

**SUSTAINABLE TECHNOLOGICAL
NURSING PRACTICES: A GUIDEBOOK FOR
NURSING STUDENTS**

LAB UNIVERSITY OF APPLIED
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ABSTRACT

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Title of publication Sustainable technological nursing practices A guidebook for nursing students		
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<p>Sustainable development is a development that meets the needs of the present without compromising the ability of future generations to reach their own needs. For decade now, it has been a major concern in every sector of society. Nursing has incorporated sustainable development with the growth of innovative and sustainable technology in the nursing sector. Nurses are trained on how to use these technologies to promote health and well-being. Nurses need adequate knowledge of sustainable practices to provide reliable and care efficient to their patients and clients. By so doing, nurses will promote health while ensuring environmental, economic and social sustainability.</p> <p>The purpose of this thesis is to create and increase awareness for the use of sustainable technological nursing practices. The aim is to produce a short and clear guidebook on sustainable technologically nursing practices.</p> <p>We collected feedback from nursing-students at LAB University of Applied Sciences and from two other UAS. The questionnaire was drafted in accordance with the criteria of a good guidebook. The results gathered supported the purpose. It is easy to read and understand.</p> <p>This thesis is based on practice-oriented research. Also, the data search is based on latest researches on the topic. This thesis was commission by Lab University of Applied Sciences, Lahti Campus. The guidebook will be available for nursing students at LAB University of Applied Sciences.</p>		
Keywords Sustainable development, sustainable nursing, nursing technologies, sustainable technology in nursing,		

TIIVISTELMÄ

Tekijät BERYL NUBED-TCHUETIE ELISEE NGUELAH LEMA JANI	Julkaisun laji Opinnäytetyö, AMK	Julkaisu Syksy 2020
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Tutkinto		
Tiivistelmä <p>Kestävä kehitys on kehitystä, joka kohtaa nykyajan tarpeet vaarantamatta tulevien sukupolvien kykyä saavuttaa omat tarpeensa. Jo vuosikymmenen ajan se on ollut suuri huoli yhteiskunnan aloilla.</p> <p>Hoitotyö on yhdistänyt kestävän kehityksen innovatiivisen ja kestävän tekniikan kasvun kanssa hoitotyön alalla. Sairaanhoitajia koulutetaan käyttämään näitä tekniikoita terveyden ja hyvinvoinnin edistämiseksi. Sairaanhoitajat tarvitsevat riittävästi tietoa kestävästä käytännöistä tuottaakseen luotettavaa ja tehokasta hoitoa potilailleen ja asiakkailleen. Näin sairaanhoitajat edistävät terveyttä varmistaen samalla ympäristön, talouden ja sosiaalisen kestävyden.</p> <p>Tämän opinnäytetyön tarkoituksena on luoda ja lisätä tietoisuutta kestävien teknologisten hoitokäytäntöjen käyttöön. Tavoitteena on tuottaa lyhyt ja selkeä opas kestävästä hoitotyön käytännöistä.</p> <p>Keräsimme oppaasta palautekyselyn LAB-ammattikorkeakoulun sekä kaksi muuta ammattikorkeakoulun sairaanhoitajaopiskelijilta. Palautekyselyn kysymykset laadittiin hyvän oppaan kriteereiden mukaisesti. Opas tuloksia koettiin tarkoitustaan helppolukuisiksi ja ymmärtäviksi.</p> <p>Tämä opinnäytetyö perustuu harjoitusperäiseen tutkimustyöhön. Myös opinnäytetyön tiedonhaku perustuu viimeisimpiin aiheeseen liittyviin tutkimuksiin.</p> <p>Tämän opinnäytetyön toteutettiin Lab ammattikorkeakouluun, Lahden kampus. Opas tulee olemaan LAB:n ammattikorkeakoulun sairaanhoitajanopiskelijoiden käytössä.</p>		
Asiasanat Kestävä kehitys, kestävä hoitotyö, hoitoteknologiat, kestävät teknologiat hoitotyössä		

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List of abbreviations

CRT	Cathode ray tube
NHS	National Health Service
PDSA	Plan-Do-Study-Act
SD	Sustainable Development
SDU	Sustainable Development Unit
WHO	World Health Organization

1 INTRODUCTION

Recent concerns for sustainable development in every branch of a country's development has been growing exponentially. Although in past years this was not the case, sustainable development was a global concern and mostly linked to the environment and in general terms to the socio-economic aspects with less specific emphasis on nursing, it has been more and more specific nowadays. As rightly said by Betts & Wright in their paper titled "Observations on Sustainable and Ubiquitous Healthcare Informatics" from Florence Nightingale, "the characteristics of a sustainable world embrace the development of healthcare management systems that incorporate the principles of sustainable development and include universal access to basic health care services. The above authors in the same publication through their analysis of the works of Florence Nightingale also known as the Mother of Nursing Care confirm that sustainable nursing technology has been in development although in a slower pace since the nineteen hundred (Betts & Wright, 2009.)

More so, the need for the education of nursing-students on sustainable nursing through the incorporation of the concept of sustainability in the school curriculum is the reason for Goodman's paper "The need for a 'sustainability' curriculum in nurse education". In the said paper, he emphasises the role of sustainability in nursing and suggest that the nursing education needs to incorporate sustainability and not just instrumentalist ideologies and vocational roles. (Goodman 2011, 734.)

In this light, nursing education is attempting to incorporate the concept specifically into their development to emphasize the meaning and clarity in its objectives. With emphasis on the concept and principle of sustainability, the health care sector development and survival rely on the creation of public values that will benefit the promotion of health and wealth in a society which will in turn develop and ease the functioning of the nursing (health care) system. (Romanelli 2017, 377.) However, it should be noted that the concept of sustainable development has always been complex. This should be quite challenging in an ever-changing and complex discipline

such as healthcare/nursing. These challenges are emphasized by the recent degradation of our ecosystems due to climate change reflected by our irresponsibility towards our environment. This degradation will cause or is causing diseases that will be challenging to the healthcare system such as respiratory diseases, malnutrition and infectious diseases. Sustainable health care practices will go a long way to enable health care practitioners to do their jobs effectively. (Teherani, Nishimura, Apatira, Newman, & Ryan, 2017, 1.)

There is also the need to be versed with sustainable practices more than ever and nurses have the responsibility to carry out sustainable practices in their various units or workplaces regardless of how small or large the changes they make are. They need to apply these sustainable practices and be 'greener nurses' if they expect a more durable, high quality and improved services for their clients. (Center for Sustainable Healthcare, 2020.)

Furthermore, because technological advancement is expensive, this increases the question of sustainable health care in the future, being that the global financial crisis of the past years which continues to linger, puts emphasis on the non-sustainability of high-cost practices especially in health care (Lyons and Duggan 2014, 1).

This thesis will create and raise awareness for the need of sustainable practices in relation to nursing as well as technologies used in nursing. The guidebook will also aid in preparing nursing students for work life as well as aid them in the understanding of and implementation of those sustainable practices in their workplaces. This thesis aims at providing nursing student with a guidebook to sustainable technological practices. This will be done through the creation of a list of sustainable practices with emphasis on three main aspects, environmental, economic and social. This guidebook will be provided to students through the cooperation organisation LAB-University of Applied Sciences.

2 AIM AND PURPOSE OF GUIDEBOOK

The purpose of the thesis is to raise awareness in the need for sustainable practices related to nursing as well as technologies used in nursing. Also, this guidebook will aid in preparing nursing students for work-life as well as aid nurses to understand how to implement practices that will aid in the sustainability of technological practices.

The aim of this thesis is to provide nursing students with a guidebook to sustainable technological practices used in the nursing community. This will be done by creating a list of sustainable practices with emphasis on three main aspects, environmental, economic and social. This will guide students on how to use sustainable nursing practices in nursing and when using technology.

