



Dragon's Den

Academic year 2023-2024

Student's module book

Please think green, consider the environment before printing

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1. Part 1 General Information

1.1 Planning group and coordination

Role	Name	e-mail	Picture
Main lecturer, slides coordinator & planning	Dax Houtkamp	d.houtkamp@somt.nl	
Assignments and practical coaching activities	Roel Wingbermuhle	r.wingbermuhle@somt.nl	
Entrepreneurship	Marc Stroop	m.stroop@somt.nl	
Special lecturer during workshop, slides	Prof. Annelies Pool-Goudzwaard	a.pool@somt.nl	

1.2. Introduction

In this 6-day internship students will learn how to apply the knowledge gathered throughout this course in a practical health-technological setting. The main goal is to develop and/or implement a technological product which can prevent health issues or optimize treatment. Ultimately, students present the designed product in a Dragon's Den style presentation at the end of this course.

Prior to the Dragon's Den assessment, there will be two preliminary knowledge tracks in which students will learn basic knowledge regarding entrepreneurship and product design.

1.3. Intended learning outcomes

The student is able to:

1. Able to use wearables for measuring physical activity, falls, gait, balance and motor symptoms in clinical reasoning
2. Able to use technology to measure position, motion- range, movement, activity (gait) and speed as goniometers, inclinometers, accelerometers and electromagnetic trackers and is able to apply this knowledge in the clinical reasoning as physiotherapist.
3. Able to use Python and program with the use of interfaces to synchronize multiple variables and perform data- analysis
4. Able to use wearables and technology to measure lung heart capacity, metabolism, biomarkers, muscle morphology, lean body mass as small lung capacity devices and muscle glucose wearables (e.g. Monark, Cosmos Quasar, Tensiomyography, Cortex-custo) in clinical reasoning for diagnoses, prognosis, objective measure, intervention and effect
5. Implements knowledge on technology in principles and skills of Evidence-Based Practice related to assessment and intervention in physical therapy and other domains.

2. Part 2 : Preliminary knowledge track I: Entrepreneurship

The first preliminary knowledge track will exist of two sessions in which will be elaborated on Canvas business model and entrepreneurship.

Dates: 14 dec 2023 12:30-16:00 (session 1) & 18 dec 2023 12:30-16:00 (session 2)

Lecturer: Marc Stroop

Preparation:

- Read the Physiotherapy Case (Appendix A)
- Watch: <https://www.youtube.com/watch?v=QoAOzMTLP5s>
- Read: <https://www.strategyzer.com/library/what-is-a-business-model>
- Scan the guiding questions (Appendix B)
- Come with an open-minded spirit to class.

Tip: take a printed version of the Physiotherapy Case to class.

2.1 Preliminary knowledge track II: Product design

The second preliminary knowledge track will consist of three sessions in which will be elaborated on product design. After the first session, it is advisable to start searching for an internship so you will get a better understanding of the requirements of the innovation at the place of your internship.

Dates: 8 feb 2024 12:30-16:00 (session 1), 13 march 12:30-16:00 (session 2) and 4 april 2024 12:30-16:00 (session 3)

Lecturer: Dax Houtkamp

2.3 Preparation internship

A handful of opportunities for an internship will be provided by SOMT University of Physiotherapy.

In the case that a student wants to look for his or her own internship, then that is also possible. In this case it is advised to start looking for possible stakeholders at an early stage of the course (ultimately at the end of February). Make sure to make clear expectations: It is not the purpose of the internship to be a technological help desk, but rather to present yourself as a health technological consultant who is able to solve one specific problem by development of a tool/product. The required product design can be interpreted broadly, implementation of a yet existing, evidence-based tool/app in the practical setting is allowed as well. It is obligatory however that the product is technological in nature and implementation was not yet started prior to the internship.

