, in order to increase the doctor numbers, it can be observed that the quota for medical universities is increasing as well as the patient rights idea is becoming more and more important, it can be assumed from this that simulation centres will be becoming more mandatory. At the same time, with the popularization of simulation in medical education, the simulations itself would become more realistic. In Turkey, as a result of this realism simulation centres, and simulation based education becomes more widespread. In the above mentioned 5-6 universities that have simulation centres, after examining the education that they give, they are incorporating more simulations and simulation based exercises to increase the experience that their new graduates get. It should not be forgotten that without the interest of lecturers and faculties, without the infrastructure, without having simulations that are for all levels of knowledge, without the share of knowledge about the efficiency simulation centres, it is impossible generalise and make simulation centres more common and available to all medical students.
5.2.6 Importance of practicing Ultrasound

“With the advent of ultrasound, the information available to the pregnant patients’ attending doctors has increased markedly. Doctors are able measure the size of the foetus, which helps in determining when delivery of the baby would be expected; monitor growth of the developing foetus; check for structural abnormalities of foetus, e.g. head, and spine between 18 and 20 weeks of pregnancy; locate the site of the placenta; check for evidence of foetal wellbeing or compromise with examinations of the foetal heart and even perform procedures on the foetus.” (Dr Lum, 2018)

The next question on the interview is “According to research paper that has been done by C.A. Burden, J. Preshaw, S. Grant, practicing on ultrasound is really important diagnostics and treatment, do you agree this and please elaborate on it?”

This question was to determine the importance of practicing ultrasound and with the combination of previous answers from “During your medicine education, which computing technologies did you use and which of them do you used further on your professional life? How were their impacts?” it easy to understand that ultrasound has one of the biggest parts as a computer technology in obstetricians’ and gynaecologists’ professional lives.

Dr Faruk Buyru talks about the importance of practice in medicine and he describes it as “With practice, operation speed increases, and meanwhile the mistakes, errors and complications decrease.” Dr Ismet Gulum Atilgan points another important point about practice and ultrasound. She states that practice with sonography in many patients, diminishes the time required to make diagnostic on a case. Dr Murat Yayla also adds that even with just practice of ultrasound on models it would help to reduce the time required for diagnostics and treatment in a real case. Dr Aysen Reside Alkis states that with the increasing amount of practice that doctors can get simulation centres and sonography, the mistake ratios and complication ratios would diminish also diagnostics would become easier.
Prof Dr Faruk Buyru also talks about the places where ultrasound is used and how the practice of sonography can increase the success of these procedures. Few procedures in this matter are Down Syndrome Screening, Double Test, Triple Test. “Chorionic villus sampling (CVS) is a prenatal test that diagnoses chromosomal abnormalities such as Down syndrome, as well as a host of other genetic disorders. The doctor takes cells from tiny finger like projections on your placenta called the chorionic villi and sends them to a lab for genetic analysis.” (BabyCenter, 2018)

5.2.7 Medical students’ practice with computer technologies

Eighth question “Do you think student are getting enough practice on computing technologies during their education in medical universities? Please explain it.” And ninth question “How can students increase their practice on computing technologies? And do you know any kind of workshops or simulations that are provided by the department of health in Turkey?” are in the interviews in order to understand and evaluate the current situation of medical students when they are practicing computer technologies in medical education of obstetrics and gynaecology.

While all of the participants except for Dr Murat Yayle, agree on that with recent years universities started to pay more attention on computer technologies to improve the quality of medical education, each interviewee mentioned different and important points that should not be forgotten. Prof Dr Faruk Buyru mentions the importance of costs of these computer technologies and suggests that universities should allocate more budget on these computer technologies whether its ultrasound, computer labs, or simulation centres. Thus, the next generation of doctors would have more practice on these machines and by extension they could create new less painful operations, surgeries with better recovery time and better life quality.

Dr Murat Yayla thinks that there is still not enough practice on simulations and respectively on ultrasound, and laparoscopy. He suggests that with increasing amount of student each university should start building simulation centres to educate the newer generations, and until each university has its own simulation centre they
should make a rotation system where all medical students and interns can benefit from the existing simulation centres, machines.

“As the health care industry becomes more familiar and comfortable with medical simulators and robotic surgery, additional benefits will be gained. Continued success and use of robotics will increase the number of credentialed and licensed physicians needed to provide complex medical services for patients.” (Kunkler, 2006)

6. Conclusion

6.1 Introduction

This dissertation’s goal was to determine the computer technologies that are used in medical education of obstetrics and gynaecology, and to be precise in Turkey. There were few research questions that was asked in section 2.4, and all of them had been answered through this research.

6.2 Review of Research Questions

- What’s the history of computers, computer technology, and medicine?

This question was one of the more important questions as structure wise, since it explained the background of the technologies that are used in medicine. This question has been addressed in section 2.1 and 2.2. During introduction and background, the history of computers and big leaps has been discussed. A short summary to this question would be computers are available since 19th century however they became more common and usable in multiple fields during 1940s - 1950s
• When did computer technology became a part of medical education?

This research question is related to previous question in matter of talking about the history and background of computer technologies in medical field especially in obstetrics and gynaecology. This question was answered in sections 2.1, 2.2 and in literature review the introduction of computers in to medicine discussed (Section 3.2) History of the computing technologies show how medicine incorporated a technology which was using industrially and made it to ultrasound machine that are used today, it started in late 50s and it only become common 60s and Turkish medical system adopted it in early 70s and started to teach this technology in late 70s. The answer for this question also supported with the responses from interviewees.

• Is there enough ultrasound practice in Turkish medical education?

To answer this question few universities timetables and curriculums has been examined and like mentioned in section 3.3 the medical students does almost get 0 practice with ultrasound in their first four years and after that it all depends on the opportunities that they get during their intern years or in their medical speciality years. However during the second part of their education according to participants to interviews they are getting better education compared 80s, 90s. However, a plus point for the Turkish education system is that there are improvements regarding simulation centres which allows users to practice on all kinds of computer technologies, and these centres are available to all medical staff.
• Is there enough practice and emphasis on laparoscopy and minimal invasive surgeries in Turkey?

Like with ultrasound, there is not much practice chance for students during their first half of their medical education, however within their intern years they are getting used to laparoscopy procedures. But unlike ultrasound it is harder to practice on live participants and this where simulation centres play a bigger role. During section 5.2.4 it is deeply discussed how medical doctors and students prepare for new operations within simulation centres. And regarding laparoscopy and hysterectomy, as mentioned in section 5.2.5 simulation centres are crucial and essential.

• What is simulation based learning, how important is it?

Simulation based training is the newest learning method in medicine, and it is probably the most important safe free method for newcomers to learn difficult surgeries. In section 3.5, simulation centres are discussed in depth and explained how important they are. In short, they provide opportunities for preparing to difficulties and complications that can occur during real surgeries. This allows students and doctors to gain more practice on surgeries and let them perfect methods such as laparoscopy which increases the general quality of the patients by reducing the recovery time and scars.

• What are the pros and cons of simulation based learning and simulation centres?

This research question has been deeply research during the literature review in section 3.5.1 and 3.5.2. Simulation centres can be researched just in another research paper however to make it short, like mentioned before it has benefits such as practice, or physiological boost however there are disadvantages of getting used to simulation based learning such as cost.
6.3 Overall Conclusion

This dissertation’s purpose was to examine the current situation of computer technologies that are used in medical scene especially in Turkey. Main reason that this research was done in Turkey, was because of the background of researcher. Researcher is Turkish, finished the best French high school in Turkey, went to United States to study medicine after 2 and a half year he had to return to Turkey due to medical reasons, and studied 5 years of computer engineering and now studying Software engineering in Cardiff Metropolitan University. Thus, decided to write his dissertation in area that combines both of his background, with his connections in Turkey, he did interviews with professors and doctors.

Current situation of medical education in Turkey is progressing rapidly. And importance of computer technologies is gathering more attention from both doctors, lecturers and students. With the current education system in Turkey, being a doctor with speciality takes around 8 years. The first four years are more theoretical; however, during their intern years, students are getting the most practice and decides on which specialty they want to focus on. In obstetrics and gynaecology, doctors have two patients rather than one, which requires a lot more technique compared to some other fields in medicine. With the advancement of computer technologies, tackling the complications and problems is becoming easier.

The medical education now requires a decent understanding in computer techniques that are used in obstetrics and gynaecology, if a doctor wants to be successful, and create better life quality for his patients. Most important technologies that are being used obstetrics are ultrasound and laparoscopy, however to practice these technologies students requires simulation based learning. This is where simulation centres shines, whether universities’ simulation centres or governments simulation centres or private simulation centres. And general consensus on this matter is that medical faculties should work together and with simulation centres to provides better education for students.
7. Bibliography


Beaubien, J. (2018). The use of simulation for training teamwork skills in health care: how low can you go?


Appendix

**Appendix A: Blank Ethics Form**

When undertaking a research or enterprise project, Cardiff Met staff and students are obliged to complete this form in order that the ethics implications of that project may be considered.

If the project requires ethics approval from an external agency such as the NHS or MoD, you will not need to seek additional ethics approval from Cardiff Met. You should however complete Part One of this form and attach a copy of your NHS application in order that your School is aware of the project.

The document *Guidelines for obtaining ethics approval* will help you complete this form. It is available from the [Cardiff Met website](#).

Once you have completed the form, sign the declaration and forward to your School Research Ethics Committee.