3 SUSTAINABLE DEVELOPMENT

3.1 Definition of sustainable development

Sustainability and Sustainable Development (SD) is not a new concept, it has been in existence since the 1990s and has its roots in political discussions including United Nations' Conference on Human Environment, the Brundtland Commission and the Earth Summit in 1992. World Commission on Environment and Development (1987) define Sustainable Development as the development that satisfies the needs of the present without compromising the ability of future generations to meet their own needs. The key point in this definition is bringing together environmental, humanitarian and economic concerns under the concept of equity (between and within generations). It frames the environmental problems not as something external to human society, social and economic systems but as a co-dependent relationship. (Emas, 2015.)

Another definition of sustainable development by the Brundtland Commission is making development sustain-able ensuring the ability of future generations to meet their needs while meeting the needs of the present (Robert, Parris, & Leiserowitz, 2005, 10). New challenges and opportunities due to increased globalization in recent years have given it a different approach. Development outcomes are now determined by new stakeholders like transnational corporations, civil society organizations as well as new technologies. According to Jennifer Elliot, sustainable development maintains development over time. It should not be developed just for a particular time or season. Development implemented today should not be detrimental to the future generation. That is, development is sustainable when it benefits the present and future generations. (Elliot 2013, 16.)

However, the concept of sustainable development is evolving and demands continuous critical evaluations of the processes of development and decision making in

all areas of life. This means that there is no prescribed standard for achieving sustainable development. It is relative to certain places, countries or regions and the point in time of implementation or the current generation. (Mensah 2019, 6.)

3.2 Sustainable nursing

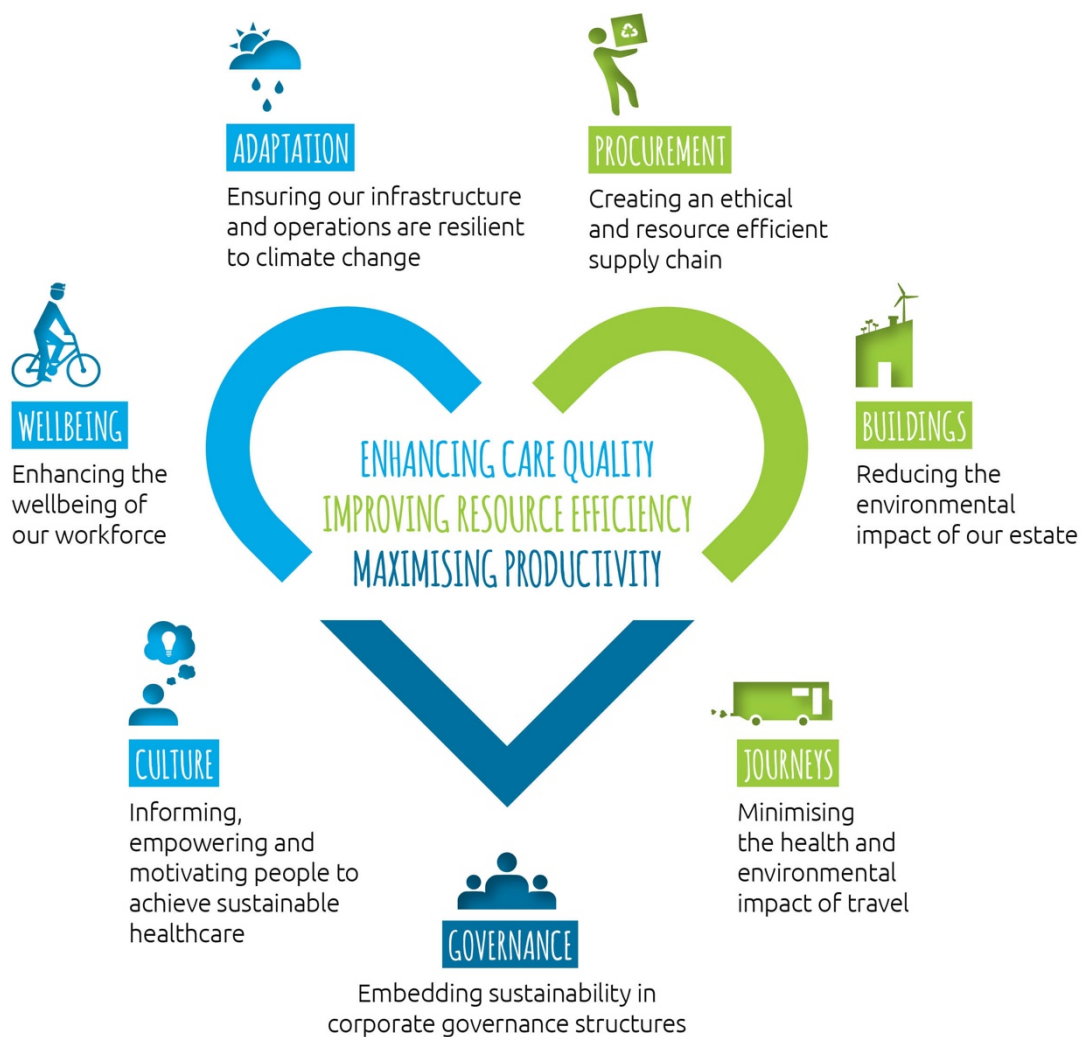
Sustainable nursing involves ecology, environment, future, globalism, holism and maintenance. There has been a great increase in the implementation of sustainable practices in the healthcare/nursing sector. To understand sustainable nursing, students should be educated in the fields of ecology, environment and sustainable development. (Anåker and Elf, 2014.)

Also, as rightly said by Anåker and Elf “A consensus exists that current climate change is caused by humans and originates in the emissions of greenhouse gases in the atmosphere. This phenomenon, in turn, creates climate changes that influence the frequency of extreme weather events, drought, lack of groundwater, limited food availability, rising sea levels and melting of ice at the poles. Health will be directly affected by increased air pollution, more vector-borne diseases, deforestation, the spread of harmful wastes and reduced biodiversity. Climate change may alter normal human development through malnutrition from decreased food supplies and exposure to increased pesticide use and harmful algal blooms. These events will be particularly threatening to vulnerable populations such as children, older adults, individuals with pre-existing illnesses and the poor (Anåker and Elf 2014, 381.)

This is so because the overall condition of the natural environment greatly affects the health of the population and the health of individuals are directly linked to the environment. Also, nursing practices partly contribute to the detriment of the environment as illustrated by the carbon emissions from health organisations such as the NHS National Health Service in the United Kingdom with 22.8million tonnes of

carbon emitted in 2015. It is also said that nurses can redesign the healthcare system to benefit patients as well as the environment thus they must be educated on sustainable nursing practices that recognize and respect the dependence of our health on the earth's ecosystems, without resulting in unfair or disproportional impacts within society. (Riedel 2016, 3.)

Another attempt to the definition of sustainable nursing is the implementation of nursing duties while protecting and preserving the environment for future generations. Nurses have an important role in this because the environment, health and sustainable development is a crucial part of international nursing. (Anåker & Elf, 2014.) It should be noted that sustainable nursing is just a small part of sustainable development and should work hand in hand with other sectors of society to maintain a balance. Also, high-quality patient care through the promotion of environmental, social and economic sustainable development is key to attaining and maintaining sustainable healthcare/nursing. (Royal College of Nursing 2020.)



3.3 Nursing Technologies

In recent years, there has been a great increase in the use of technology in many sectors of society as well as nursing care. Some authors have mentioned that technology has a very crucial part to play in determining sustainability. According to Anadon, Chan, Harley, Matus, Moona, Murthy, & Clark,

“Technological innovation is at the heart of sustainable development and Technology is the subset of knowledge that includes the full range of devices, methods,

processes, and practices that can be used “to fulfill certain human purposes in a specifiable and reproducible way,” (Anadon et al 2016.)