3. Part 3: Dragon's Den assignment: a technological innovation

During the internship you will design a technological solution that can enhance quality and/or quantity of physical therapy. Innovation typically follows different phases. The following tasks are designed to guide you through this exciting process!

3.1 Phase 1: Analysis

Start with identifying a relevant technological problem (or chance of optimization) within the context and formulate the main question and sub questions of your innovation project. Make sure to do this in correspondence with the company, it is crucial to have support from them. Who will be affected by the innovation? Who are the key figures and decision-makers?

There are different models that can be helpful in this phase depending on the nature of the product (e.g. is it a completely new product or a helpful innovation?). Research the following models and choose the one that you find most suitable for the project and elaborate on that during your Dragons Den presentation:

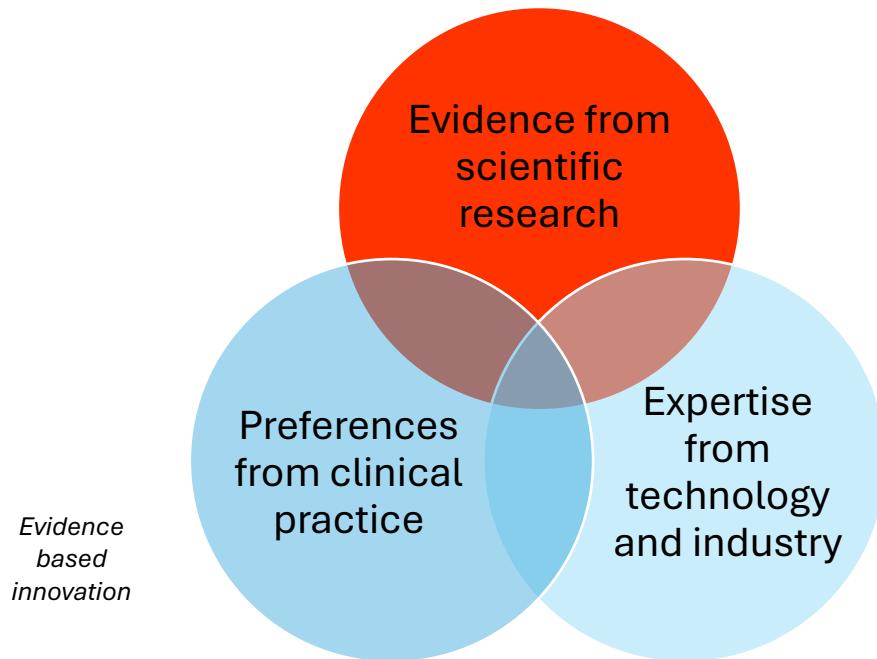
- [Empathy map](#)

- [Color test for change \(de Caluwé & Vermaak, 2001\)](#)
- [SWOT analysis](#)
- [Ishikawa Diagram](#)

At the end of this phase you have to be able to 1) motivate your choice for the innovation, 2) explain the relevance in physical therapy practice, 3) describe (shortly) what the context and/or culture of the company is in relation with your innovation and 4) define the problem including main question and possible sub questions.

3.2 Phase 2: Design

Now that your main innovative question is clear you are going to explore what is already known. Search for answers from various perspectives (e.g., scientific literature or technological experts, but also colleagues within the company). Try to explore what the clinical practice needs as well. You can have a look in your own practice, but also see if you can find reports online. Based on these answers you can draw your conclusions: What will the project finally deliver?



3.3 Phase 3: Development

Once you have defined the project's deliverables, the development phase follows. You create and execute a plan that results in the design of the project. In the plan you allocate tasks to achieve a technological solution. You might be doing it in collaboration with colleagues within the company: What are the milestones and (interim) deadlines? Who is responsible for milestones and deliverables? How do you gather feedback, and what do you do if someone fails to meet agreements?