**PLEASE NOTE:**
*Participant recruitment or data collection must not commence until ethics approval has been obtained.*

**PART ONE**

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<th>Name of applicant:</th>
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<td>If your collaborators are external to Cardiff Met, include details of the organisation they represent</td>
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<td>Will the study involve NHS patients or staff?</td>
<td>If yes, attach a copy of your NHS application to this form</td>
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<td>Will the study involve taking samples of human origin from participants?</td>
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*In no more than 150 words, give a non technical summary of the project*
Does your project fall entirely within one of the following categories:

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<th>Category</th>
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<td>Paper based, involving only documents in the public domain</td>
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<td>Laboratory based, not involving human participants or human tissue samples</td>
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<td>Practice based not involving human participants (eg curatorial, practice audit)</td>
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<td>Compulsory projects in professional practice (eg Initial Teacher Education)</td>
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If you have answered YES to any of these questions, no further information regarding your project is required.
If you have answered NO to all of these questions, you must complete Part 2 of this form

**DECLARATION:**
I confirm that this project conforms with the Cardiff Met Research Governance Framework

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**FOR STUDENT PROJECTS ONLY**

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**Research Ethics Committee use only**

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Project reference number: Click here to enter text.

Name: Click here to enter text.  Date: Click here to enter a date.

Signature:

Details of any conditions upon which approval is dependant:  Click here to enter text.
PART TWO

**A RESEARCH DESIGN**

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<th>A1 Will you be using an approved protocol in your project?</th>
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<td>A2 If yes, please state the name and code of the approved protocol to be used¹</td>
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<td>A3 Describe the research design to be used in your project</td>
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<td>A4 Will the project involve deceptive or covert research?</td>
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<td>A5 If yes, give a rationale for the use of deceptive or covert research</td>
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**B PREVIOUS EXPERIENCE**

| B1 What previous experience of research involving human participants relevant to this project do you have? | Click here to enter text. |
| B2 Student project only | Click here to enter text. |
| What previous experience of research involving human participants relevant to this project does your supervisor have? | |

**C POTENTIAL RISKS**

| C1 What potential risks do you foresee? | Include details of risks to the participants, the researcher and the project as a whole. |
| C2 How will you deal with the potential risks? | Click here to enter text. |

When submitting your application you **MUST** attach a copy of the following:

- All information sheets
- Consent/assent form(s)

Refer to the document *Guidelines for obtaining ethics approval* for further details on what format these documents should take.

¹ An Approved Protocol is one which has been approved by Cardiff Met to be used under supervision of designated members of staff; a list of approved protocols can be found on the Cardiff Met website here
Appendix B: Approved Ethics Form
When undertaking a research or enterprise project, Cardiff Met staff and students are obliged to complete this form in order that the ethics implications of that project may be considered.

If the project requires ethics approval from an external agency (e.g., NHS), you will not need to seek additional ethics approval from Cardiff Met. You should however complete Part One of this form and attach a copy of your ethics letter(s) of approval in order that your School has a record of the project.

The document Ethics application guidance notes will help you complete this form. It is available from the Cardiff Met website. The School or Unit in which you are based may also have produced some guidance documents, please consult your supervisor or School Ethics Coordinator.

Once you have completed the form, sign the declaration and forward to the appropriate person(s) in your School or Unit.

PLEASE NOTE:
Participant recruitment or data collection MUST NOT commence until ethics approval has been obtained.

PART ONE

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<tr>
<td>Project Title:</td>
<td>A critical exploration on how computing technology can support the education of healthcare professionals in obstetrics and gynaecology: a case study of the Turkish health care system.</td>
</tr>
<tr>
<td>Expected start date of data collection:</td>
<td>07/01/2018</td>
</tr>
<tr>
<td>Approximate duration of data collection:</td>
<td>3 Months</td>
</tr>
<tr>
<td>Funding Body (If applicable):</td>
<td>N/A</td>
</tr>
<tr>
<td>Other researcher(s) working on the project:</td>
<td>No</td>
</tr>
<tr>
<td>Will the study involve NHS patients or staff?</td>
<td>No</td>
</tr>
<tr>
<td>Will the study involve human samples and/or human cell lines?</td>
<td>No</td>
</tr>
</tbody>
</table>
Does your project fall entirely within one of the following categories:

<table>
<thead>
<tr>
<th>Category</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paper based, involving only documents in the public domain</td>
<td>Yes</td>
</tr>
<tr>
<td>Laboratory based, not involving human participants or human samples</td>
<td>No</td>
</tr>
<tr>
<td>Practice based not involving human participants (e.g. curatorial, practice audit)</td>
<td>No</td>
</tr>
<tr>
<td>Compulsory projects in professional practice (e.g. Initial Teacher Education)</td>
<td>No</td>
</tr>
<tr>
<td>A project for which external approval has been obtained (e.g., NHS)</td>
<td>No</td>
</tr>
</tbody>
</table>

If you have answered YES to any of these questions, expand on your answer in the non-technical summary. No further information regarding your project is required. If you have answered NO to all of these questions, you must complete Part 2 of this form.

In no more than 150 words, give a non-technical summary of the project:

Is it feasible to use new computing technologies in medical education in Turkey, particularly within the field of obstetrics and gynaecology? Will it improve the quality of education for medical students? There are a lot of new technologies such as simulations on fake bodies and using virtual reality. The purpose of using these computing technologies in education is to prepare future healthcare professionals in Turkey for advanced procedures and situations. The project will focus on computing technologies to improve the problems by exploring certain subjects:

- Virtual Reality diagnostics
- Robotic surgeries
- Surgery simulations
- Ultrasound machine practice and simulation

DECLARATION:
I confirm that this project conforms with the Cardiff Met Research Governance Framework.
I confirm that I will abide by the Cardiff Met requirements regarding confidentiality and anonymity when conducting this project.

STUDENTS: I confirm that I will not disclose any information about this project without the prior approval of my supervisor.

Signature of the applicant: Alper Alkis 
Date: 12/11/2017

FOR STUDENT PROJECTS ONLY

Name of supervisor: Catherine Tryfona 
Date: 12/01/2018

Signature of supervisor:
PART TWO

**A RESEARCH DESIGN**

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1 Will you be using an approved protocol in your project?</td>
<td>No</td>
</tr>
<tr>
<td>A2 If yes, please state the name and code of the approved protocol to be used</td>
<td>N/A</td>
</tr>
<tr>
<td>A3 Describe the research design to be used in your project</td>
<td></td>
</tr>
</tbody>
</table>

Brief interviews will be conducted as research methodology. The main purpose of these interviews is to determine: is it beneficial to use more computing technologies in the education of those in the medical field, particularly within the field of obstetrics and gynaecology?

There will be approximately 8 – 10 questions. The interviews will be done in via skype, or with facetime. All of the chosen interviewees will be lecturers from universities.

The main reason to conduct interviews with four different lecturers is: While a lecturer may be open minded towards the idea of education through computing technology such as virtual reality gear which is a new technology for him/her, another lecturer may find this idea unnecessary and could defend that it would diminish the skill that is required to be a surgeon.

Data collection for feasibility study. And budget search for a typical university in Turkey.

Data collection will be anonymised, with the exception of a role description. Participants will be asked to complete a participant agreement form and their informed of their rights to withdraw.

---

2 An Approved Protocol is one which has been approved by Cardiff Met to be used under supervision of designated members of staff; a list of approved protocols can be found on the Cardiff Met website here.
A4 Will the project involve deceptive or covert research?  
No

A5 If yes, give a rationale for the use of deceptive or covert research  
N/A

A6 Will the project have security sensitive implications?  
No

A7 If yes, please explain what they are and the measures that are proposed to address them  
N/A

B PREVIOUS EXPERIENCE  
B1 What previous experience of research involving human participants relevant to this project do you have?  
None.

B2 Student project only  
What previous experience of research involving human participants relevant to this project does your supervisor have?  
Catherine Tryfona has over 11 years of experience supervising undergraduate final year projects, along with her own research.

C POTENTIAL RISKS  
C1 What potential risks do you foresee?  
1. Not meeting the deadline.  
2. Not being able to arrange an interview.  
3. There is a risk of this research becoming too big and becoming more of a PHD research.

C2 How will you deal with the potential risks?  
1. Planning interviews and creating timelines to diminish procrastinating.  
2. Lecturers already agreed to do interviews, and to avoid the schedule problems the intention is to arrange the meetings as soon as possible.  
3. Sticking to a plan makes it easier to focus on the more related subjects.

When submitting your application you **MUST** attach a copy of the following:  
- All information sheets  
- Consent/assent form(s)

An exemplar information sheet and participant consent form are available from the Research section of the Cardiff Met website.
Appendix C: Participant consent form example

PARTICIPANT CONSENT FORM

Reference Number: 2016D5793

Participant name or Study ID Number:

Title of Project: A critical exploration of how computing technology can support the education of healthcare professionals in obstetrics and gynaecology: a case study of Turkish health care system

Name of Researcher: Alper Alkis

Participant to complete this section: Please initial each box.

1. I confirm that I have read and understand the information sheet for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily. 

2. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason.

1. I agree to take part in the above study.

The following statements could also be included on the consent form if appropriate:

2. I agree to the interview / focus group / consultation being audio recorded

3. I agree to the interview / focus group / consultation being video recorded

4. I agree to the use of anonymised quotes in publications
Signature of Participant

Date

Name of person taking consent

Date

Signature of person taking consent

* When completed, 1 copy for participant & 1 copy for researcher site file
Appendix D: Participant Consent forms

PARTICIPANT CONSENT FORM

Reference Number: 2016D5793

Participant name or Study ID Number: Prof Dr Faruk Buyru

Title of Project: A critical exploration of how computing technology can support the education of healthcare professionals in obstetrics and gynaecology: a case study of Turkish health care system

Name of Researcher: Alper Alkis

Participant to complete this section: Please initial each box.