That said, nurses now use technology in almost every aspect of nursing care. To be a competent nurse today, the nurse needs to be able to care for patients as well use technology safely and adequately. Healthcare or nursing technologies are technologies that increase the quality of care while reducing cost and decreasing workforce problems. (De Veer, Fleuren, Bekkema, & Francke, 2011.)

According to Littlejohns, Kieslich, Weale, Tumilty, Richardson, Stokes, Gauld and Scuffham, sustainable healthcare systems through health technology assessment must include clinical effectiveness and cost-effectiveness. No one individual should have to be priorities over another. Health care must be fair and equitable as has always been the aim. They further explain that every and all key stakeholders must be involved in this process especially the patients and the public. (Littlejohns et al 2018.) Furthermore, regarding the fact that technological advancement is expensive, increases the question of sustainable health care in the future being that the global financial crisis of the past years which continues to linger puts emphasis on the non-sustainability of high-cost practices especially in health care (Lyon and Duggan 2014).

Also, technology in healthcare/nursing has the capability of giving patients control and understanding over their health. The share of information through technologies play a big part in that, for example in Finland, the introduction of the Kanta page (OmaKanta) has given patients, service users as well as the communities a sense of control over their health. In that page, patients can access their information (appointments, prescriptions, test results and healthcare professional’s note on their health) anytime and anywhere. The Kanta services also ensures that the processing of clients' information is secure and reliable.(Kanta, 2020.)

3.4 Sustainable technological nursing practices

Technology in nursing has been an innovative part of nursing for decades and nurses are being geared in their studies toward the usage of technology in most part of their careers. These nursing technologies are widespread and are used in all areas and aspects of healthcare. All healthcare professionals use technologies in taking care of their patients and clients, however, some nurses are not yet versed with these innovations as shown by some studies. Nurses not working in research and application hospitals are not that knowledgeable about the innovative technologies. (Adibeli and Boyaci 2018.)

In 2015, the Sustainable Development Unit of the National Health Service (NHS) in England had a vision for sustainable healthcare in which health and care systems accommodate innovation technology and research and development in order to improve healthcare while ensuring environmental and social sustainability. Also, according to this Unit “Sound sustainable development policy and practice is embedded across the system generating more value from the available financial, environmental and social resources...” (Sustainable Development Unit (SDU), 2015.)

Silvis further analysis sustainability through technology in healthcare/nursing explaining that documentation- related practices is linked to sustainable technological advantages which cuts costs eases information sharing and decreases medical errors as well as benefits in the monitoring and managing of patients’ health. Technology is used to both diagnose, treat diseases and share treatment process through a network. This decreases per head cost and increases effectiveness in resource management while minimising staff fatigue if they were made to go from one unit to the other. For example, wireless communication devices used by key staff in hospitals and remote sites, such as a doctor’s office or even a life-flight helicopter, can be essential to providing care outside of any one room, department, or building in real time. (Silvis, 2012.) In nursing, sustainable practices can be divided into three main aspects. Environmental/ecological, economic and social sustainable practices (Segall, 2020).

3.4.1 Environmentally sustainable practices

Geared towards the maintenance of the environment. This implies nursing practices that do not degrade the environment such as pollution and energy wastage. In order to avoid the degradation of our environment through our nursing technologies, organisations as well as nurses should be able and willing to carry out the following practices. (SDU, 2015).

Energy saving can be carried out by using technology that saves energy such as buying energy saving computers which are now used in all nursing establishments as well as other energy saving technologies used in nursing care. A good example of where energy saving computers have contributed to the environmental sustainability is at the Pacific University where they purchase energy saving computers from Dell and Apple and have reduced energy consumption to as much as 78%. These computers are 4.0 stars energy savers. (Pacific University Oregon 2020.) Investing in renewable energy will instil confidence in the healthcare system that sustainable energy is crucial to the running of healthcare units and its technologies (SDU, 2015).

Recyclable technologies imply the reuse, donation or recycling of nursing technologies. The increase in the usage of medical technologies increases the need for recycling. According to TechWaste Recycling "Computers, televisions, lab analysers, EKG monitors and other types of biomedical equipment contain many hazardous constituents from lead in cathode ray tube (CRT) monitors, chlorinated plastics in cable wiring, brominated flame retardants in circuit boards to mercury in LCD displays. CRTs alone contribute almost one third of the lead found in the municipal waste stream. Improper management or disposal of electronic equipment poses a significant threat to public health and the environment. Healthcare facilities need to manage their electronic equipment in a way that controls costs, protects data and complies with federal, state and local regulations. (TechWaste, 2019.) Nursing organisations should purchase technologies that can fulfil the above criteria. For example, used equipment or outdated equipment can be donated to other areas of the

society or recycled to produce new and improved technologies and this recycling of technology should be done by the right technological waste disposal company in order to protect patient data as well as any sensitive data in those technologies. The right company will therefore maintain sustainability. (TechWaste, 2019.)

Carbon emission reduction is an aspect of healthcare technologies that can damage the environment enormously. Carbon emission should be reduced, and this can be done by improving waste management techniques and facilities. Facilities that emit carbon can also be replaced by low carbon technologies such as digital technology. (Centre for Sustainable Healthcare 2020).

Waste Reduction can be practiced by educating nurses on how to reduce unnecessary waste. This can be done by the purchase of equipment or medical materials that can be disinfected and reused or as rightly put by Azmal, Kalhor, Fadaei, Goharinezhad, Asadollahi & Farzianpour Glass and metals can be disinfected, and usage of pre-sterilised disposable items should be reduced. Sterilisation procedures should be strengthened, and effective sterilisers should be used accordingly. The usage of steam sterilization method preferred to chemical disinfection to prevent the generation of hazardous chemical wastes should be encouraged. (Azmal et al 2014.)

Water recycling is also a good practice for nurses in order to promote environmental sustainability. According to D'Alessandro, Tedesco, Rebecchi and Capolong, water can be recycled and used for other activities which are directly or indirectly linked to the healthcare facilities that provide the recycled water. For instance, recycled water can be used for irrigation, cooling of devices, heating, cooling, waste flushing. This practice will go a long way to encourage environmental sustainability through water management technologies. (D'Alessandro et al 2016.)

3.4.2 Economic sustainable practices

In relation to technology in nursing, these are practices geared towards the economic development of the health sector and the community at large. These practices must be able to protect and sustain resources be it human or material for long term use and values. For instance, when health care institutions implement the purchase and use of practices like Single Stream Recycling for non-hazardous waste disposal, it helps the institution to save a lot of money as well as saving thousands of trees thereby also protecting the environment. Short-term expenditure leads to long-term benefits. (Riedel 2011).

Energy consumption is another economic sustainable practice in the use of nursing technology. Efficient use of energy positively impacts on the emissions created (Kwakye, Brat & Masaryk, 2011). There has been a great increase in energy consumption due to medical technology in recent years. As such, energy consumption can be reduced by purchasing environmentally friendly products, recycling and using recycled products, which will in turn reduce unwarranted purchases (Primozić 2010).

Nurses must create investment opportunities through the practices of sustainable nursing not only technologically wise but also in all nursing duties. Practices that can attract investment not only domestic but also foreign could include the recycling of water. Water usage in nursing facilities can be recycled to be used for non-drinking purposes such as device cleaning, for leisure. The main aim is to reduce the usage of drinkable water for other purposes. (D'Alessandro et al 2016,56.)

