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Editor's Notes:
This is a very well written and easy to follow dissertation, on a topic that is always fascinating. Within this sample work, I corrected grammar while improving sentence flow and organization of the text. In response to you instructions, tense changes were made. Good luck and I look forward to working with you on this project.

PRIMARY EDITOR: Dr Katharine

Should you have ANY questions regarding this editing or your order, please do not hesitate to contact our office.

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Hi, I'm a PhD student completing my dissertation, just wanted to find out how much it would cost to edit my dissertation. I think the main questions is tenses and expression that is of concern. I do not need major structural format or content changes.

First sample, our EDITED version: page 6 to 8

More than 100 years ago, Halsted conceived the first Fformalized surgical training scheme ~~was 1st conceived~~ at John Hopkins University ~~by Halsted more than 100 years ago.~~[2]. He proposed an apprentice model to surgical training, where the surgical trainee is mentored by a senior fellow, who allows the trainee to have graded responsibility and hands-on experience.[3]. It is typified by the phrase of "see one, do one, and teach one."~~.~~ While it continues to be a fundamental component of surgical training today, changes within surgery and society, as well as development of new surgical technology, ~~has~~ have challenged this traditional method of training.[4].

Within surgery, one of the significant changes has been the advent of, as well as the wide spread acceptance of minimally invasive surgery in the 1980s. This not only produced a significantly different way of operating, but it also ~~it~~ provided a new challenge to the old surgical training model.[5]. While traditional open cavity surgery involved large cuts and tactile sensation with hands, minimum invasive surgery introduced the concept of "key-hole" surgery. This meant that surgeons changed from a ~~3D~~ three-dimensional (3D) view to a ~~2D~~ two-dimensional view on a monitor. In addition, surgery is performed at the end of long surgical instruments with minimal tactile sensation. ~~Its~~ The rapid introduction of keyhole surgery meant that experienced surgeons needed to acquire these new psychomotor skills and be subjected to the same learning curve as the trainees. This resulted in a significantly higher complication rates when minimal invasive surgery was first introduced, and~~. This~~ ultimately related to inadequate training of skills used in the videoscopic interface.[5 5-6 7 8 9]. Minimal invasive surgery is also a prime example of where ~~the~~ surgical skills ~~can not~~ cannot be adequately learnt by merely observing an expert.[4, 10]. These events prompted questions regarding how surgical training ~~can~~ could be made more transparent, more efficient, and more effective. It also prompted demands from the public to demonstrate proficiency prior to accreditation.[11].

Within society, ~~there were~~ significant changes ~~that were occurring~~ occurred at the same time. There ~~has~~ were ~~been~~ changes with community expectations regarding trainee surgeons

Formaterat: Standardstycketeckensnitt

Kommentar [KJM1]: My name is Katharine and I will be serving as your editor for this free sample. My task is to ensure that your work is presented as clearly as possible. Thank you for entrusting me with your work.

Kommentar [KJM2]: Please note that normally the period comes before the reference.

Kommentar [KJM3]: Please note that all abbreviation such as this need to be written out.

"practicing" on real patients.[12] This ~~is~~ was reflected in a higher demand of healthcare with a lowered tolerance of medical errors and a high rate of medical litigation cases. It ~~is~~ was also suggested that it is an ethical imperative that patients are protected and not used as a convenience to training.[13] Reports published on medical errors, suggested that better training with more objective assessment would be the key to reducing medical errors.[14,15] Public hospitals are increasing populated by patients with serious and complex surgical problems that often require skills of an expert surgeon.[16,17] While at the same time, the more elective standard patients are often shifted to the private sector, where they are "protected" from trainees.[18] With an aging population, ~~there are~~ an increasing number of trainees are being trained to cope with the increased demands. While there is an increase in the number of trainees, the health care system is increasingly demanding more service components from their staff at the expense of educational opportunities.[19,20] This combined with the safe-working hours initiatives meant a dramatic reduction in training opportunities for trainees.[4,15,21] ~~[4 15]~~ The current training system stills evolves around the Halsted apprenticeship model, which relies on sufficient volume and variety of patient encounters during residency to achieve proficiency.[15] Unfortunately these encounters are based on random opportunities in case loads of different hospitals.[22] This gives a significant variability of educational content provided to trainees leading to minimal uniformity in training.[23] To address this variability, all surgical specialties generally now accept logbooks of procedures performed by the trainee ~~are now generally accepted in all surgical specialties~~. However, certain studies have found that proficiency is not necessarily a function of number of procedures performed but related to more fundamental principles of surgical education.[24] ~~This is also reflected in t~~The variability of recommendation of different international bodies in dealing with minimum case number required for competency also reflects this.