1. I confirm that I have read and understand the information sheet for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.  

2. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason.

5. I agree to take part in the above study.

The following statements could also be included on the consent form if appropriate:

6. I agree to the interview / focus group / consultation being audio recorded

7. I agree to the interview / focus group / consultation being video recorded

8. I agree to the use of anonymised quotes in publications
Prof Dr Faruk Buyru __________________________   _______ 24/03/2018_______

Signature of Participant

_____________________________  __________________________

Date

Alper Alkis________________________   _______ 18/02/2018_______

Name of person taking consent

_____________________________

Date

Alper Alkis________________________

Signature of person taking consent

* When completed, 1 copy for participant & 1 copy for researcher site file
PARTICIPANT CONSENT FORM

Reference Number: 2016D5793

Participant name or Study ID Number: Dr Ismet Gulum Atilgan

Title of Project: A critical exploration of how computing technology can support the education of healthcare professionals in obstetrics and gynaecology: a case study of Turkish health care system

Name of Researcher: Alper Alkis

Participant to complete this section: Please initial each box.

1. I confirm that I have read and understand the information sheet for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily. [X]

2. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason. [X]

9. I agree to take part in the above study. [X]

The following statements could also be included on the consent form if appropriate:

10. I agree to the interview / focus group / consultation being audio recorded [X]

11. I agree to the interview / focus group / consultation being video recorded [X]

12. I agree to the use of anonymised quotes in publications [X]
Signature of Participant

Date

Name of person taking consent

Date

Signature of person taking consent

* When completed, 1 copy for participant & 1 copy for researcher site file
PARTICIPANT CONSENT FORM

Reference Number: 2016D5793

Participant name or Study ID Number: Dr Aysen Reside Alkis

Title of Project: A critical exploration of how computing technology can support the education of healthcare professionals in obstetrics and gynaecology: a case study of Turkish healthcare system

Name of Researcher: Alper Alkis

___________________________________________________________________

Participant to complete this section: Please initial each box.

1. I confirm that I have read and understand the information sheet for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily. ✘

2. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason. ✘

13. I agree to take part in the above study. ✘

The following statements could also be included on the consent form if appropriate:

14. I agree to the interview / focus group / consultation being audio recorded ✘

15. I agree to the interview / focus group / consultation being video recorded ✘

16. I agree to the use of anonymised quotes in publications ✘
_Dr Aysen Reside Alkis________________________   ______  25/02/2018_______
Signature of Participant

_ Alper Alkis____________________________   ______  18/02/2018_______
Name of person taking consent
Signature of person taking consent

* When completed, 1 copy for participant & 1 copy for researcher site file
PARTICIPANT CONSENT FORM

Reference Number: 2016D5793

Participant name or Study ID Number: Prof Dr Cihat Sen

Title of Project: A critical exploration of how computing technology can support the education of healthcare professionals in obstetrics and gynaecology: a case study of Turkish health care system

Name of Researcher: Alper Alkis

Participant to complete this section: Please initial each box.

1. I confirm that I have read and understand the information sheet for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.

2. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason.

17. I agree to take part in the above study.

The following statements could also be included on the consent form if appropriate:

18. I agree to the interview / focus group / consultation being audio recorded

19. I agree to the interview / focus group / consultation being video recorded

20. I agree to the use of anonymised quotes in publications
Prof Dr Cihat Sen

Signature of Participant

Date

Alper Alkis

Name of person taking consent

Date

Alper Alkis

Signature of person taking consent

* When completed, 1 copy for participant & 1 copy for researcher site file
PARTICIPANT CONSENT FORM

Reference Number: 2016D5793

Participant name or Study ID Number: Dr Murat Yayla

Title of Project: A critical exploration of how computing technology can support the education of healthcare professionals in obstetrics and gynaecology: a case study of Turkish healthcare system

Name of Researcher: Alper Alkis

Participant to complete this section: Please initial each box.

1. I confirm that I have read and understand the information sheet for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily. X

2. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason. X

21. I agree to take part in the above study. X

The following statements could also be included on the consent form if appropriate:

22. I agree to the interview / focus group / consultation being audio recorded X

23. I agree to the interview / focus group / consultation being video recorded X

24. I agree to the use of anonymised quotes in publications X
Dr Murat Yayla________________________   ______

Signature of Participant

Date

Alper Alkis___________________________   ______

Name of person taking consent

Date

Alper Alkis___________________________

Signature of person taking consent

* When completed, 1 copy for participant & 1 copy for researcher site file
PARTICIPANT CONSENT FORM

Reference Number: 2016D5793

Participant name or Study ID Number: Ecem Onaran

Title of Project: A critical exploration of how computing technology can support the education of healthcare professionals in obstetrics and gynaecology: a case study of Turkish health care system

Name of Researcher: Alper Alkis

Participant to complete this section: Please initial each box.

1. I confirm that I have read and understand the information sheet for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily. 

2. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason.

25. I agree to take part in the above study.

The following statements could also be included on the consent form if appropriate:

26. I agree to the interview / focus group / consultation being audio recorded

27. I agree to the interview / focus group / consultation being video recorded

28. I agree to the use of anonymised quotes in publications
_Ecem Onaran________________________   ______  02/04/2018_______
Signature of Participant                      Date

_Alper Alkis___________________________  ______  18/02/2018_______
Name of person taking consent               Date

Alper Alkis___________________________
Signature of person taking consent

* When completed, 1 copy for participant & 1 copy for researcher site file
**Appendix E: Interview Question**

Interview questions:

1. Please briefly elaborate your educational background, from which university did you graduate, when did you graduate, and what is your specialty?

2. During your medicine education, which computing technologies did you use and which of them do you used further on your professional life? How were their impacts?

3. When you are teaching, are you using any kind of computing technologies including the more non-technical ones such as simple human models? And what are the purpose of these technological devices?

4. Have you ever used any kind of computing technology devices other then simple human models, such as virtual reality headsets and computer simulations or any kind of augmented reality devices to perform surgeries or simple operations? If yes, how was the experience?
5 As a doctor and a lecturer do you think with the new technologies in the medicine, having simulation centres and computer laboratories in medical universities will help the next generation of health care staff of Turkey? And please elaborate on it.

6 In obstetrics and gynaecology, what are the most used and most important computing technologies? (Programs and machines)

7 According to research paper that has been done by C.A. Burden, J. Preshaw, S. Grant, practicing on ultrasound is really important diagnostics and treatment, do you agree this and please elaborate on it?

8 Do you think student are getting enough practice on computing technologies during their education in medical universities? Please explain it.

9 How can students increase their practice on computing technologies? And do you know any kind of workshops or simulations that are provided by the department of health in Turkey?

10 What kind of effects does computing technologies have on the health of the Turkish society?
Appendix F: Turkish Translation of Interview Questions:

Interview questions:

1 Please briefly elaborate your educational background, from which university did you graduate, when did you graduate, and what is your specialty?

TR: Lütfen eğitim gecmişinizi anlatınız, Hangi üniversiteden/universitelerden mezun oldunuz, hangi yıl mezun oldunuz, ve uzmanlığınız nedir?

2 During your medicine education, which computing technologies did you use and which of them do you used further on your professional life? How were their impacts?

TR: Eğitim hayatınızı boyunca, hangi bilgisayar teknolojilerini (Bu, bilgisayarla ilgili olan her şeyi içerir. Örnek: Ultrason, Laparoskopik Ameliyattaki kullanılan makineler, Endoskopik Ameliyattaki kullanılan makineler, bilgisayara bağlı insan modelleri, vs) kullandınız? Bunlardan hangilerini ierde profesyonel hayatınızda kullanınız? Bunlar profesyonel hayatınızda ki etkileri nasıldı?

3 When you are teaching, are you using any kind of computing technologies including the more non-technical ones such as simple human models? And what are the purpose of these technological devices?
TR: Eğitim verirken, daha az teknolojik bilgisayar teknolojileri kullanıyor musunuz, örnek olarak basit insan modelleri? Sizce bunların kullanılmadaki amacı nelerdir?

4 Have you ever used any kind of computing technology devices other then simple human models, such as virtual reality headsets and computer simulations or any kind of augmented reality devices to perform surgeries or simple operations? If yes, how was the experience?

TR: Daha once hiç Yapay gerçeklik, bilgisayar simulasyonları, ya da zenginleştirilmiş gerçeklik cihazlarını, bir ameliyat ve ya bir ameliyata calısanıken ya da genel olarak tip için kullanınız mı? Kullandıysanız nasıl idi ve memnun kaldınız mı?

Dip Not: Burda sormak istediğim içine laparoskopik ameliyatlar ve benzeri ameliatlarda giriyor.

5 As a doctor and a lecturer do you think with the new technologies in the medicine, having simulation centres and computer laboratories in medical universities will help the next generation of health care staff of Turkey? And please elaborate on it.

TR: Sizce bir doctor ve eğitimci olarak, tipta yeni çıkan teknolojiler ve similasyon merkezleri ve bilgisayar labaratuarlarının tip üniversitelerinde daha çok kullanılması, Turkiye deki yeni jenerasyon tip personeline yardımcı olur mu? Lütfen açıklayıniz.
6 In obstetrics and gynaecology, what are the most used and most important computing technologies? (Programs and machines)

TR: Kadin Hastalıkları ve doğum alanın da, sizce en çok kullanılan bilgisayar teknolojileri nelerdir? Ve de en onemli bilgisayar teknolojileri nelerdir? (Bilgisayar programları, makinalar vs)

7 According to research paper that has been done by C.A. Burden, J. Preshaw, S. Grant, practicing on ultrasound is really important diagnostics and treatment, do you agree this and please elaborate on it?


