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School of Science
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Constructing performance measures for a medical curriculum reform project

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 ABSTRACT OF
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<p>This thesis constructs performance measures for the use of monitoring the curriculum reform project at the Faculty of Medicine at the University of Helsinki. Medical education is in turmoil not only due to developments in modern health care, but also due to the changing role of the physician. Changes are always disruptive and should be planned and managed accordingly to reduce the disruption to operations. This thesis studies not only the performance measures used to manage curriculum reforms and evaluate the outcomes of these reforms, but also the change agendas behind these reforms. It is important to understand these agendas as they influence the goals set for a project.</p> <p>Based on the literature study on the performance measures and change agendas, performance metrics for the curriculum reform project at the Faculty of Medicine at the University of Helsinki are constructed. The metrics utilise the well-known balanced scorecard framework, adapting the four perspectives to a higher education environment. The resulting scorecard utilises many existing feedback and evaluation channels as well as several new metrics.</p>		
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<p>Tässä diplomityössä kehitetään suorituskykymittaristo Helsingin yliopiston lääketieteellisen tiedekunnan opetusohjelman uudistusprojektin seurantaan ja arviointiin.</p> <p>Lääketieteen opetus on murroksessa, johtuen paitsi modernin terveydenhuollon kehityksestä, myös lääkärin roolin muuttumisesta. Muutokset ovat aina häiriöksi organisaation toiminnalle ja siksi ne tulee suunnitella huolella ja toteuttaa halliten häiriön minimoimiseksi. Tässä työssä tutkitaan paitsi opetussuunnitelmien uudistusprojektien seurantaan ja arviointiin käytettäviä suorituskykymittareita, myös muutosprojektien sisäisiä ja ulkoisia taustoja ja tarkoitusperiä. Ne vaikuttavat projektin tavoitteiden asettamiseen ja niiden ymmärtäminen on siksi tärkeää.</p> <p>Suorituskykymittareihin ja muutosprojektien taustoihin keskittyvän kirjallisuuskatsauksen pohjalta kehitetään mittaristo Helsingin yliopiston lääketieteellisen tiedekunnan opetusohjelman uudistusprojektin seurantaan ja arviointiin. Mittareissa hyödynnetään tunnettua tasapainotettu tulokortti -runkoa, jonka neljä näkökulmaa mukautetaan korkean asteen koulutuksen käsittelyyn. Lopputuloksena saadaan tulokortti, jossa hyödynnetään useita eri palaute- ja arviointikanavia sekä useita uusia metriikoita.</p>			
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Helsinki, March 15, 2015

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Abbreviations and Acronyms

SISU I/II	Sisällön suunnittelu työryhmät I/II - Content planning work groups I and II
CanMEDS	Canadian Medical Education Directives for Specialists
OSCE	Objective Structured Clinical Examination
EKT	European Knowledge Test
PPOS	Patient-Practitioner Orientation Scale
C3	Communication, Curriculum, and Culture Instrument
DRG	Diagnosis-Related Groups

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Chapter 1

Introduction

1.1 Background

In business change is considered inevitable - one has to constantly adjust to be able to cope with the ever evolving market environment. The same mentality for change is also prevalent in educational organisations, who reform their curricula and adopt new teaching methods and learning philosophies to respond to perceived crises and opportunities. Reasons for change are often mentioned to be the increasing diversity of the student body [41], the strain on financial and other resources [41], or the reforms might come as an answer to the change in the organisation's strategy, for example the aim to become counted as one of the world's leading institutions.

Changes are always disruptive and may cause stress and frustration among the personnel as they are not allowed to focus on their work. Therefore changes must be planned and executed with a clear vision in mind, to avoid strain on the staff and students. The formation of a vision and the contributing goals is one of the first steps in project management [12] and the third step in change management [38]. Too often education reform projects carry a ballast of mixed expectations, prohibiting the formation of a common goal and a clear direction.

New teaching methods and techniques are constantly being introduced,

each reflecting the current climate of pedagogic research. In the 1970s student-centred learning and active learning spread to higher education institutions in the form of problem-based learning from law schools to medical schools [43] [13], and currently the advances in information technology have opened new possibilities for teaching and learning. How can education reformers know which methods are appropriate for the goals they strive to achieve? Evaluation is just as an integral part of a project as setting up the vision is. Without it there can be no way of knowing how well a project has been able to meet the strategy of the organisation. Evaluation not only serves the project team and the organisation, but is essential in aiding new efficient innovations disseminate in the field [11]. Showing the improvements may also help the anchoring of new practices in the organisation.