3.4.3 Social technological practices

The demand of effective healthcare services has initiated the need for socially sustainable practices in healthcare as well as out of the health care sector. (Aptel & Pourjalali, 2001; de Vries & Huijsman, 2011).

Social Sustainable practices in relation to technology in nursing relates to the aspects that directly affect the lives of the consumers to whom the nursing is geared towards as well as the nurses or healthcare professionals. Social technological sustainable practices should include the privacy of clients, comfort, health promotion and safety. (Eizenberg and Jabareen, 2017.)

According to Silvis, Social sustainability is between patient and provider. Social sustainability refers to the ability or opportunity that everyone must create or experience a full existence in terms of intellectual, emotional, spiritual, and physical health. (Silvis, 2012.)

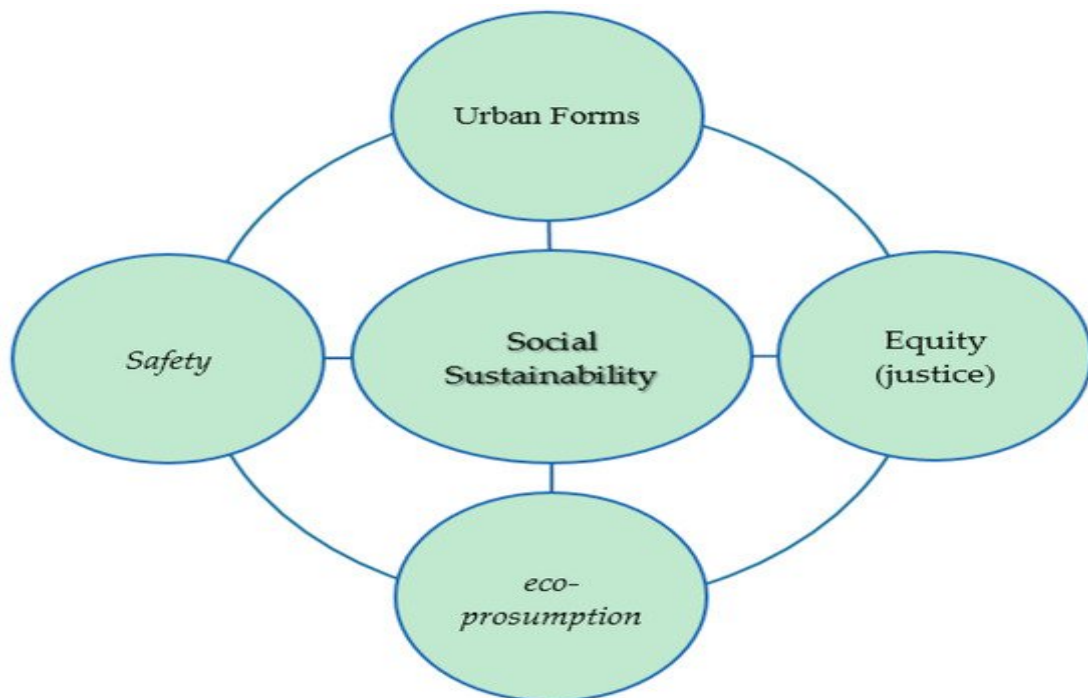


Figure 2: Concepts of social sustainability (Eizenberg and Jabareen, 2017).

Privacy practices encompasses the availability of private spaces and rooms for patient as well as patient data privacy. Technology must safeguard the privacy of patients both physically as well as their information. Patient information storage system must be accessed only by patients or their healthcare providers or those that have

been given permission to by the patient. Without such privacy measures, a healthcare or nursing system will not be able to withstand the pressures and competition of the future because it will lose clients. (Capolongo, Gola, di Noia, Nickolova, Nachiero, Rebecchi, Settimo, Vittori & Buffoli 2016, 19.)

Comfort in a nursing setting is also an aspect that promotes sustainability. These practices include the provision of comfortable nursing environments for patients which include using technologies that enhances these comforts such as air filters in nursing settings, technological equipment that will make their lives more comfortable such as tablets used by the aging population or any client or patient that has limited mobility to be able to do consultations in the comfort of their homes. (Capolongo et al 2016, 19-20.)

Equal opportunity practices are practicing that nurses should also in cooperate in their duties in order to sustain their field. This means that all patients must have or be given equal opportunities especially when it comes to technological distribution. For instance, if there is a new technology available for patients or client, everyone involved should be given the opportunity to use that technology to improve their health and wellbeing. Nurses should be willing and determined to fight for the rights of their patients. These types of situations are mostly impacted by the political economy and as rightly explained by Goodman, understanding both the concepts of sustainability and health is directly linked to the understanding of political economy. (Goodman 2016, 12.)

Humanisation is also a sustainable practice that will develop the social aspect of a nursing practice and make long lasting effects. According to Capolongo et al, security, safety, social, well-being and health promoting aspects are crucial in social sustainability. Technologies that can encourage and promote these aspects of nursing care are to be used such as providing buildings that stimulate faster healing process such as buildings equipped with good lighting, quality furniture, green areas artificial and natural lightings, relaxation areas and as well as good entertainments technologies that help relax patients and boost their healing or help relax nurses and promote better work quality. (Capolongo et al 2016, 18-19.)

4. COOPERATION ORGANIZATION

This guidebook is done in cooperation with the Lab University of Applied Sciences (LAB UAS) and will be used in the Faculty of Healthcare and sciences but more precisely the bachelor's degree program in Nursing. LAB UAS is part of the LUT university concept which was conceived in 2019 through the merging of two universities of applied sciences, Lahti and Saimaa Universities of applied sciences which gave birth to LAB UAS. It finally opened its doors on January 1st, 2020. It is the sixth largest university of applied sciences in Finland with about 8500 students. (LAB, 2020.) There are two campuses, one in Lahti and the other in Lappeenranta and there is also what we call an E-campus which is online studies (LAB, 2020a).

This Lab UAS offers many bachelor's as well as master's degree programmes including healthcare and social sciences, technology, business, tourism and hospitality and design and arts. LAB UAS provides studies both in Finnish and English. Most studies are practice-oriented which helps students acquire hands-on skills as well as strong theoretical knowledge base. This knowledge will further provide a strong base for the students when it comes to job trainings which can also include cooperation with employers and companies in their various fields. (LAB, 2020d.)

In LAB-University of Applied Sciences, emphasis is made on the competences of future healthcare workers which is rapidly being geared towards technology. In the Lahti campus, emphasis is also put on the competences in modern technology including smart care solutions for healthcare promotion with the use of e-health and robotics. (LAB, 2020f.) With reference to the curriculum of the Nursing degree program (Appendix 2) the lack of sustainable nursing courses is also a clear reason that this guidebook will be useful to nursing student (Lab, 2020g).

5. CREATING A GOOD GUIDEBOOK

A guidebook is communication or information that is clear and understandable. Therefore, creating an effective guidebook requires the use of reliable research material and sources, evidence-based and most recent information. Steps to consider when creating a guidebook include a clear message, text appearance: use font sizes between 12 and 14. For headings, use a font size at least 2 points larger than the main text size. Font Style (font with serif in the body of the text). Use visuals that help emphasize or explain the text (make visuals easy for your audience to follow and understand. Place visuals near the text to which they refer). Layout and design should be effective (make the cover attractive to your intended audience, show the main message to your audience. (Center for Disease Control and Prevention, 2010.)

Using good design and images can help people get much information when they read more than only text. Repetition of the visual style can provide an integral form that gives it a professional standard (Guidebook, 2016). To produce the materials, it is important to select the best types of pictures for the materials; to use the pictures that can help emphasize the text; to use the pictures that are uncomplicated to understand. A good layout can make the materials more appealing and understandable. In page layout, white space should be considered to prevent the page from being crowded or unprofessional. 10 to 35 per cent of margin per page of printed material and at least ½ to 1 inch of space between the edges of the page and the text is recommended for an easily readable guide. Also, using bullet points to break up the text will create a good text structure, which is easy for the eye to follow. (U.S. Department of Health and Human Services 2010.)