Makalenin İngilizce sonucu: “Result: Absolute deviation from the defined standards for all parameters was calculated. Preliminary data showed a significant difference between novice versus intermediate (p=0.004) and expert (p=0.012) in CRL1 measurements, demonstrating construct validity. With repetition accuracy of novice measurements and time taken approached expert levels demonstrating a learning curve. Growth scan preliminary data revealed greatest variability within the novice measurements and the expert group was significantly faster (p=0.002).” Thus, their conclusion was “VRS ultrasound training has the potential to improve scanning skills of Obstetrics and Gynaecology trainees.”

Makalenin linki: [http://fn.bmj.com/content/96/Suppl_1/Fa56.3](http://fn.bmj.com/content/96/Suppl_1/Fa56.3)

TR: Kisaca yapılan araştırmada: 30 Tane Kadin dogum uzmani ile yapılan bir araştırmada, bunlardan 10 tanesi acemi (10 kere yada daha az sayıda ultrason kullanmışlar) 10 tanesi orta seviye( 20 ile 50 kez arasi ultrason kullanmışlar) 10 taneside ileri seviye(100 un üzerinde ultrason kullanmışlar). Bunlardan 3 kere Rahim bölgesinin
ultrasonunun yapılması ve ölçümlerin alınması istenmistir ve bunların zamani tutulmustur. İlk sonuçlara göre acemiler ile orta ve ileri seviyelerin aralarındaki zaman farkı çok fazla iken 2. Ve 3. Denemelerinde bu farkın çok daha azaldığı gözlemlenmiştir.

8 Do you think student are getting enough practice on computing technologies during their education in medical universities? Please explain it.

TR: Sizce öğrenciler tip üniversitelerinde bilgisayar teknolojileri ile yeterince alıştırma yapabiliyorlar mı? Lütfen açıklayın.

9 How can students increase their practice on computing technologies? And do you know any kind of workshops or simulations that are provided by the department of health in Turkey?

TR: Sizce öğrenciler bilgisayar teknolojileri üzerine nasıl daha alıştırma yapıp deneyİM kazanabilirler. Turkiyede, Sizin bildiğiniiz devlet, sağlık bakanlığı tarafından yapılan seminerler vey a simulasyon merkezleri var mı? Yoksa olmasını istermiydiniz?

10 What kind of effects does computing technologies have on the health of the Turkish society?

TR: Genel olarak, sizce bilgisayar teknolojilerinin Turkiyedeki tip personellerinin hayatlarında ne kadar etkisi vardır? Mesela Hemsirelerin profesyonel hayatlarında bu teknolojileri ne kadar kullanıyor sızce.
Appendix G: Interview Responses

Genel olarak bilgisayar teknolojilerinin Türkiye de tıp alanın daki personeli (doktorlar, radyologlar, hemsireler, ebepler vb) ile etkilesimi üzerine bu sorular.

Kısacı bilgisayar teknolojileri dedik mi aklimiza bilgisayarla ilgili olan her şey gelebilir, düz bilgisayarlardan, ultrasonlara, laparoskopik ameliyatlardan bilgisayar simülasyonlarına, insan maketlerinden sanal gerçekliğe kadar.

Interview questions:

1 Please briefly elaborate your educational background, from which university did you graduate, when did you graduate, and what is your specialty?

Lütfen eğitim geçmişini anlatınız, Hangi üniversiteden/universitelerden mezun oldunuz, hangi yıl mezun oldunuz, ve uzmanlığınız nedir?

Profesor Doktor Faaruk Buyru
İstanbul Üniversitesi İstanbul Tıp Fakültesi 1983
Kadın Hastalıkları ve Doğum Uzmanlığı 1990
Associate Prof 1996
Prof 2002

2 During your medicine education, which computing technologies did you use and which of them do you used further on your professional life? How were their impacts?

Eğitim hayatınızı boyunca, hangi bilgisayar teknolojilerini (Bunun içine bilgisayarla ilgili olan hersey girdi. Örnek: Ultrason, Laparoskopik Ameliyat kullanılar makineler, Endoskopik Ameliyat kullanılan makineler, bilgisayara bağlı insan modelleri, vs) kullanınız? Bunlardan hangilerini ilerde profesyonel hayatınızda kullanınız? Bunlar profesyonel hayatınızda ki etkileri nasıldır?
Bilgisayarları eğitim ve hasta kayıtlarını tutma amacı ile kullandık, halen kullanıyoruz. Daha önce yayın ve verilere ulaşmak için dergi ve index medicus olarak adlandırılan kaynaklara başvururken, bugün Pubmed, Medscape, UpToDate veri kaynaklarını kullanıyoruz. Sunumlarımızı daha önce fotoğraf çekerek hazırladığımız slaytlarla yaparken, bugün Powerpoint, Keynote kullanıyoruz. Daha hızlı, daha güvenilir ve bilgiye daha kolay ulaşılır oldu. Bilgi transferi kolaylaştı ve yenilikler herkes tarafından daha kolay öğrenilir ve dünyanın her yerinde uygulanır hale geldi.

Gebeliklerin izlenmesinde (obstetrilde) ve jinekolojide ultrasonografi muayenenin bir parçası oldu. Konjenital anomali taraması sonucu, problemli gebeliklere müdahale edilmeye başlandı. Fetal büyüme ultrasonografi ile değerlendirilmeye başlandı.

Tüp bebek tedavilerinde ultrasonla yumurta gelişiminin ve endometriumun izlenmesi, tüm tüp bebek sürecinde bilgisayar teknolojileri ve ultrasonografi kullanılıyor. Son yıllarda tüp bebekte mikroinjeksiyon işleminde kullanılabacak sperm seçiminde, embryo gelişiminin değerlendirilmesinde bilgisayar teknolojileri kullanılıyor.

Endoskopik ameliyatlarında, görüntülemede ve robotik cerrahide de bilgisayar teknolojileri kullanılıyor.

Genel olarak başarı oranını artırdığını, hata payını azalttığını ve işleri hızlandırdığını söylemek mümkün bu teknolojilerin kullanımının.

Bilgisayara bağlı insan modellerini kullanmıyoruz.

3 When you are teaching, are you using any kind of computing technologies including the more non-technical ones such as simple human models? And what are the purpose of these technological devices?

Egitim verirken, daha az teknolojik bilgisayar teknolojileri kullanıyor musunuz, örnek olarak basit insan modelleri? Sizce bunların kullanılmadaki amacı nelerdir?
4 Have you ever used any kind of computing technology devices other than simple human models, such as virtual reality headsets and computer simulations or any kind of augmented reality devices to perform surgeries or simple operations? If yes, how was the experience?

Daha önce hiç Yapay gerçeklik, bilgisayar simulasyonları, ya da zenginleştirilmiş gerçeklik cihazlarını, bir ameliyat ve ya bir ameliyata çalışırken ya da genel olarak tip için kullandınız mı? Kullandiysanız nasılı ve memnun kaldınız mı?

Dip Not: Burda sormak istediğim icine laparoskopik ameliyatlar ve benzeri amelyatlarda giriyor.

Kullandım ve çok memnun kaldım. Örneğin histeroskopik operasyon modelleri, tüp bebekte simülasyon ile embryo trasnferi çok yararlı. Bunları modelde yaptktan sonra hasta üzerinde uygulamak başarı oranını arttırıyor ve daha kolay, güvenli uygulama sağlıyor. ASRM tarafından geliştirilen embryo transfer simülasyonu çok başarılı.

5 As a doctor and a lecturer do you think with the new technologies in the medicine, having simulation centres and computer laboratories in medical universities will help the next generation of health care staff of Turkey? And please elaborate on it.

Sizce bir doctor ve eğitic olarak, tipta yeni cikan teknolojiler ve simülasyon merkezleri ve bilgisayar labaratuvarlarının tip universitelerinde daha çok kullanılıması, Turkiye deki yeni jenerasyon tip personeline yardımcı olur mu? Lütfen açıklarınız.

6 In obstetrics and gynaecology, what are the most used and most important computing technologies? (Programs and machines)

Kadin Hastalıkları ve doğum alanında, sizce en çok kullanılan bilgisayar teknolojileri nelerdir? Ve de en onemli bilgisayar teknolojileri nelerdir? (Bilgisayar programları, makinalar vs)

Donanım- makina: Ultrasonografi, endoskopi, robotic cerrahi, urodinami cihazları , Tüp bebekte embryoskop,

Program olarak fetal anomaly riskini tahmin etmeye yarayan programlar (Down Syndrome screening, double test, triple test) ve anne kanında DNA araştırılması yöntemi

Genetik inceleme yöntemleri

7 According to research paper that has been done by C.A. Burden, J. Preshaw, S. Grant, practicing on ultrasound is really important diagnostics and treatment, do you agree this and please elaborate on it?

C.A Burden, J. Preshaw ve S.Grant tarafından yapılan araştırmada Ultrason ile alistirma yapmak, tani ve tedavide inanılmaz onemlidir. Siz buna katılıyormusunuz ve açıklar misiniz lütfen.