The Faculty of Medicine at the University of Helsinki is currently in the midst of a curriculum reform project, and the implementation of the new curriculum is planned for the autumn of 2015. Along with the new curriculum there will be major changes to the organisation, such as replacing the five separate institutions with just one faculty, with the aim of improving the integration and management of the overall education at the faculty. As part of the reform project the faculty has commissioned this thesis in order to draft success metrics to evaluate the impact of the reforms.

Jules Dienstag, the Dean for Medical Education at Harvard Medical School, argues that curriculum reform is never finished but is a constant process of renewal and re-evaluation, while at the same time regretting the lack of metrics to measure the impact and success of reforms [23]. This is a worrying statement coming from the dean of one of the most respected medical schools in the world. This thesis aims to produce a set of performance metrics that will help follow up on the outcomes of curriculum reforms and monitor the performance of the curriculum to help identify areas of future improvement.

1.2 Problem statement

It is often said that you cannot manage what you cannot measure, and that you get what you measure. The goal definition is the first step of a project, and arguably the most critical one, as it defines the purpose and the change the project aims to bring about, thereby guiding the formulation and execution of the project. Project management literature stresses the need for the goal of the project to be in alignment with the overall strategy and objectives of the organisation as a whole [12]. But setting these goals is not enough, evaluation of the success of a project is also an important step [12], as it provides feedback to the project organisation on the overall success of the project, helps identify and disseminate innovations, and establishes accountability for external stakeholders [11].

The success of a project is not a simple thing to determine: as [12] noted a project can be deemed a success although it had to be terminated before completion. Often the success is understood to mean the meeting of the three constraints: time, budget, and scope. However, this approach is a very limited one, as it does not take into account the view of the stakeholders and overall impact [12].

To construct valid performance measures for a reform project one must first understand the agendas behind the project and the expectations of various parties might have of the project. A project with the agenda to meet the political pressure for change can not be evaluated on the same criteria as a project that is established to solve a serious issue in faculty satisfaction.

The main research problem of this study is:

How to measure the success of a curriculum reform project in medical education?

This problem is divided into the following questions and objectives:

1. What are the agendas driving medical curriculum reforms?
2. What are the current practices in evaluating curriculum reform projects?

3. Construct the performance metrics for a medical curriculum reform project

1.3 Objectives of the study

The objective of this thesis is to explore the field of educational reform in terms of the change agendas these reforms have and the evaluation methods used to assess the how well these reforms succeed in meeting their stated goals. Based on this research, success metrics for the curriculum reform of the Faculty of Medicine at the University of Helsinki will be established and an evaluation of the current curriculum is made, to set up a comparison point for the evaluation of the project's strengths and weaknesses.

1.4 Scope of the study

This study aims at establishing the performance criteria of a curriculum reform project focusing on the impact of the project, whether the medical school will produce better physicians as the result of the reform. Discussion of the efficiency with which the process has been managed, i.e. has the project been completed in time and on budget, will be omitted. Project efficiency is a very short term measure, and gives no indication of the long-term benefit to the organisation [50].

The performance metrics will be constructed from an operations management and strategy angle. Shenhar et al [50] divided the success of a project into four hierarchical dimensions: *a)* Project Efficiency *b)* Impact on Customer *c)* Business Success *d)* Preparing for the Future . The time frames for each dimension vary from measuring project efficiency immediately after the completion of the project, to the assessment of how the project has prepared the organisation for future opportunities and changes some years after the project has ended. With the constructed performance metrics the project organisation will be able to follow the implementation of the new curricu-

lum, identifying the positive effects and catching the problems early on. As the implementation is finished the metrics will help the Faculty evaluate the overall success of the reform. The performance criteria and their implementation themselves will help the faculty prepare for the future by presenting the management information on how their faculty is developing.

The performance metrics will be designed using the curriculum reform project at the Faculty of Medicine at the University of Helsinki as a case example, and are therefore not directly applicable to other curriculum reform projects or other fields of education. However, the methodology used can be followed in other educational projects to construct a suitable set of metrics.

1.5 Research methodology

This study is a case study focusing on the curriculum reform project of the Faculty of Medicine at the University of Helsinki, utilizing a constructive research approach. According to Oyegoke [46] the approach is a problem-solving method relying on different research tools, and that connects the empirical data to the research questions and ultimately to its conclusions. The approach is aimed at finding solutions to both practical and theoretical problems [46]. Not all problem-solving exercises should be classified as constructive research. It is essential to relate the problem and the solutions to existing theoretical knowledge, and the novelty and inventiveness of the solution is of great importance [37].