3.4 Phases 4 & 5: Implementation and evaluation

Now that you have gathered all the information and have agreed what the innovation should deliver you are all set up ready for the implementation! Gather 360 degrees feedback on experiences and try to monitor (preliminary) results. Your implementation does not have to be perfect, but make sure to discuss with your client if this is in line with their expectations and vision. Did it provide the solutions for the problems found before the product? And based on the evaluative data, what should the further implementation focus on to enhance the quality of the product?

3.5. Presentation

During the final meeting of this module, you will present your technological innovation in a Dragon's Den style presentation during the multiplier event at SOMT University of Physiotherapy. In this presentation you will try to convince a jury of technological experts to invest in your product or innovation. At the end of the meeting the jury will evaluate which presenter they will invest in. The presentation will take 10 min per person in which you explain the choices you made during the innovation process, but also the added value of the product and how you will mitigate potential flaws of the current product in the future.

Make sure you put attention to the following subjects: Problem description, context of the innovation, deliverables of the project, evaluation and future optimization.

Disclaimer

The total study load of this internship and Dragons Den presentation is 4 EC (i.e. 112h). It is advised and expected to spend most of this time (6 days) working within the company on your technological innovation. The rest of the required time can be spent on self-study about related topics (i.e. entrepreneurship, product design, market research) and preparation of the presentation. In consultation with the coordinator of the course changes may occur if desired by the company or personal situation.

Appendix a: Physiotherapist case

A year ago, your team has bought a small-sized physiotherapy practice, which is established in one of the Dutch midsize cities (80k citizens) and is therefore part of the Dutch healthcare system. The practice was owned for 25 years by a married couple of physiotherapists. Ten years ago, their son joined the practice after he got his diploma as a physiotherapist. Around that time the practice hired two part-time secretaries, who took over all kinds of duties from the owners, including planning consultations, some of the paperwork, and managing the website of the practice. That was the only kind of task division that had occurred during the existence of the practice. The owners ran the practice and made the decisions together, although the secretaries could often hear the owners arguing –the spouses were stubborn people and were not easily convinced of the usefulness of the ideas of other persons.

Bookkeeping was entrusted to an external accounting agency and for legal advice the owners could rely on a law firm. Advertising merely consisted of putting adds in the local papers and posting items on the website, nothing fancy. More marketing was not considered necessary to attract clients. After all, business was okay, new clients occasionally found their way to the practice by word of mouth. Besides, the owners had befriended a number of GPs and medical doctors at the local hospital who referred their patients to the practice. The practice was wellknown for its pleasant way of handling clients who felt comfortable during their visit of the practice. The patients, almost all elderly, were pleased with the services of the practice. The numbers of patients were easy to handle, and the physiotherapists were good at their job.

True, the practice only offered generic, classical physiotherapy, including exercise therapy, massage, electrotherapy, and heat treatments. However, their clientele did not care for what they called “fancy new treatments” anyway, such as Dry Needling, EPTE-therapy, Taping, or Shockwave therapy. As long as the patients felt better after treatment, they were satisfied. Personal training and lifestyle coaching? The older patients didn’t know it existed. Most of the clients were not even interested in using the latest digital technology, such as wearables or apps that helped a patient to manage their disease and lifestyle. There was no idea behind the choice of patients and treatments, the physiotherapists just went along with whatever came their way. The owners and their employees earned a pleasant income, although they fully relied on payments by the insurance companies for the treatment of their patients, including those patients who took supplementary health insurance. None of the clients of the practice were paying out-of-pocket.