A guidebook is also an effective way to pass knowledge across without the bulk reading of a paper or an article. Therefore, a good guidebook should be precise and concise and not bulky, and the design of your guidebook should attract your targeted readers (Guidebook, 2016). The team of a good guidebook should have a mastery of their subject matter and should deliver it in such a way that it will be clear to their targeted readers. This will give motivation to the readers to read further and gain the knowledge the team intended. (McCoy 2019.)

6. METHODOLOGY

6.1 Data search, review and collection

The data for the guidebook was gotten from the recent researches done in relation to our thesis topic from the year 2010- 2020. This enables us to get reliable and current information about the topic. The key words used for data search are:

- Sustainability
- Nursing technology
- Nursing practices
- Sustainable nursing practices
- Sustainable nursing technologies
- Implementation of sustainable nursing practices or sustainable nursing technologies

Data is collected from reliable database searches through our main online library which is the university online library Masto Finna international search which contain ebooks and articles through third party engines such as

- Directory of open access journal.
- EBSCO
- PubMed
- E-article
- Sage Journals online
- Springer Open free
- ProQuest

In the same light, data is also collected from online searches and medical and Nursing associations' websites (World Health Organisation, National Health Service, Center for disease control and prevention, Center for sustainable healthcare) as well as online academic articles from Google scholar.

Data search from Masto Finna which is now Lut Primo resulted in more than 700,000 results available online with the search word sustainable development, about 37,000 with sustainable development practices, about 49,000 for sustainable technological practices, about 1 million for nursing technologies and about 65,000 for sustainable nursing. These results were gone through to find the appropriate literature for the thesis. Google scholars also produced a number of results that were also selected to find the best and most reliable.

6.2 Practice based thesis

This thesis is done as a practice-based thesis which will begin with a review on the existing literature concerning the topic sustainability, sustainable nursing, nursing technologies and sustainable technological practices.

We used the PDSA (Plan, Do, Study, Act) model for our thesis. This model is an effective approach to easily assess the success of an intervention in each setting and to make the necessary modifications to improve the delivery and sustainability of the desired modifications (McGowan and Reid, 2018).

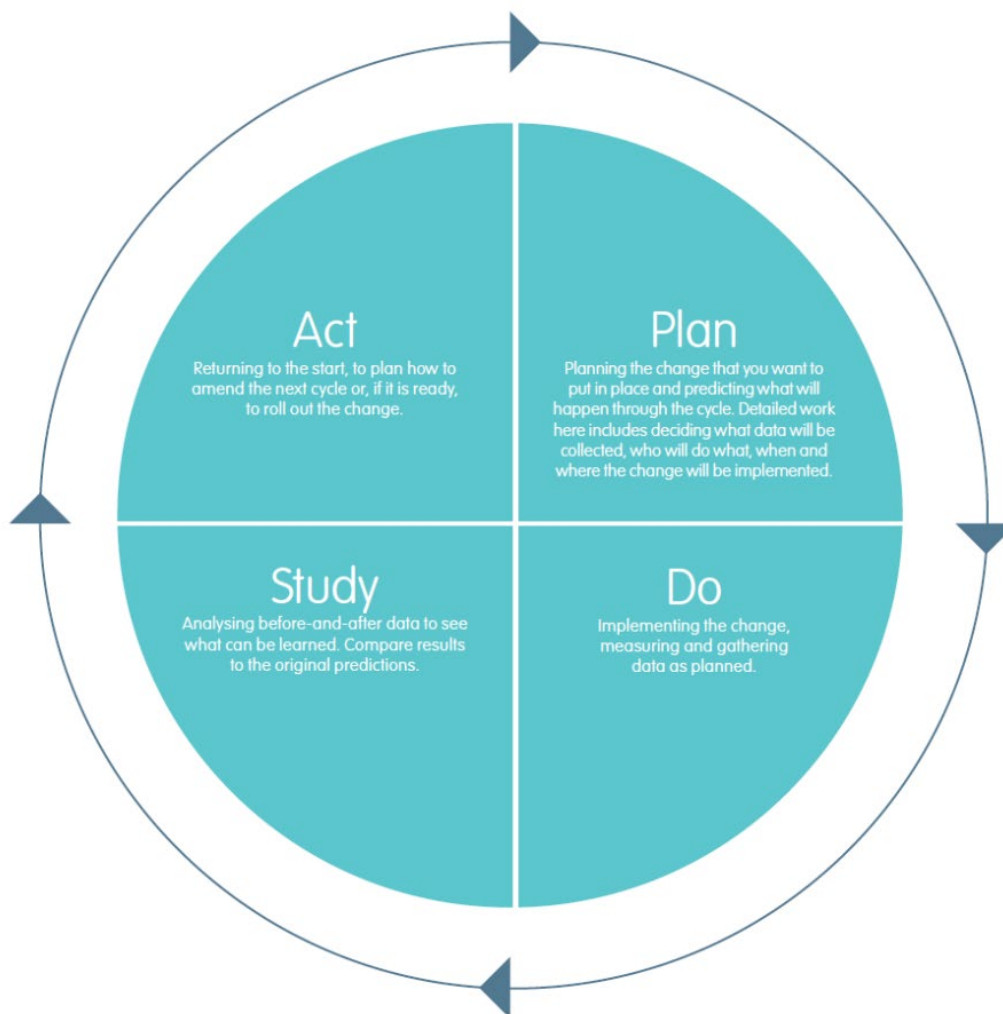


Figure 3: PDSA Model (Academic Health Science Network, 2020).

This model is effective in that, it facilitates the testing of changes on a small scale, construct on the lessons learnt from the test on a coherent manner before implementing on a larger scale (ACT Academy, 2020)

The four steps of this model as illustrated by the above figure 3 include “Plan” which includes defining our objectives, questions and predictions and then plan data collection and decide on who will do what and where the project will be implemented (Academic Health Science Network, 2020).

The “plan” was carried out with the participation of the authors and it was researched in order to establish the usefulness, novelty, benefits, as well as concreteness of the final product. A trail timeline was established and an application for an organizational partner as well as a reviewer was made.

“Do” involves carrying out the plan and collecting data as well as data construction. At this stage, we searched for existing literature through search engines such as the online library of LAB University of Applied Sciences and google scholar. Searched articles were peer reviewed and academic as well as from renowned health organizations websites like World Health Organization (WHO), NHS and CDC.

The next phase is the “Study” phase which involves compiling and comparing the results from the literature and choosing the right literature for the review. This will also provide a learning opportunity through comparing the literature and the creation of the theoretical framework of the thesis. (Academic Health Science Network, 2020.)

The final stage is “Act” which involves making plans for implementation. Here, appropriate action is taken from what we learnt in the study phase. (McGowan and Reid, 2018.) The implementation will be the final product which will be the constructive writing of the thesis and the production of the guidebook. The guidebook will be separate from the literature review. Also, in this phase, the necessary modifications will be made if any arose during the study phase. This stage will also involve the production of a questionnaire that will be used to get feedback about the guidebook by other nursing students.

During the writing of this thesis, the writers began with planning which included the formation of the title of the thesis in relation to their interest on a guide to sustainable technological nursing practices for nursing students and those of LAB UAS in particular. Therefore, an agreement was made with LAB University of Applied Sciences where the guidebook can be used to guide students on sustainable practices. This agreement is called a cooperation agreement (Appendix 1). The various subtitles were thought upon and agreed upon by the writers and the gathering of the existing literature was the next step.