This data collection of this study relies principally on interviews and review of case documents as the data collecting method. The background of the curriculum reform was gathered from interviews with the work group members, through review of the planning groups' minutes, and the evaluation report of the Helsinki 2000 curriculum. The goals and the plans were for the most part collected from the report of the SISU (Sisällön suunnittelu - Content planning) work group and the minutes of the subsequent SISU II work group. The findings were then confirmed with the faculty.

Chapter 2

Literature review

The basis of western medicine is evidence that links an intervention with the cause of said intervention, the doctrine of evidence based medicine. Every accepted treatment must undergo a rigorous research and evaluation phase where hypotheses on cause and effect are formulated and tested. But how evidence based is the education of the medical practitioners? Educational institutions change their curriculum as the content and the knowledge transmitted to the students evolves and new research unfolds itself. However, few curriculum reforms focus solely on updating the content, but also aspire to reform the way the content is taught seeking the acclaimed benefits of new teaching and learning methods. This chapter will look into the methods used to validate the outcomes of these methods that claim to revolutionise the education of medical practitioners. In addition to the methods of evaluation this chapter reviews the agendas behind medical curriculum reforms. It is important to understand the agenda and the goals of the reform as they will guide the evaluation of the outcome.

2.1 Agendas behind curriculum reforms

Peninsula Medical School, established in 2000, evaluated their curriculum by comparing their graduates to graduates from other schools through a

questionnaire on their readiness to practice as a junior doctor [18]. The Peninsula Medical School fared well not only in the mentioned study but also on external quality measures, but they still went forth and reformed their existing curriculum [17]. As Bleakley [17] points out, why tamper with something that is not broken? In answer he notes that curriculum reforms are not solely content updates but rather a political process that can change the moral and ethical culture of the institution.

The political agendas mentioned in literature include the growing emphasis on patient-centredness, teamwork, and life-long learning [17] [45]. Physicians are encouraged to view the patient in a broader scope than just through the illness that they are currently presented with, patients' lives and the illnesses themselves have multiple aspects that must be considered for a successful outcome. Thus the emphasis on teamwork not just between fellow physicians, but also with professionals from other aspects of health care such as the nurses and therapists as well as social services.

The medical school of Manchester also reformed their curriculum to encourage a certain set of values and a mindset in students and the faculty, namely motivate and educate the students in life-long learning and promote a student-centered approach in the faculty [45]. These characteristics did not come about on their own but were given impetus by the publication of the Tomorrow's Doctors by the General Medical Council of the United Kingdom [4]. Similarly, the reform of the curriculum at the Karolinska Institutet in Sweden was guided by the Tomorrow's Doctors recommendations [43]. The latest edition of the publication came out in 2009 [5] and, like the previous edition, sets the outcomes graduates from United Kingdom's medical schools must be able to demonstrate, as well as the standards for teaching, learning and assessment. A similar set of standards is the CanMEDS Physician Competency Framework initiative by The Royal College of Physicians and Surgeons of Canada [26]. Both of these frameworks assign doctors a variety of roles in addition to a healer and are part of the movement to outcomes-based education, certifying learning not through the input but by the outcome and

competencies achieved. To follow these standards schools need to incorporate the teaching of the various roles into their curriculum, and implement instruction and assessment methods that support the competency-based educational mindset.

Globalisation is not only seen in the business world but also in education. In 1999 the Education Ministers of 29 European countries signed the Bologna declaration to establish the European area of higher education with comparable degrees in terms of standards and quality with the aim to promote co-operation [1]. With increased communication and mobility between educational institutions ideas and innovations in teaching methods and curriculum structure spread, with the problem-based teaching method as a well known example [43]. Globalisation also brings about pressure to keep up with the international development, as seen in Sweden where National Agency for Higher Education assessments of the Swedish medical schools in 1997 and 2006 called for reforms to keep up with international trends and developments [43].

Comparison reviews and the effect they can have on the structure of education and dissemination of new ideas are nothing new in the field of medical education literature. Arguably the most influential report in the field was published by Abraham Flexner in 1910 [25]. The report is credited with standardising the medical education, by calling for science based education, clinical training, and a linkage with universities [23] [42], thereby ensuring the quality of the education. Many claim that the division of the clinical education into the pre-clinical basic science phase followed by a mentored clinical phase is largely the consequence of Flexner's observations and recommendations [42].