To train as a surgeon, there is both knowledge transfer, as well as psychomotor skills acquisition. While knowledge can be learned from didactic teaching and books, skills acquisition relies heavily on practice. While some might argue that technical skills only make up 25% of a successful operation,[25] a successful outcome ultimately still depends on a solid execution of the operation. Experienced surgeons are able to predict worse postoperative outcomes based on technical facts alone.[26] In the current training program, surgical skills acquisition is still very much based in the operating room (OR) on real patients. While this is the ultimate arena to which training surgeons are expected to hone their skills,[4] it is an expensive and inefficient classroom for novice trainees.[27] Learning in the OR comes at a considerable cost~~, –~~; ~~there are~~ not only are there prolonged operating times but also ~~in~~ increased complication rates, longer hospital stays, suboptimal long term results, and patient dissatisfaction. The annual cost of training residents in the OR has been estimated at US$53 million ~~US~~ per year in 1997.[28] From an educational perspective, OR is also a poor venue for training. This is because the OR is primarily there for patients. Mistakes are poorly tolerated and it is a stressful environment with time pressure to complete the list on time.~~[29 28]~~[27-29] The surgical mentor may not be a good instructor and the technical requirement may be above or below the learner's abilities. The progress or sequence of operation ~~can not~~cannot be altered, nor procedure repeated for more standardized educations.[27]

In addition to external factors that place~~s~~ stress on the trainees, the performance of surgery ~~it self~~itself has many facets ~~to be grasp by~~ a trainee has to grasp. In 2005, Gallagher eloquently outlined ~~The~~ the difficulties of learning surgery, ~~was eloquently outlined by Gallagher in 2005~~ where he outlined an educational psychology point of view to learning in surgery.[6] ~~His~~ He stressed the idea of attention, which he defined as the ability to concentrate mentally, and introduced the idea of attentional capacity threshold. It is well known in cognitive psychology that humans have a limited attention capacity and working memory.[30]~~.~~ Earlier work with Miller in 1956 suggested that working memory capacity is limited and able to hold only seven plus or minus two items.[31]~~.~~ Gallagher suggested that during an operation, a trainee~~s~~ would devote more of his attentional capacity towards the basic knowledge and psychomotor skills needed to actually performed the surgery. This means that they would have less attention capacity towards learning and even less to the higher cognitive ability that separates experts from novices, which are judgment, surgical planning, and error avoidance. Thus, the major difference between a trainee and an expert is that the expert has already automated the basic knowledge and psychomotor skills, allowing them to have ~~more~~ increased attentional capacity to devote to other aspects of surgery. This theory is closely related to a ~~well documented~~well-documented theory in cognitive psychology ~~, which is~~ the cognitive load theory. Cognitive load is a term that refers to load on working memory during problem solving, thinking, and reasoning.[30]~~.~~ In 1988, John Sweller defined ~~Cognitive~~ cognitive load theory ~~was defined by John Sweller in 1988 where~~and he ~~proposes~~ proposed that optimum learning occurs when the load on working memory is kept to a minimum to facilitate the changes in long term memory.[32]~~.~~ There are ~~3~~three main types of cognitive load:~~.~~ ~~T~~the intrinsic cognitive load, which is related to the problem ~~it self~~itself and ~~can not~~cannot be changed~~,~~; the germane cognitive load, which is related to the learning; and the extraneous cognitive load, which does not contribute to learning and ~~are~~ is related to the instructional design.[30]~~.~~ The aim of an educational tool is to decrease the extraneous cognitive load and to increase the germane cognitive load. Cognitive load theory gives a framework to design educational tools and helps to explain why at the early stages of surgical training, learning is difficult in the operating theatre environment.

The confluence of the factors mentioned above has lead to the provision of technical skills training for surgical trainees outside the operating theatres and separation of technical training from clinical service provision especially in the early stages. Teaching outside the OR ~~has~~ was ~~been~~ considered as early as 1962 in Canada.[33]~~.~~ In the United States (US)~~A~~, psychomotor skills training was recognized by orthopedic surgery in the mid-1960s.[34]~~.~~ In England, various skills workshops were developed in the mid-1970s to foster the art of surgery.[35]~~.~~ In 1998, Rosser et al. ~~in 1998~~ showed that residents and experienced surgeons could~~can~~ be taught to suture ~~as well as experienced surgeons~~ in a ~~2~~ two and half~~½~~ day~~s~~ program, and once again emphasized the importance of basic skills training outside of the OR.[36]~~.~~

Second sample, our EDITED version: page 18 to 19

The CSIRO temporal bone simulator was made with collaborative efforts from the University of Melbourne and the CSIRO. Its software and hardware platform has been extensively described in the literature.[88, 89]~~.~~ Essentially, its interface consists of a user wearing 3D shutter glasses looking at an image ~~that is~~ projected on~~ ~~to a silvered mirror. They see a 3~~-~~D representation of the human temporal bone, which the user can interact with using two~~2~~ virtual instruments:~~,~~ the virtual drill and the virtual sucker irrigator. These virtual instruments are haptically-rendered 3~~-~~D pointing devices, with six degrees of freedom and three degrees of force feedback (PHANTOM Premium 1.5, SensAble Technologies). The computer produces the 3~~-~~D volumetric bone model and calculates the positioning of the pointing devices. When the tip of the pointing device is in contact with the virtual bone model, it then sends a signal into the phantom device and provides resistance within the pointing device; thus, giving the user a sense of feeling the bone. Thus, this VR simulation has not only ~~3 dimensional~~3D, ~~two~~ two-handed simulation but also haptic or simulated tactile feedback.