Existing literature on the selected chapters were searched through the above-mentioned search engines and the appropriate literature was analysed to produce the theoretical framework of the thesis and the final guidebook. The most important part of the theoretical framework was the analysis of the sustainable practices that will be later used to produce the guidebook. At the stage, the writers also made corrections suggested by the guiding teacher.

After the writing of the theoretical framework as well as the discussion, ethical considerations and implications for further studies, the next stage was to produce the guidebook with the information gotten from the literature search. The guidebook was produced and given to 6 students with a quantitative evaluation questionnaire in order to have feedback in relation to the qualities of a good guidebook. The students gave feedback and one student disagreed that the guidebook did not follow the guide for a good guidebook.

The quantitative evaluation questionnaire was created based on a 5 points Likert Scale in which respondents specify their level of agreement to a statement typically in five points. (1) Strongly disagree, (2) Disagree, (3) Neutral, (4) Agree and (5) Strongly agree. This questionnaire was sent to our thesis supervisor for comment. The supervisor made a comment related to question (8) which had 2 qualitative questions in the same statement. This could affect reliability of the answers. A new series of 11 questions were made and resend via email for evaluation to the same 6 voluntary nursing-students from three different universities of applied sciences (2 from LAB university, 2 from LAUREA university and 2 from SAMK). In this second evaluation all the students agreed, 3 strongly agreed and 3 agreed.

The results collected show that three students strongly agree, three students agree, and no student disagreed. According to these nursing-students, the guidebook's main points are accurately mentioned. The guide is easy to read and understand. The visual design and pictures are attractive and catch the reader's attention. The guide overall (structure, language, and design) was simple. They strongly believe this guide will benefit future nurses and should be implement in nursing training curriculum.

7 CONCLUSION

7.1 Discussion

The purpose of our thesis is to create awareness on the importance of sustainable practices related to nursing linked to technologies used in nursing. Also, our guidebook will aid in preparing nursing students for work-life and aid them in the understanding and implementation of practices that will help in sustainability of technological nursing.

The aim of our thesis is to provide nursing students with a guidebook to sustainable technological practices in the nursing community. We created a list of sustainable practices on three main aspects, environmental, economic and social sustainability. This guidebook will assist students on how to use sustainable nursing practices when using nursing technology.

Sustainable development is a very important topic that cannot be overemphasised. Due to its importance, heads of states at the 2015 United Nations General Assembly set higher and ambitious health related goals recognising the fact that health is the common factor between the three dimensions of sustainable development which are environment, social and economic. (Tangcharoensathien, Mills & Palu 2015, 2-5.)

Due to the environmental and social problems that the world faces today, sustainability is the process that avoids the exhaustions of natural resources to maintain balance in the quality of life. (Youmatter, 2020.) Maintaining balance involves the use of technology and the use of technology in every sector of the society especially health care has been dominating. Due to this domination, it is paramount that technology be sustainable as well. This will ensure the continuation of healthcare or nursing practices.

Sustainable development is linked to technology which is linked to sustainable technological practices as examined above. This inclusiveness is the reason why sustainable practices can be related to healthcare as a whole and to healthcare

technologies. The inter-relation between the three aspects of sustainable development at some point is also a clear indication that no one aspect is independent. All aspects of healthcare and sustainable development as well as technology are dependable on each other and should be sustained through the environmental, social and economic sustainable practices.

This guidebook was created for nursing students on how they can develop and sustain their nursing practices to the best of their abilities. During the development of the guidebook, we faced challenges such as limited material on sustainable healthcare technologies and practices linked directly to sustainable healthcare technologies. There were numerous definitions of sustainable development but very few on sustainable healthcare or sustainable technologies. This called for further and deeper research by the writers which finally produced this literature and guidebook.

7.2 Ethical considerations

In dissertation writing or any form of writing, ethical considerations are very important because any writing involves people, communities, as well as societies. Thus, in writing one must protect data, maintain good quality writing and research which includes verified data sources for our data collection and analysis. Also, the consequences and effects of our work must be carefully thought out and if any individuals are involved, their consents must be obtained, and privacy respected. (Winstanley, 2020.) This privacy aspect is seen in the distribution of the questionnaire which was used to assess the quality of the guidebook in relation to producing a good guidebook. Respondents were carefully chosen, and their privacies were dully respected in that there were no names mentioned neither on the forms nor in the thesis. The effects of the thesis and guidebook was also thought of by collecting reliable data and creating a guidebook that will represent academic writing and respect for other academic writers.

7.3 Reliability and validity

Producing a guide that could benefit nurses and other healthcare professionals (physicians, physiotherapists, practical nurses) in general, a partnership was agreed upon through a commissioning contract signed with the LAB- University of Applied sciences. This ensures the accountability as well as the reliability of the work in that both parties will take full responsibility over any aspect of the work and ensure that all ethical considerations have been met and all thesis and guidebook guidelines have been followed.

The evaluation of this thesis by an evaluation committee at the LAB-University of Applied Sciences also expatiates on the responsibility of the students as well as the institution regarding the publication of the work and enables the fairness of the evaluation.

7.4 Implication for further studies

Technology in nursing is a growing aspect. Every aspect of nursing care is incorporated with technology. The nursing sector has evolved so much in the last decades that technology has sped up the process of advancing medical breakthroughs and abilities. Whether it is the technology that allows us to peer deep into the body or medicines that extend the lives of those with chronic diseases, it is easy to see how advances in health and medicine have touched the lives of nearly every person on the planet as rightly put by TechWaste. (TechWaste, 2019.) These technologies, however, beneficial to the nursing sector should also be sustainable so that their benefits can be seen decades to come. Most importantly, this guidebook will ensure that future nurses will already have an idea on how to be sustainable in their various workplaces through these practices outlined in the guidebook.

The process of producing this guidebook met with some dilemmas. There are so many different types of interpretation of the concept of sustainability but very little to do with sustainable technologies in healthcare/nursing. We had to make connections between sustainable nursing practices and technology to produce a well

understood and clear guidebook. The literature, as well as the guidebook, was reviewed several times and corrections made which ensured the production of a guidebook that could be used to educate Nursing students and aid them in sustaining their sector as they venture into the professional world.

The guidebook provides nurses with a simplified way to access and acquaint themselves with sustainable technological nursing practices. Further studies on how technology in healthcare/nursing could be sustainable is needed, as well as easier ways for nurses to get access to them.

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Appendices.

Appendix 1: Cooperation Organisation Form.

Appendix 2: Curriculum at LAB University of Applied Sciences 2020-2021.

Appendix 3: GUIDEBOOK.

Appendix 4: Guidebook evaluation questionnaire.

APPENDICES

Appendix 1: Cooperation Organisation Form.