Makalenin ingilizce sonucu: “Result: Absolute deviation from the defined standards for all parameters was calculated. Preliminary data showed a significant difference between novice versus intermediate (p=0.004) and expert (p=0.012) in CRL1 measurements, demonstrating construct validity. With repetition accuracy of novice measurements and time taken approached expert levels demonstrating a learning curve. Growth scan preliminary data revealed greatest variability within the novice measurements and the expert group was significantly faster (p=0.002).” Thus, their conclusion was “VRS
ultrasound training has the potential to improve scanning skills of Obstetrics and Gynaecology trainees.”

Makalenin linki: http://fn.bmj.com/content/96/Suppl_1/Fa56.3

Kısaca yapılan araştırmada: 30 Tane Kadın doğum uzmanı ile yapılan bir araştırma, bunlardan 10 tanesi acemi (10 kere yada daha az sayıda ultrason kullanmışlar) 10 tanesi orta seviye (20 ile 50 kez arası ultrason kullanmışlar) 10 taneside ileri seviye (100 un üzerinde ultrason kullanmışlar). Bunlardan 3 kere Rahim bolgesinin ultrasonunun yapılması ve ölçümlerin alınması istenmistir ve bunların zamani tutulmuştur. İlkbahar çalıştayla göre acemiler ile orta ve ileri seviyelerin aralarındaki zaman farkı çok fazla iken 2. ve 3. Denemelerinde bu farkın çok daha azaldığı gözlenenmiştir.

Tabii katılıyorum Tıpta deneyim önemlidir. Kişinin yaptığı işlem veya operasyon sayısına paralel olarak işlemi yapma hızı artar, hata ve komplikasyon oranı azalır.

8 Do you think student are getting enough practice on computing technologies during their education in medical universities? Please explain it.

Sizce öğrenciler tip universitelerinde bilgisayar teknolojileri ile yeterince alisturma yapabiliyorlar mı? Lütfen açıklayın.

Giderek daha fazla kullanılıyor. Tabii bunların maliyeti var, Üniversiteler bu teknolojlere yeterli kaynak ayırdıkları takdirde eğitimde daha fazla teknoloji kullanılacaktır. Öğrenci sayısının artması ve eğitim için daha az hasta kullanılabilmesi bu teknolojilerin kullanımını zorunlu kılmıştır.

9 How can students increase their practice on computing technologies? And do you know any kind of workshops or simulations that are provided by the department of health in Turkey?
Sizce öğrenciler bilgisayar teknolojileri üzerine nasıl daha alıştırma yapip deneyim kazanabilirler. Turkiyede, Sizin bildiginiz devlet, sağlık bakanlığı tarafından yapılan seminerler veya simulasyon merkezleri var mı? Yoksa olmasını isterdiniz?

Gerek Bakanlığın, gerek Üniversitelerin simulasyon merkezleri var ve bunlar kullanılıyor. Bu merkezler sınavlarda da kullanılıp yeterlilik araştırılıyor.

10 What kind of effects does computing technologies have on the health of the Turkish society?

Genel olarak, sizce bilgisayar teknolojilerinin Turkiyedeki sağlık personellerinin hayatlarında ne kadar etkisi vardır? Mesela Hemsirelerin profesyonel hayatlarında bu teknolojileri ne kadar kullanıyor sezce.

Genel olarak bilgisayar teknolojilerinin Türkiye de tıp alanın daki personeli (doktorlar, radyologlar, hemsireler, ebeler vb) ile etkilesimi üzerine bu sorular.

Kısacısı bilgisayar teknolojileri dedikimi aklimiza bilgisayarla ilgili her şey gelebilir, düz bilgisayarlardan, ultrasonlara, laparoskopik ameliyatlardan bilgisayar simülasyonlarına, insan maketlerinden sanal gerçekliğe kadar.

Interview questions:

1. Please briefly elaborate your educational background, from which university did you graduate, when did you graduate, and what is your specialty?

Lütfen eğitim gecmişini anlatınız, Hangi üniversiteden/universitelerden mezun oldunuz, hangi yıl mezun oldunuz, ve uzmanlığınız Nedir?

Dr. İsmet Gülüm Atılgan
+9053222871945
Gulumatilgan@hotmail.com
İstanbul üniversitesi cerrahpaşa tıp fakültesi 1984,
Şişli etfal eğitim araştırma hastanesi kadın hastalıkları ve doğum uzmanlığı 1992

2. During your medicine education, which computing technologies did you use and which of them do you used further on your professional life? How were their impacts?

Eğitim hayatınız boyunca, hangi bilgisayar teknolojilerini (Bunun içinde bilgisayarla ilgili olan her şey giriyor. Örnek: Ultrason, Laparoskopik Ameliyatta kullanılan makineler, Endoskopik Ameliyatta kullanılan makineler, bilgisayara bağlı insan modelleri, vs) kullandınız? Bunlardan hangilerini ilerde profesyonel hayatınızda kullanınız? Bunlar profesyonel hayatınızda ki etkileri nasıldır?

3 When you are teaching, are you using any kind of computing technologies including the more non-technical ones such as simple human models? And what are the purpose of these technological devices?

Eğitim verirken, daha az teknolojik bilgisayar teknolojileri kullanıyor musunuz, örnek olarak basit insan modelleri? Sizce bunların kullanılmadaki amacı nelerdir?

Hasta eğitiminde insan modelleri ve aile planlaması eğitimi için görel bilgiendir me yapıyorum

4 Have you ever used any kind of computing technology devices other than simple human models, such as virtual reality headsets and computer simulations or any kind of augmented reality devices to perform surgeries or simple operations? If yes, how was the experience?

Daha önce hiç Yapay gerçeklik, bilgisayar simulasyonları, ya da zenginleştirmis gerçeklik cihazlarını, bir ameliyat ve ya bir ameliyata çalışırken ya da genel olarak tip için kullanınız mı? Kullandıysanız nasılsı ve memnun kaldınız mı?

Dip Not: Burda sormak istediğim icine laparoskopik ameliyatlar ve benzeri ameliyatlarda giriıyor.

Çalıştım alan geregi bilgisayar ve modeller üzerinde çalıştım

5 As a doctor and a lecturer do you think with the new technologies in the medicine, having simulation centres and computer laboratories in medical universities will help the next generation of health care staff of Turkey? And please elaborate on it.

Sizce bir doctor ve eğitimi olarak, tipta yeni çıkan teknolojiler ve simülasyon merkezleri ve bilgisayar labaratuarlarının tip üniversitelerinde daha çok kullanılması, Türkiye deki yeni jenerasyon tip personeline yardımcı olur mu? Lutfen açıklarınız.

Kesinlikle olur. Bilgiye kolay ulaşım. operasyonlar için deneyim kazanma, uluslararası bilgi paylaşımı sayesinde yeni teknolojiye ulaşım sağlanır.
6 In obstetrics and gynaecology, what are the most used and most important computing technologies? (Programs and machines)

Kadin Hastalıkları ve doğum alanında, sizce en çok kullanılan bilgisayar teknolojileri nelerdir? Ve de en onemli bilgisayar teknolojileri nelerdir? (Bilgisayar programları, makinalar vs)

Bilgisayar, ultrason, laparoskopi, histereskopi, robotik cerrahi

7 According to research paper that has been done by C.A. Burden, J. Preshaw, S. Grant, practicing on ultrasound is really important diagnostics and treatment, do you agree this and please elaborate on it?

C.A Burden, J. Preshaw ve S.Grant tarafından yapılan araştırmalarına göre, Ultrason ile alıştırma yapmak, tani ve tedavide inanılmaz önemlidir. Siz buna katılıyorsunuz ve açıklar misiniz lütfen.

Makalenin ingilizce sonucu: “Result: Absolute deviation from the defined standards for all parameters was calculated. Preliminary data showed a significant difference between novice versus intermediate (p=0.004) and expert (p=0.012) in CRL1 measurements, demonstrating construct validity. With repetition accuracy of novice measurements and time taken approached expert levels demonstrating a learning curve. Growth scan preliminary data revealed greatest variability within the novice measurements and the expert group was significantly faster (p=0.002).” Thus, their conclusion was “VRS ultrasound training has the potential to improve scanning skills of Obstetrics and Gynaecology trainees.”

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Evet katılıyorum. Ne kadar çok hatada ultrasonografik inceleme yapılmışsa farklı varyasyonları tanımda beceri kazanılır.

8 Do you think student are getting enough practice on computing technologies during their education in medical universities? Please explain it.

Sizce öğrenciler tip universitelerinde bilgisayar teknolojileri ile yeterince alistırma yapabiliyorlar mı? Lütfen açıklayın.

Son zamanlarda teknolojik gelişmelere ulaşım üniversitelerimizin çoğuında artış olmuştur bu sayede öğrenciler modeller üzerinde deneyim kazanmaktadır. Sonuç olarak deneyim doğru tanı ve tedaviyre giden en iyi yoldur

9 How can students increase their practice on computing technologies? And do you know any kind of workshops or simulations that are provided by the department of health in Turkey?

Sizce öğrenciler bilgisayar teknolojileri üzerine nasıl daha alistırma yapıp deneyim kazanabilirler. Türkiye'de, Sizin bildiginiz devlet, sağlık bakanlığı tarafından yapılan seminerler veya a simulasyon merkezleri var mı? Yoksa olmasını istermiyiniz?

Birçok üniversite ve sağlık bakanlığında merkezler mevcut CERRAHPAŞA TIP FAK., HACETTEPE TIP FAK, ULUDAĞ ÜNIVERSİTESİ, ACIBADEM TIP FAK. Gibi
10 What kind of effects does computing technologies have on the health of the Turkish society?