The 3~~-~~D volumetric temporal bone model was reconstructed from CT-scans into wire-frame model with volumentric representation. It is manually segmented to produce key anatomical landmarks, including the dura, sigmoid, facial nerve, ossicles, carotid artery, and labyrinth. It also includes the external ear canal skin and the tympanic membrane. ~~These landmarks as~~As mentioned in the previous section, these landmarks are ~~the~~ critical to the performance of the mastoidectomy. The use of volumetric rendering (generation of an image based on calculation of entire volume) allows for more realistic interaction with entire volume of data ~~was more realistic~~ to simulate temporal bone drilling than surface rendering.[90]

In addition to these visually accurate representations, there is also auditory feedback for the drilling sound, as well as facial nerve monitor for physiological feedback. Thus, users are “immersed” in a virtual environment, where there is visual input of the 3D model, auditory input, and tactile sensation using the haptic devices. While ~~it is~~ quite similar in its interface with the other temporal bone simulator mentioned in ~~previous s~~Section (**PAGE XXX**), it has a distinct advantage in that it can be networked over a local area network and so ~~2~~ two simulators can be used simultaneously and the instructor on one simulator can demonstrate and teach the trainee on the other ~~simulator~~.[85]

The University of Melbourne/CSIRO temporal bone simulator ~~described above certainly~~ has the necessary features to be a virtual reality simulator for temporal bone dissection. However, like many emerging technology, its features changes with ~~the~~ research requirements. Its evolution through the PhD candidature will be discussed in the study chapters **(pages XXX)**.

At the conclusion of this chapter, the necessity and benefits for VR simulation for surgery ~~has~~ have been outlined, the task (temporal bone dissection) to be simulated has been described, ~~finally~~ and the specification of the simulator has been summarized. In the next chapter, the key research hypothesis of this thesis will be discussed.

First sample, your unedited version:

Formalized surgical training scheme was 1st conceived at John Hopkins University by Halsted more than 100 years ago [2]. He proposed an apprentice model to surgical training where the surgical trainee is mentored by a senior fellow who allows the trainee to have graded responsibility and hands-on experience [3]. It is typified by the phrase of “see one, do one and teach one”. While it continues to be a fundamental component of surgical training today, changes within surgery and society, as well as development of new surgical technology has challenge this traditional method of training [4].

Within surgery, one of the significant changes has been the advent as well as the wide spread acceptance of minimally invasive surgery in the 1980s. This not only produced a significantly different way of operating, it provided a new challenge to the old surgical training model [5]. While traditional open cavity surgery involved large cuts and tactile sensation with hands, minimum invasive surgery introduced the concept of “key-hole” surgery. This meant that surgeons changed from a 3D view to a 2D view on a monitor. In addition, surgery is performed at the end of long surgical instruments with minimal tactile sensation. Its rapid introduction meant that experienced surgeons needed to acquire these new psychomotor skills and be subjected to the same learning curve as the trainees. This resulted in a significantly higher complication rate when minimal invasive surgery was first introduced. This ultimately related to inadequate training of skills used in the videoscopic interface [5 6 7 8 9]. Minimal invasive surgery is also a prime example where the surgical skills can not be adequately learnt by merely observing an expert [4 10]. These events prompted questions regarding how surgical training can be made more transparent, more efficient and more effective. It also prompted demands from the public to demonstrate proficiency prior to accreditation [11].

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To train as a surgeon there is both knowledge transfer as well as psychomotor skills acquisition. While knowledge can be learned from didactic teaching and books, skills acquisition relies heavily on practice. While some might argue that technical skills only make up 25% of a successful operation [25], successful outcome ultimately still depend on a solid execution of the operation. Experienced surgeons are able to predict worse postoperative outcome based on technical facts alone [26]. In the current training program surgical skills acquisition is still very much based in the operating room (OR) on real patients. While this is the ultimate arena to which training surgeons are expected to hone their skills [4], it is an expensive and inefficient classroom for novice trainees [27]. Learning in the OR comes at a considerable cost, there are not only prolonged operating time but also in increased complication rates, longer hospital stays, suboptimal long term results and patient dissatisfaction. The annual cost of training residents in the OR has been estimated at 53million US per year in 1997 [28]. From an educational perspective, OR is also a poor venue for training. This is because the OR is primarily there for patients. Mistakes are poorly tolerate and it is a stressful environment with time pressure to complete the list on time [29 28 27]. The surgical mentor may not be a good instructor and the technical requirement may be above or below the learner's abilities. The progress or sequence of operation can not be altered, nor procedure repeated for more standardized educations [27].

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