Two years ago, after their son had left the practice, the owners decided to retire from their business. They sold their practice and moved to Italy. Your team was excited to have been able to buy the practice for a reasonable price. At least for now, you decided to keep the two parttime secretaries. Excitement soon waned after you took stock of the clientele, the building and inventory, the ICT facilities, the contracts with the suppliers of physiotherapy equipment, legal and accountancy services, and so on. You were shocked to discover that record keeping was a mess, that the prior owners had relied more on their memory and notebooks than on systematical storage in a computer data base of information about their clients, revenues, suppliers, health insurers. The contracts that were signed with companies who took care of maintenance of the

practice's equipment, housekeeping, and legal advice, were more expensive than necessary considering the current market. Nobody had bothered to map other physiotherapy practices and healthcare providers in the area, let alone other potential client groups. The original physiotherapists were clearly old school – not only with respect to the types of treatment they were offering their clients, but also regarding the way they handled their business. It seemed that time had stood still in the practice, so your team wondered how the prior owners had managed to stay in business for so long. Although the business is still generating profits, its viability is expected to go into dire straits in the near future. This insight puts you on a crossroad. Not only do you want to infuse your practice with new ideas – However, you are also a team of entrepreneurial healthcare professionals who want to provide highly valued services to your customers. You have an idea in mind about the reason of existence of your physiotherapy practice and about the future the practice is ultimately working towards (a mission and a vision) – something like "we help people with movement issues". However, this idea is still implicit and vague. In addition, you do not know:

- *Which target group or groups (patients/clients – populations, groups, individuals?), geographical areas (local? regional? national?), service areas (Physical? Mental? Lifestyle? Nutrition? Etc.) you should choose.*
- *Which products or services you could create (Prevention? Treatment? Guidance? Supervision? Training programs? Rehabilitation? Preparation? Therapy? Advice? Education? Clinics? Lessons? Specialized or general treatment? Monodisciplinary? Multidisciplinary? Physical? Mental? Indoors? Outdoors? Standardized? Customized? Online? And so on)*
- *Which conditions you should consider (systemic, digital, organizational, and strategical; strengths etc.); for instance, should you completely overhaul the current business model of your practice into a new model, or should you explore and develop a new business model besides the current one? Should you keep the old organizational structure, or would it be better to add a new structure to the old one?*

Before you can start thinking about new business models and related value propositions, you decided to start with describing the current business model. During the first class, you will work on this assignment. In the annex, guiding questions are mentioned for the business model.

Appendix B: guiding questions business model canvas

Element	Business Model Canvas Guiding Questions (See also Osterwalder & Pigneur (2010: 14-41))
Customer Segment	<ul style="list-style-type: none"> - For whom are we creating value? - Who are our most important customers, client, or users?
Value Proposition	<ul style="list-style-type: none"> - What value do we deliver to the customer? - Which one of our customer's problems are we helping to solve? - Which job are we helping the customer get done? - Which customer needs are we satisfying? - What bundles of products and services are we offering to each Customer Segment?
Customer Relationships	<ul style="list-style-type: none"> - What relation does each of our Customer Segment expect us to establish and maintain with them? - Which ones have we established? - How costly are they? (Can be in terms of money, time, energy, etc.) - How are they integrated with the rest of our business model?
Channels	<ul style="list-style-type: none"> - Through which Channels do our Customer Segments want to be reached? - How are we reaching them now? - How are our Channels integrated? - Which ones work best? - Which ones are most cost-efficient? - How are we integrating them with customers routines?
Revenue Model	<ul style="list-style-type: none"> - For what value are our customers really willing to pay? - How would they prefer to pay? - How much does each Revenue stream in % contribute to the overall revenues
Key Resources	<ul style="list-style-type: none"> - What Key Resources do our Value Proposition(s) require? - And, our Distribution Channel(s)? - And, our Customer Relationships? - And, our Revenues Models?
Key Activities	<ul style="list-style-type: none"> - What Key Activities do our Value Proposition(s) require? - And, our Distribution Channel(s)? - And, our Customer Relationships? - And, our Revenues Models?
Key Partners	<ul style="list-style-type: none"> - Who are our Key Partners? - Who are our key suppliers? - Which Key Resources are we acquiring from partners? - Which Key Activities do partners perform for us?
Cost Structure	<ul style="list-style-type: none"> - What are the most important costs inherent in our business model? - Which Key Resources are most expensive? - Which Key Activities are most expensive?