Genel olarak, sizenbilgisayar teknolojilerinin Turkiyedeki tip personellerinin hayatlarında ne kadar etkisi vardır? Mesela Hemsirelerin profesyonel hayatlarında bu teknolojileri ne kadar kullanıyor sizence.

Çok etkisi var. Hem eğitim dönemlerinde uygulama becerisi kazanmak için, hemde profesyonel hayatta gereklidir.
Genel olarak bilgisayar teknolojilerinin Türkiye'de tip alanın daki personeli (doktorlar, radyologlar, hemsireler, ebepler vb) ile etkilesimi üzerine bu sorular.

Kısacasi bilgisayar teknolojileri dedikmi aklimiza bilgisayarla ilgili olan her sey gelebilir, düz bilgisayarlardan, ultrasonlara, laparoskopik ameliyatlardan bilgisayar simülasyonlarına, insan maketlerinden sanal gerçekliğe kadar.

Interview questions:

1 Please briefly elaborate your educational background, from which university did you graduate, when did you graduate, and what is your specialty?

Lütfen eğitim geçminizi anlatınız, Hangi üniversiteden/universitelerden mezun oldunuz, hangi yıl mezun oldunuz, ve uzmanlığınızı nedir?

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2015 den beri İstanbul Bilim üniversitesi sağlık bilimleri fakültesi Ebelik bölümü öğretim üyesi

2 During your medicine education, which computing technologies did you use and which of them do you used further on your professional life? How were their impacts?

Eğitim hayatınız boyunca, hangi bilgisayar teknolojilerini (Bunun içinde bilgisayarla ilgili olan her şey giriyor. Örnek: Ultrason, Laparoskopik Ameliyat kullanlan makineler, Endoskopik Ameliyat kullanlan makineler, bilgisayarla bağlı insan modelleri, vs) kullandınız? Bunlardan hangilerini ilerde profesyonel hayatınızda kullanınız? Bunlar profesyonel hayatınızda ki etkileri nasıldır?

Tıp eğitimim sırasında bilgisayar sistemleri fakültemizde sadece hasta kayıtlarını tutmadı kullanlidak. Tıolojik gelimele gelşim arasında PC sayesinde bilgiyi ulaşama, eğitimde kullanım (Power point sunumlar gibi) yerini aldı. 1984 den itibaren ultrasonografıği jinekoloji ve obstetrıde kullanıma başladıım.
Bilim üniversitesinde simülasyon merkezimizde ebelik öğrencileri ile bilgisayara bağlı insan modelleri üzerinde uygulamalar yapmaktadır.

Bilgisayar teknolojileri sayesinde bilgiye daha kolay ve hızlı ulaşılabilir oldu. Aynı zamanda dünyada bilgi ve deneyim paylaşımı arttı.

Eğitimde Bilgisayar teknolojilerinin kullanımıyla ders aktarımı kolaylaştı, uygulamalar sayesinde öğrencilerin deyim kazanımları arttı.

3 When you are teaching, are you using any kind of computing technologies including the more non-technical ones such as simple human models? And what are the purpose of these technological devices?

Eğitim verirken, daha az teknolojik bilgisayar teknolojileri kullanıyor musunuz, örnek olarak basit insan modelleri? Sizce bunların kullanılmadaki amacı nelerdir?

Evet kullanıyorum. Özellikle insan modelleri üzerinde uygulamalar. Örnek doğum eylemi. Öğrencilerin modeller üzerinde çalışmaları daha iyi anlamalarına yardımcı oluyor.

4 Have you ever used any kind of computing technology devices other then simple human models, such as virtual reality headsets and computer simulations or any kind of augmented reality devices to perform surgeries or simple operations? If yes, how was the experience?

Daha once hiç Yapay gerçeklik, bilgisayar simülsyonları, ya da zenginleştirilmiş gerçeklik cihazlarını, bir ameliyat ve ya bir ameliyata calısmırken ya da genel olarak tip için kullandınız mı? Kullandiysanız nasıl ve memnun kaldınız mı?

Dip Not: Burda sormak istediğim icine laparoskopik ameliyatlar ve benzeri amelyatlarda giriyorum.

Histeroskopik simülasyon çalışmalarına katıldım. deneyim kazanmada yararlı.
5 As a doctor and a lecturer do you think with the new technologies in the medicine, having simulation centres and computer laboratories in medical universities will help the next generation of health care staff of Turkey? And please elaborate on it.

Sizce bir doctor ve eğitici olarak, tipta yeni çıkan teknolojiler ve simülasyon merkezleri ve bilgisayar labaratuarlarının tip üniversitelerinde daha çok kullanılması, Türkiye deki yeni jenerasyon tip personeline yardımcı olur mu? Lutfen açıklarınız.

Kesinlikle yardımcı olur. Türkiye'de bir çok üniversitede simülasyon merkezleri var Bilim üniversitesi, Koç üniversitesi, Uludağ üniversitesi, Acıbadem üniversitesi gibi deneyim kazanmada yararlı cerrahi girişimlerde hata yapmayı azaltır. Operasyon süresini kısaltır.

6 In obstetrics and gynaecology, what are the most used and most important computing technologies? (Programs and machines)

Kadın Hastalıkları ve doğum alanında, sizce en çok kullanılan bilgisayar teknolojileri nelerdir? Ve de en onemli bilgisayar teknolojileri nelerdir? (Bilgisayar programları, makinalar vs)

Ultrasonografi, laparoskopi, histeroskopi, robotik cerrahi ürodinami cihazları, Fetal iyilik hali mütayininde kullanılan programlar

7 According to research paper that has been done by C.A. Burden, J. Preshaw, S. Grant, practicing on ultrasound is really important diagnostics and treatment, do you agree this and please elaborate on it?

C. A Burden, J. Preshaw ve S. Grant tarafından yapılan araştırma makalesine göre, Ultrason ile alıştırma yapmak, tani ve tedavide inanılmaz önemlidir. Siz buna katılıyorsunuz ve acıklar misiniz lütfen.

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Katıldığım. Ne kadar çok işlem yapılrsa okadar deneyim artar. Hata yapma oranı azalır. Tipta kullanılan teknolojilerdeki deneyim artması komplikasyon oranını azalttığı gibi doğru tanı koymayı artırır.

8 Do you think student are getting enough practice on computing technologies during their education in medical universities? Please explain it.

Sizce öğrenciler tip universitelerinde bilgisayar teknolojileri ile yeterince alıştırma yapabiliyorlar mı? Lütfen açıklayın.

Son yıllarda bilgisayar teknolojilerinin kullanımı gittikçe artıyor. Öğrencilerin uygulamada beceri kazanmaları arttı. Özellikle simülasyon merkezlerinin artması eğitim için hasta kullanımını azalttı.
9 How can students increase their practice on computing technologies? And do you know any kind of workshops or simulations that are provided by the department of health in Turkey?

Sizce öğrenciler bilgisayar teknolojileri üzerine nasıl daha alıştırma yapıp deneyim kazanabilirler? Türkiye'de, Sizin bildiginiz devlet, sağlık bakanlığı tarafından yapılan seminerler ve a simulasyon merkezleri var mı? Yoksa olmasını istermiyiniz?

Hem bazı üniversitelerin hemde sağlık bakanlığının simulasyon merkezleri var. Simülasyon merkezlerinin öğrencilere ulaşılır hale getirilmesi ve son teknolojilerin bu merkezlerde bulundurulması tanı ve tedavide hata payını düşürecektir.

10 What kind of effects does computing technologies have on the health of the Turkish society?

Genel olarak, size bilgisayar teknolojilerinin Türkiye'deki tıp personellerinin hayatlarında ne kadar etkisi vardır? Mesela Hemsirelerin profesyonel hayatlarında bu teknolojileri ne kadar kullanıyor size.

Son yıllarda bilgisayar ve teknolojilerinin kullanımı sağlık personeli arasında yaygınlaştı. Ebeler ve hemsireler hem eğitim süreçlerinde hemde profesyonel hayatlarında kullanmaktadır.
Genel olarak bilgisayar teknolojilerinin Türkiye de tıp alanın daki personeli (doktorlar, radyologlar, hemsireler, ebeler vb) ile etkilesimi üzerine bu sorular.

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Interview questions:

1 Please briefly elaborate your educational background, from which university did you graduate, when did you graduate, and what is your specialty?

Lütfen eğitim gecmişinizi anlatınız, Hangi üniversiteden/universitelerden mezun oldunuz, hangi yıl mezun oldunuz, ve uzmanlığınız nedir?

Dr Murat Yayla


2 During your medicine education, which computing technologies did you use and which of them do you used further on your professional life? How were their impacts?

Eğitim hayatınız boyunca, hangi bilgisayar teknolojilerini (Bunun içine bilgisayarla ilgili olan hersey giriyor. Örnek: Ultrason, Laparoskopik Ameliyatta kullanılan makineler, Endoskopik Ameliyatta kullanılan makineler, bilgisayara bağlı insan modelleri, vs) kullanınız? Bunlardan hangilerini ilerde profesyonel hayatınızda kullanınız? Bunlar profesyonel hayatınızda ki etkileri nasıldır?

3 When you are teaching, are you using any kind of computing technologies including the more non-technical ones such as simple human models? And what are the purpose of these technological devices?

Egitim verirken, daha az teknolojik bilgisayar teknolojileri kullanıyor musunuz, örnek olarak basit insan modelleri? Sizce bunların kullanılmadaki amacı nelerdir?


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Dip Not: Burda sormak istediğim icine laparoskopik ameliyatlar ve benzeri amelyatlarda giriyorum.

Hayır. Branşım dışında olduğundan ilgilenmedim.