OPINNÄYTETYÖN TOIMEKSIANTOSOPIMUS

TOIMEKSIANTAJA	
Toimeksiantaja	LAB UNIVERSITY OF APPLIED SCIENCES
Aputoiminimi tai yksikkö	
Toimeksiantajan yhteyshenkilö	KIRSI HÄMÄLÄINEN
Lähiosoite	Mukkulankatu 19
Postinumero ja -toimipaikka	15101 Lahti, Finland
Y-tunnus	"-"
Toimipisteen kotikunta	LAHTI
Puhelin	+358 (0)44 7085038
Sähköposti	kirsi.hamalainen@lab.fi
OPINNÄYTETYÖN TEKIJÄ	
Nimi ja opiskelijanumero	BERYL NUBED-TCHUETIE 1701507
Koulutusala	Sosiaali- ja terveysala
Suoritettava tutkinto	Sairaanhoitaja (AMK)
Puhelinnumero	0409606150
Sähköpostiosoite	beryl.nubed-tchuetie@student.lab.fi
OHJAAJA(T) – LAB AMMATTIKORKEAKOULU	
Ohjaava opettaja	Sari Lappalainen
Koulutusala	Sosiaali- ja terveysala
Puhelin	+358447080320
Sähköposti	sari.lappalainen@lab.fi
Ohjaava opettaja	
Koulutusala	
Puhelin	
Sähköposti	
OPINNÄYTETYÖ	
Opinnäytetyön aihe	SUSTAINABLE TECHNOLOGICAL NURSING PRACTICES: A GUIDEBOOK FOR FUTURE NURSES

TOIMEKSIANTOSOPIMUKSEN EHDOT	
Ohjaus	Ammattikorkeakoulu vastaa opinnäytetyön ohjauksesta. Ammattikorkeakoulu ja opettaja eivät ole konsulttivastuussa työstä. Toimeksiantaja sitoutuu antamaan opiskelijan käyttöön opinnäytetyön tekemiseen tarpeelliset tiedot ja antamaan
Dokumentointi	Ammattikorkeakoulun opinnäytetyöt ovat julkisia. Työstä laaditaan opinnäytetyöohjeen mukainen kirjallinen esitys. Se julkaistaan digitaalisessa muodossa (ja arkistoidaan) avoimessa Theseus-verkkojulkaisupalvelussa. Opiskelija antaa Theseuksessa opinnäytetyölleen verkkojulkaisuluvan ennen työn tallennusta. Muusta menettelystä sovitaan erikseen.
Oikeudet	Opinnäytetyön tekijänoikeudet kuuluvat tekijälle. Toimeksiantaja saa rinnakkaisen käyttöoikeuden työn tuloksiin opinnäytetyön valmistuttua. Sopijaosapuolet voivat sopia muista opinnäytetyön tuloksia koskevista oikeuksista. Ammattikorkeakoululla on jatkuvasti voimassa oleva oikeus käyttää tuloksia omassa opetuksessa TKL-toiminnassa.
Keksinnöt	Jos opinnäytetyön tekijä on osallisena keksintöön, joka patentoidaan, mainitaan hänet yhtenä tekijöistä. Mahdollisesta keksintökorvauksesta sovitaan erikseen noudattaen Lahden ammattikorkeakoulun innovaatioprosessia.
Työsuhde	Mahdollisesta työsuhteesta tai opinnäytetyön tekemisestä maksettavasta palkkiosta toimeksiantaja ja opinnäytetyön tekijä sopivat erikseen. Mikäli opiskelijalla ei ole työsuhdetta toimeksiantajaan, hän on Lahden ammattikorkeakoulun
Opinnäytetyön julkisuus	Opinnäytetyön esitys on julkinen. Työn tekijä ja toimeksiantaja määrittävät yhdessä esityksen sisällön siten, ettei esitys loukkaa salassapitosopimusta. Työ on julkinen heti, kun se on arvioitu. Opinnäytetyön on oltava avoimesti luettavissa.
Luottamukselliset tiedot	Ohjaavilla opettajilla ja opinnäytetyöntekijöillä on salassapitovelvollisuus toimeksiantajan liike- ja ammattisalaisuuksiin nähden. Julkaistaviin opinnäytetöihin ei sisällytetä salassa pidettävää aineistoa. Toimeksiantajan liike- tai ammattisalaisuudet anonymisoidaan tai jätetään työn taustaineistoon erilliseen liitteeseen, jota ei julkaista. Kun opiskelija jättää opinnäytetyön arvioitavaksi ammattikorkeakoululle, hän toimittaa sen myös toimeksiantajalle. Toimeksiantaja varmistaa, että opinnäytetyö ei sisällä salassapidettävää aineistoa. Mikäli toimeksiantaja ei 14
Salassapitosopimus	Toimeksiantajan niin vaatiessa käytetään erillistä opinnäytetyön liiteaineiston salassapitosopimusta, jossa opinnäytetyön liitteiden salassapito perustellaan ja salassapitoaika määritellään. Salassa pidettävälle tiedolle on oltava lakiin perustuva peruste.
Vastuut	Sopijaosapuolet ovat vastuussa toisilleen sopimusrikkomuksen aiheuttamista välittömistä vahingoista. Vastuun syntyminen edellyttää tahallaan tai törkeällä huolimattomuudella aiheutettua vahinkoa.
<input type="checkbox"/> Työelämä maksaa opinnäytetyön tekemisestä opiskelijalle tai ammattikorkeakoululle. <input type="checkbox"/> Opinnäytetyö ei sisällä salassa pidettävää aineistoa. Muut selvitykset opinnäytetyön kustannuksista, tekijänoikeuksista, aikataulusta ja muista erikseen sovituista yksityiskohdista voidaan liittää tämän sopimuksen liitteeksi.	

Tällä sopimuksella toimeksiantaja ja opiskelija sopivat, että opiskelija suorittaa opinnäytetyöksi määritellyn tutkimuksen tai kehittämistyön toimeksiantajalle. Osapuolet sitoutuvat noudattamaan toimeksiantosopimuksen ehtoja.	
ALLEKIRJOITUKSET	
OPISKELIJA	BERYL NUBED-TCHUETIE
Paikka ja päiväys	
Allekirjoitus	
OHJAAJA	Sari Lappalainen LAB ammattikorkeakoulu
Paikka ja päiväys	
Allekirjoitus	
OHJAAJA	LAB ammattikorkeakoulu
Paikka ja päiväys	
Allekirjoitus	
TOIMEKSIANTAJA	KIRSI HÄMÄLÄINEN LAB UNIVERSITY OF APPLIED SCIENCES
Paikka ja päiväys	
Allekirjoitus	

Tätä sopimusta on tehty kolme (3) samansisältöistä kappaletta, yksi (1) opiskelijalle, yksi (1) toimeksiantajalle ja yksi (1) ohjaajalle. Kopio sopimuksesta toimitetaan jokaiselle opinnäytetyön tekijälle. Sopimuksen kopioista vastaavat opinnäytetyön tekijä/tekijät. YAMK-opiskelijoiden ei tarvitse toimittaa lomaketta ohjaajalle.

Sopimus perustuu ammattikorkeakoulun hyväksymään opinnäytetyösuunnitelmaan ja se astuu voimaan allekirjoitushetkellä.

Päivitetty 28.5.2020

APPENDIX 2.

Curriculum at LAB University of Applied Sciences 2020-2021

**Bachelor of Health Care, Nursing, full-time studies,
Lahti**

Code	Name	1 y	2 y	3 y	4 y	ECTS total
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NURSE20SLTI-1001 CORE COMPETENCE 180 NURSE20SLTI-1002 Com-
mon Core Competence 25

LA00BE73	English for Work	3				3
LA00BF20	Swedish language, Oral Communication		1			1
LA00BF21	Swedish language, Written Communication		2			2
LA00BF22	Professional communication	4				4
LA00BF23	Developing professional competence 1	2				2
LA00BQ92	Developing professional competence 2		2			2
LA00BQ93	Developing professional competence 3			1		1
LA00BF24	Research and development		5			5
LA00BF27	Anticipating future trends			5		5

NURSE20SLTI-1003 Professional Core Competence 155

NURSE20SLTI-1004 Factors of Wellbeing 10

ST00BN20	Customership in Changing Operational Environments	5				5
ST00BK60	Promoting health and wellbeing	5				5

NURSE20SLTI-1005 Nursing Care and Nursing Science 15

ST00BK33	Basic Nursing Competency	5				5
ST00BK34	Medicine	5				5
ST00BK35	Clinical Training: Basics of Clinical Nursing	5				5