5 As a doctor and a lecturer do you think with the new technologies in the medicine, having simulation centres and computer laboratories in medical universities will help the next generation of health care staff of Turkey? And please elaborate on it.

Sizce bir doctor ve eğitimi olarak, tipta yeni cikan teknolojiler ve simlasyon merkezleri ve bilgisayar labaratuvarlarının tip universitelerinde daha çok kullanılması, Turkiye deki yeni jenerasyon tip personeline yardımcı olur mu? Lütfen açıklarınızı.

6 In obstetrics and gynaecology, what are the most used and most important computing technologies? (Programs and machines)

Kadin Hastalıkları ve doğum alanında, sizce en çok kullanılan bilgisayar teknolojileri nelerdir? Ve de en onemli bilgisayar teknolojileri nelerdir? (Bilgisayar programları, makinalar vs)

Ultrasonografi ve laparoskopi, IVF teknolojileri.

7 According to research paper that has been done by C.A. Burden, J. Preshaw, S. Grant, practicing on ultrasound is really important diagnostics and treatment, do you agree this and please elaborate on it?

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Model üzerinde ultrasonografi yapmak acemi uygulayıcıları eğitebilir, hızlandırır, el alışkanlığı yaratır, dolayısı ile tanı ve tedaviye yardımcı olabilir.

8 Do you think student are getting enough practice on computing technologies during their education in medical universities? Please explain it.

Sizce öğrenciler tip üniversitelerinde bilgisayar teknolojileri ile yeterince alıştırma yapabiliyorlar mı? Lütfen açıklayın.

Sanımiyorum. Ancak emin değilim.

9 How can students increase their practice on computing technologies? And do you know any kind of workshops or simulations that are provided by the department of health in Turkey?

Sizce öğrenciler bilgisayar teknolojileri üzerine nasıl daha alıştırma yapıp deneyim kazanabilirler. Türkiyede, Sizin bildiginiz devlet, sağlık bakanlığı tarafından yapılan seminerler veya simulasyon merkezleri var mı? Yoksa olmasını isteriymiyiniz?

Hem bazı üniversitelerin hemde sağlık bakanlığının simulasyon merkezleri var. Simülasyon merkezlerinin öğrencilere ulaşılır hale getirilmesi ve son teknolojilern bu merkezlerde bulundurulması tanı ve tedavide hata payını düşürecektr. Bazı merkezler var. Her eğitim kurumunda olmalı. Olana kadar belirli merkezler rotasyon ile gelecek olanlara (herkese) bu eğitimi vermeli.
10 What kind of effects does computing technologies have on the health of the Turkish society?

Genel olarak, sızce bilgisayar teknolojilerinin Turkiyedeki tip personellerinin hayatlarında ne kadar etkisi vardır? Mesela Hemsirelerin profesyonel hayatlarında bu teknolojileri ne kadar kullanıyor sızce.

Genel olarak bilgisayar teknolojilerinin Türkiye de tip alanın daki personeli (doktorlar, radyologlar, hemsireler, ebeler vb) ile etkilesimi üzerine bu sorular.

Kısaca bilgisayar teknolojileri dedik mi aklimza bilgisayarla ilgili olan her sey gelebilir, düz bilgisayarlardan, ultrasonlara, laparoskopik ameliyatlardan bilgisayar simülasyonlarına, insan maketlerinden sanal gerçekliğe kadar.

Interview questions:

1. Please briefly elaborate your educational background, from which university did you graduate, when did you graduate, and what is your specialty?

Lütfen eğitim geçmişinizi anlatınız, Hangi universiteden/universitelerden mezun oldunuz, hangi yıl mezun oldunuz, ve uzmanlığınız nedir?

Ecem Onaran
Teditepe Üniversitesi biyomedikal mühendisliği Lisans programından 2013 yılında mezun olduğum ardından bilim Üniversitesi fizyoloji anabilim dalı yüksek lisans programından 2017 Yılında mezun oldum

2. During your medicine education, which computing technologies did you use and which of them do you use further on your professional life? How were their impacts?

Eğitim hayatınız boyunca, hangi bilgisayar teknolojilerini (Bunun içine bilgisayarla ilgili olan hersey giriyor. Örnek: Ultrason, Laparoskopik Ameliyatta kullanılan makineler, Endoskopik Ameliyatta kullanılan makineler, bilgisayara bağlı insan modelleri, vs) kullandınız? Bunlardan hangilerini ilerde profesyonel hayatınızda kullandınız? Bunlar profesyonel hayatinizda ki etkileri nasıldır?

Lisans eğitimim boyunca nöroloji de kullanılan eeg emg gibi cihazları ve radyolojiye kullanılan mr xray pet spect cihazlarının çalışma prensiplerini detaylı inceledim aynı zamanda insan modelleme de kullanılan cihazların yapımında ve geliştirilmesinde çalıştım bunlar profesyonel hayatımda akademisyen olduğum için ders anlatırken veya bir makale yazarken hangi alanlarda nasıl bir detay bulunması gerektiğini araştırmamda veya eklemem de yardımcı oluyorlar.
3 When you are teaching, are you using any kind of computing technologies including the more non-technical ones such as simple human models? And what are the purpose of these technological devices?

Eğitim verirken, daha az teknolojik bilgisayar teknolojileri kullanıyor musunuz, örnek olarak basit insan modelleri? Sizce bunların kullanılmadaki amaci nelerdir?

Eğitirken simulasyon merkezimizde bulunan basit insan modelleri temel yaşam desteği, sütur teknikleri sonda, kadın doğum gibi maketleri aynı zamanda laparoskopı ve Artroskop simülatörleri ile elektronik kadavra cihazını kullanıyoruz.

4 Have you ever used any kind of computing technology devices other than simple human models, such as virtual reality headsets and computer simulations or any kind of augmented reality devices to perform surgeries or simple operations? If yes, how was the experience?

Daha önce hiç Yapay gerçeklik, bilgisayar simulasyonları, ya da zenginleştirilmiş gerçeklik cihazlarını, bir ameliyat ve ya bir ameliyata calıșırken ya da genel olarak tip için kullanınız mı? Kullandıysanız nasıl ve memnun kaldınız mı?

Dip Not: Burda sormak istediğim içine laparoskopik ameliyatlar ve benzeri ameliyatlarda giriyor.

Yapay gerçeklik değil ancak laparoskop artroskop ve kadavra cihazları birebir dokuyu taklit edebildiği için kullanılan eğitimciler doktorlar hissettikleri taklit dokudan oldukça memnunlar.

5 As a doctor and a lecturer do you think with the new technologies in the medicine, having simulation centres and computer laboratories in medical universities will help the next generation of health care staff of Turkey? And please elaborate on it.

Sizce bir doctor ve eğitimi olarak, tipta yeni çıkan teknolojiler ve simülasyon merkezleri ve bilgisayar labaratuarlarının tip üniversitelerinde daha çok kullanılması, Türkiye deki yeni jenerasyon tip personeline yardımcı olur mu? Lütfen açıklanız.

Tip fakülteleri nde kullanılan simülasyon merkezleri Ve bilgisayar labaratuarları tip personeli ve öğrencileri için oldukça yararlanabilecekleri ve kendilerini geliştirbilecekleri laboratuvarlar olup bu tür laboratuvarların her yeni çıkan
teknolojiyle kendini geliştirmesi gerekmektedir. Bu laboratuvarlar hastaya bilebirci
temasa geçmeden önce kendilerini geliştirmek ve olabildiğince pratik yapmak için
mükemmeli bir imkan sağlamaktadır.

6 In obstetrics and gynaecology, what are the most used and most important
computing technologies? (Programs and machines)

Kadın Hastalıkları ve doğum alanında, size en çok kullanılan bilgisayar teknolojileri
nelerdir? Ve de en onemli bilgisayar teknolojileri nelerdir? (Bilgisayar programları, makinalar
vs)

Kadın doğum alanında hem laparoskopik simülatörler hem de tüm
manevralarıyla doğru birebir gösteren maketler kullanılmaktadır bunlar markette
biri bebeğin nasıl hareket edeceğini bize pratikte gösterip gerçekte nasıl bir yol
İzlenilmesi gerektiğini tatbik etmemiz sağlar.

7 According to research paper that has been done by C.A. Burden, J. Preshaw, S.
Grant, practicing on ultrasound is really important diagnostics and treatment, do you agree
this and please elaborate on it?

C.A Burden, J. Preshaw ve S.Grant tarafından yapılan araştırmakalemesine göre,
Ultrason ile alıstırma yapmak, tani ve tedavide inanılmaz önemlidir. Siz buna katılıyor
musunuz ve acıklar misiniz lutfen.

Makalenin ingilizce sonucu: “Result: Absolute deviation from the defined standards for all
parameters was calculated. Preliminary data showed a significant difference between
novice versus intermediate (p=0.004) and expert (p=0.012) in CRL1 measurements,
demonstrating construct validity. With repetition accuracy of novice measurements and
time taken approached expert levels demonstrating a learning curve. Growth scan
preliminary data revealed greatest variability within the novice measurements and the
expert group was significantly faster (p=0.002).” Thus, their conclusion was “VRS
ultrasound training has the potential to improve scanning skills of Obstetrics and
Gynaecology trainees.”

Makalenin linki: http://fn.bmj.com/content/96/Suppl_1/Fa56.3
Kisaca yapılan araştırmaya: 30 Tane Kadın doğum uzmanı ile yapılan bir araştırmada, bunlardan 10 tanesi acemi (10 kere yada daha az sayıda ultrason kullanmışlar) 10 tanesi orta seviye (20 ile 50 kez arası ultrason kullanmışlar) 10 taneside ileri seviye (100 un üzerinde ultrason kullanmışlar). Bunlardan 3 kere Rahim bolgesinin ultrasonunun yapımını ve ölçümünün alınması istenmiştir ve bunların zamani tutulmuştur. İlk sonuçlara göre acemiler ile orta ve ileri seviyelerin aralarındaki zaman farkı çok fazla iken. 2 ve 3. Denemelerinde bu farkın daha azaldığı gözlemlenmiştir. 

Yapılan araştırmaya göre ultrason ile araştırma yapmak tanı ve tedavi de kesinlikle önemlidir çünkü yeni mezun olan bir uzman bile ne kadar fazla bu cihazı kullanırsa kendini geliştirip Incelediği bölge üzerinde daha kolay tanı koyabilir.

8 Do you think student are getting enough practice on computing technologies during their education in medical universities? Please explain it.

Sizce öğrenciler tip universitelerinde bilgisayar teknolojileri ile yeterince alıştırma yapabiliyorlar mı? Lütfen açıklayın.

Tip fakültesi öğrencileri ellerinin altında bulunan maket ve simülatörleri boş zamanlarında ve derslerde kullanmaya oldukça hevesler bu sebepten dolayı bu tür teknolojileri bulunduran Laboratuvarlar kendiyle sıkça geliştirmeli.

9 How can students increase their practice on computing technologies? And do you know any kind of workshops or simulations that are provided by the department of health in Turkey?

Sizce öğrenciler bilgisayar teknolojileri üzerinde nasıl daha alıştırma yapip deneyim kazanabilirler. Türkiye'de, Sizin bildiginiz devlet, sağlık bakanlığı tarafından yapılan seminerler veya simulasyon merkezleri var mı? Yoksa olmasını ister misiniz?

Öğrenciler simulasyon merkezlerinde oldukça aktif kullanıp daha fazla deneyim kazanabilirler. Türkiye’de özel üniversitelerin dört ya da beş tanesinde simulasyon merkezi bulunmakta devlet üniversitelerinde ve diğer üniversitelerde bu tür simulasyon merkezlerinin çok daha fazla olması öğrencilerin hastayla karşılaşmadan önce buralarda pratik yapması İsterdim.
10 What kind of effects does computing technologies have on the health of the Turkish society?

Genel olarak, sızce bilgisayar teknolojilerinin Turkiyedeki tıp personellerinin hayatlarında ne kadar etkisi vardır? Mesela Hemsirelerin profesyonel hayatlarında bu teknolojileri ne kadar kullanıyor sızcə.

Tıp personeli örnek hemşireler profesyonel hayatlarında simülasyon merkezlerini hastayla karşılaşımadan veya zor bir vaka geldiğinde örnekın damar yolu açma veya sonda takma gibi durumlarda hastaya nasıl yaklaşılacağını ve nasıl işlemin yapılacağını pratik edebilirler. Bunlar sadece kolay olan günlük profesyonel hayatlarında sürekli yaptıkları işlemlerdir.
Interview questions:

1 - Please briefly elaborate your educational background, from which university did you graduate, when did you graduate, and what is your specialty?

PROF DR CIHAT SEN

ISTANBUL UNIVERSITY CERRAHPASA MEDICAL FACULTY -1979, SPECIALTY IN OBSTETRICIAN AND SUB-SPECIALTY IN PERINATAL MEDICINE

Lutfen egitim gecmisinizi anlatiniz, Hangi universiteden/universitelerden mezun oldunuz, hangi yil mezun oldunuz, ve uzmanliginiz nedir?

2 - During your medicine education, which computing technologies did you use and which of them do you used further on your professional life? How were their impacts?

ULTRASOUND IN OBSTETRICS AND GYNECOLOGY, COMPUTING IN MEDICINE

Egitim hayatiniz boyunca, hangi bilgisayar teknolojilerini (Bunun icine bilgisayarla ilgili olan hersey giriyor. Ornek: Ultrason,Laparoskopik Ameliyatta kullanilar makineler, Endoskopik Ameliyatta kullanılan makineler, bilgisayara bagli insan modelleri, vs) kullandiniz? Bunlardan hangilerini ilerde profesyonel hayatinizda kullaniniz? Bunlar profesyonel hayatinizda ki etkileri nasildir?

3 - When you are teaching, are you using any kind of computing technologies including the more non-technical ones such as simple human models? And what are the purpose of these technological devices?

ULTRASOUND FOR DIAGNOSIS AND INTERVENTION, ENDOSCOPIC SURGERY

Egitim verirken, daha az teknolojik bilgisayar teknolojileri kullaniyor musunuz, ornek olarak basit insan modelleri? Sizce bunlarin kullanilmadaki amaci nelerdir?
4- Have you ever used any kind of computing technology devices other then simple human models, such as virtual reality headsets and computer simulations or any kind of augmented reality devices to perform surgeries or simple operations? If yes, how was the experience? **TELESCOPIC SURGERY, LAPARASCOPIC SURGERY, HYSTERESCOPI**

**CUT**

Daha once hic Yapay gerceklik, bilgisayar simulasyonlari, ya da zenginlestitrilmis gerceklik cihazlarini, bir ameliyat ve ya bir ameliyata calisiken ya da genel olarak tip icin kullandiniz mi? Kullandiyasaniz nasildi ve memnun kaldiniz mi?

Dip Not: Burda sormak istedigimin icine laparoskopik ameliyatlar ve benzeri amelyatlarda girdiyor.

5 -As a doctor and a lecturer do you think with the new technologies in the medicine, having simulation centres and computer laboratories in medical universities will help the next generation of health care staff of Turkey? And please elaborate on it.

**ABSOLUTELY AND NECESSARY**

Sizce bir doctor ve egitimci olarak, tipta yeni cikan teknolojiler ve similasyon merkezleri ve bilgisayar labaratuarlarinin tip universitelerinde daha çok kullanilmasi, Turkiye deki yeni jenerasyon tip personeline yardimci olur mu? Lutfen aciklariniz.

6 -In obstetrics and gynaecology, what are the most used and most important computing technologies? (Programs and machines)

**ULTRASOUN, 3D/4D ULTRASOUND, LAPARASCOPY, HYSTERESCOPY, ROBOTIC SURGERY**

Kadin Hastaliklari ve dogum alanin da, sizce en çok kullanılan bilgisayar teknolojileri nelerdir? Ve de en onemli bilgisayar teknolojileri nelerdir? (Bilgisayar proqramlari, makinalar vs)
7- According to research paper that has been done by C.A. Burden, J. Preshaw, S. Grant, practicing on ultrasound is really important diagnostics and treatment, do you agree this and please elaborate on it?

AGREE.

C.A Burden, J. Preshaw ve S.Grant tarafından yapılan araştırmaya göre, Ultrason ile alistirma yapmak, tani ve tedavide inanilmaz önemlidir. Siz bu konuya katlıyorsunuz ve açıklarınız var mı lütfen.

Makalenin ingilizce sonucu: “Result: Absolute deviation from the defined standards for all parameters was calculated. Preliminary data showed a significant difference between novice versus intermediate (p=0.004) and expert (p=0.012) in CRL1 measurements, demonstrating construct validity. With repetition accuracy of novice measurements and time taken approached expert levels demonstrating a learning curve. Growth scan preliminary data revealed greatest variability within the novice measurements and the expert group was significantly faster (p=0.002).” Thus, their conclusion was “VRS ultrasound training has the potential to improve scanning skills of Obstetrics and Gynaecology trainees.”

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Kısaça yapılan araştırmada: 30 Tane Kadin doğum uzmanı ile yapılan bir araştırmada, bunlardan 10 tanesi acemi (10 kere yada daha az sayida ultrason kullanmışlar) 10 tanesi orta seviye (20 ile 50 kez arası ultrason kullanmışlar) 10 taneside ileri seviye(100 un üzerindesi ultrason kullanmışlar). Bunlardan 3 kere Rahim bölgesinin ultrasonunun yapılmış ve ölçümlerinin alındığı istenmiştir ve bunların zamani tutulmuştur. İlk sonuçlara göre acemiler ile orta ve ileri seviyelerin aralarındaki zaman farkı çok fazla iken 2. Ve 3. Denemelerinde bu farkın çok daha azaldığı gözlemlenmiştir.

8- Do you think student are getting enough practice on computing technologies during their education in medical universities? Please explain it.

YES. THEY CAN REACH AND USE IN ALL CASES
Sizce öğrenciler tip universitelerinde bilgisayar teknolojileri ile yeterince alıştırma yapabiliyorlar mı? Lütfen açıklayın.

9- How can students increase their practice on computing technologies? And do you know any kind of workshops or simulations that are provided by the department of health in Turkey?

**MAY BE SIMULATION COULD BE HELPFUL MORE**

Sizce öğrenciler bilgisayar teknolojileri üzerinde nasıl daha alıştırma yapip deneyim kazanabilirler. Turkiyede, Sizin bildiğiniz devlet, sağlık bakanlığı tarafından yapılan seminerler vey a simulasyon merkezleri var mı? Yoksa olmasını istermiydiniz?

10- What kind of effects does computing technologies have on the health of the Turkish society?

Genel olarak, sizce bilgisayar teknolojilerinin Türkiye'deki tip personellerinin hayatlarında ne kadar etkisi vardır? Mesela Hemsirelerin profesyonel hayatlarında bu teknolojileri ne kadar kullanıyor sizce.

**SON YILLARDAN BU YANA ARTIK KULLANIYORLAR.**