NURSE20SLTI-1006 Patient Safety 10

ST00BK37	Customer-Oriented Chronic Clinical Care Pathways	5				5
ST00BK38	Pharmacotherapy	5				5

NURSE20SLTI-1007 Evidence-Based Practice 15

ST00BK52	Nursing Care of the Chronically Ill	5				5
ST00BK53	Clinical Training: Medical-Surgical Nursing Care	10				10

NURSE20SLTI-1008 Applying Nursing Science 15

ST00BK54	Mental Health and Substance Abuse Nursing Care		5			5
ST00BK55	Clinical Training: Mental Health and Substance Abuse Nursing Care		10			10

Wellbeing Technology and Smart Self-Care

NURSE20SLTI-1009 15

Solutions

ST00BK56	Family Nursing		5			5
ST00BK11	Customership and Guidance in New Environments		5	5		
ST00BK43	Clinical Training: Children and Adolescent Nursing care and Maternity care		5			5

NURSE20SLTI-1010 Applying Evidence-Based Practice 20

ST00BK42	Gerontological Nursing and Home Care		5			5
ST00BK58	Clinical Training: Gerontological nursing and home care		15			15

NURSE20SLTI-1011 Developing Patient Safety 15

ST00BK39	Acute Care			5		5
ST00BK40	Clinical Training: Acute Nursing			10		10

Applying Wellbeing Technology and Smart Self-

NURSE20SLTI-1012 care 15

Solutions

ST00BK36	Clinical Training: Applying Wellbeing Technology and Smart Self-Care Solutions			15		15
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NURSE20SLTI-1013 Leadership and Entrepreneurship 10

ST00BF48	Leadership and Entrepreneurship			5		5
ST00BF49	Practical Training: Leadership and Entrepreneurship			5		5

NURSE20SLTI-1014 Thesis 15

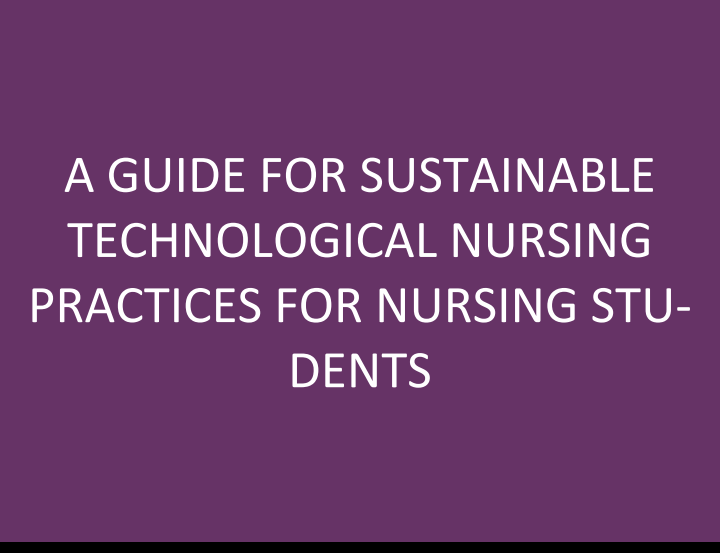
LA00BO09	Thesis planning		5			5
LA00BO10	Thesis research and writing			5		5
LA00BO11	Thesis publication			5		5

STNUR17-1021 COMPLEMENTARY COMPETENCE 30

STNUR17-1007 CORE COMPETENCE: 180 ECTS

STNUR17-1024 Common Core Competence: 25 ECTS

APPENDIX 3. GUIDEBOOK



A GUIDE FOR SUSTAINABLE
TECHNOLOGICAL NURSING
PRACTICES FOR NURSING STU-
DENTS

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LAB University of Applied Sciences

“Designing and delivering health care that meets today’s health and health care needs of individuals and populations without compromising the ability of future generations to meet their own health and health care needs; this requires the provision of health care that recognizes and respects the dependence of our health on the earth’s ecosystems, without resulting in unfair or disproportional impacts within society” (Riedel 2015, 3)

This guidebook addresses sustainable nursing practices linked to technology and is for nursing students. Its contents practices related to the environment, social and economic aspects of nursing. Nursing students can implement these practices in their future workplace to promote and maintain the principles of sustainable practices into the clinical care pathways.

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ECONOMIC SUSTAINABLE PRACTICES.....	4
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ENVIRONMENTALLY SUSTAINABLE PRACTICES



Figure 1: Environmental Sustainability: Creating the Future. (Los Alamos National Laboratory, 2020)

Energy saving

Nurses should

- Turn television off when not in use
- Unplug beds and other appliances when not in use
- Turn lights off when not in use
- Use daylight by opening the blinds
- Nurse managers could think sustainably when deciding and purchasing appliances.
- Turn off appliances such as computers at the end of the day

Recyclable technologies

- Nurses can propose where recyclable computers can be donated through researching places that need it and making a presentation to their unit.

Carbon emission reduction

Nurses can educate themselves and make presentations about

- Improving waste management techniques and facilities.
- How to replace carbon emission facilities with low carbon technologies such as digital technology.

Waste reduction:

- Glass and metals can be disinfected, and usage of pre-sterilised disposable items should be reduced.
- Sterilisation procedures should be strengthened, and effective sterilisers should be used accordingly.

Water recycling

Nurses can educate themselves on How to

- Used recycled water for waste flushing and device cooling.
- Reduced the usage of drinkable water for other purposes.

ECONOMIC SUSTAINABLE PRACTICES



Figure 4. Image by Gerd Altmann from Pixabay

Savings

Nurses should

- Use the required amount of equipment and recycle when need to save money such as required number of masks, medical equipment as directed by their health care organization.
- Invest in health promotion to reduce hospital visit with technologies such as tablets that can be used by individuals in their homes for exercises especially the old.

Energy consumption

Nurses can

- Reduce energy consumption and impact emissions created by recycling and using recycled products. For example, recycling plastics, glass and cardboard paper properly in place.
- Educate themselves on how to reduce energy consumption and make proposals at their places of work to promote sustainability.

Investment opportunity

Nurses can

- Create investment opportunities through the above sustainable practices. Companies related to waste management, water management, energy saving devices can invest in a healthcare system that practice sustainable practices.

SOCIAL SUSTAINABLE PRACTICES



Figure 5: Refresh of the RACGP's 'Vision for general practice and a sustainable healthcare system' RACGP, 2018

Privacy

Nurses should:-

- Create and provide private spaces for their client during care such as private rooms or always drawing the curtains between patients in shared room when carrying out care. This will make patients more comfortable and more open to care provided.
- Create clean and comfortable areas for relaxation for patients. For example, creating a room with good and comfortable furniture and music that can help the patient or clients relax and encourage healing both mentally and physically.

Comfort

Nurses should

- practice equal opportunities such as treating every patient equally and provided all patients will the available technologies that can contribute to their healing or health promotion.
- Ensure patients security, safety, social, well-being and health promotion through technologies such as good lighting, quality furniture and relaxation areas with good entertainments. This could be achieved by making propositions to the healthcare organisation management.

Humanization

- Nurse should be able to promote social sustainability through their own health by working ergonomically as well as self-care after work, exercising properly and eating properly.

Appendix 4

Guidebook evaluation questionnaire.

Please rate the following aspects of the guidebook.

Instructions: For each statement, please check with

- (1) Strongly disagree, (2) Disagree, (3) neutral, (4) Agree and (5) Strongly disagree

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
This guide highlights the main chapters					
This guide context suits the purpose					
This guide will benefit the target group					
This guide was easy to follow					
This guide was easy to understand					
The text is easy to read					
Images provides better illustration of the guide					
This guide is precise					
How do you rate the guide overall?	Excellent	Good	Average	Poor	Extremely poor

What aspects of the guide could be improved?
--

Other comments?