Advances in medical care and the increasing pressure to reduce the ever rising health care costs have changed the role of physicians as well as the setting for medical care [23]. Physicians are treating more patients with multiple chronic illnesses and patients that are older than before - changes that are driven by the success of earlier medical inventions that have lowered

mortality rates of many diseases and made them chronic instead of fatal [27]. This change in patient demographics and the patterns of illness calls for physicians who are capable of providing care across multiple specialities and in co-operation with other professions contributing to the long-term care of patients.

Another dramatic change is the shift from hospital based care to providing care mainly in outpatient settings. The transfer of medical care to ambulatory settings has forced medical schools to focus on their clinical training. The Harvard Medical School adopted a new curriculum in 2006, twenty years after the introduction of the New Pathway curriculum in 1985 [23]. The New Pathway curriculum was characterised by early introduction of clinical content to the preclinical years and the adoption of adult approaches to learning, for example through the introduction of problem based learning. The 1985's curriculum reform addressed to a large extent mainly the preclinical curriculum, which together with the developments in the delivery of medical care led the school to implement new drastic changes to the clinical curriculum in 2006. The shift of care from inpatient to outpatient settings has led to a situation, where students are without the possibility to observe the evolution of a disease from the early diagnostics phase, through treatment, and finally to recovery [23].

At Harvard the transfer of medical care to ambulatory settings also had an effect on the learning environment as clinical instructors were too rushed to discuss the underpinnings of clinical medicine with the students [23]. As a consequence of the eroding learning environment some of Harvard's more senior faculty members disengaged from teaching, and students did not receive the attention and feedback needed for professional and personal development.

As seen from the literature agendas vary from political to the need to solve problems of faculty and student morale. Medical schools pursuing curriculum reforms do not report having problems with learning outcomes evaluated with standard student assessment methods, and reform objectives often focus on developing the culture of the school to nurture certain traits in their students

and faculty. Various international frameworks for physician competency are behind many a reform. The use of the frameworks represents a desire to stay abreast with international developments and trends.

2.2 Evaluation methods used

Harvard Medical School piloted a longitudinal clinical clerkship model, called the Cambridge Integrated Clerkship (CIC) for three years from 2005 to 2007 before wider implementations in the school [31][23]. The 27 students who completed this pilot of the Cambridge Integrated Clerkship were qualitatively and quantitatively compared to 45 students completing their clinical clerkship at other teaching hospitals following a traditional block rotation curriculum [31]. The students for the longitudinal clerkship were randomly selected from students having expressed an interest for the new model and the comparison group was formed from students having expressed an interest for the longitudinal model but who were not selected and were therefore on the traditional clerkship model. The baseline at the beginning of the clerkships were similar for the pilot and the comparison groups, no differences in the various test scores assessing their clinical knowledge and decision making nor their patient orientation could be ascertained. The study evaluated the outcome of the pilot with the goals for the clerkship in mind. These questions related to the success of the clerkship were [31]: 1. Were the program's structural goals achieved? 2. How well did the pilot students perform on standard student assessments? 3. Did the pilot affect students' professional attitudes and values as compared with students in traditional clerkship?

The performance was evaluated utilising the exams taken by all Harvard Medical School students including subject exams in different specialities as well as comprehensive exams such as the objective structured clinical examination (OSCE). The structural goals for the program included providing students with continuity with patients, continuity with faculty, and a satisfying learning environment. These goals were evaluated with surveys, the

development of the patient-practitioner orientation scale (PPOS), and the Communication, Curriculum, and Culture Instrument (C3). The PPOS is an instrument to measure the patient-centred beliefs of practitioners, and the C3 is a scale for the measurement of the extent to which students feel they are exposed to the hidden curriculum.

Another approach to curriculum evaluation is the evaluation of the first cohort of the new curriculum, as is the case with the Manchester medical school reform [45]. At Manchester the students were asked to fill a questionnaire evaluating their learning as well as the curriculum itself. Based on the students' answers the implementation and the curriculum were deemed a success. However, the answers were evaluated among themselves and no comparison to the situation previous to the changes was conducted.

In Alexander's review [11] of 104 projects to utilise information technology in higher education to impact student learning a key finding was the discrepancy of stated goals to the actual outcomes reported. According to the article 90% of the projects reported improved student learning as their target outcome but only one third were actually able to report on this outcome. Many evaluated their projects based on student reactions to the project, instead of finding ways to assess the project's impact on actual learning outcomes. Alexander explores two alternative explanations to the discrepancy between the intended outcomes of the projects and the reported outcomes: the first explanation being that less than half of the evaluated projects were yet fully implemented at the time of the study, and the second explanation, the more concerning explanation, is that many evaluation methods used omitted the collection of relevant information to evaluate student learning [11]. The methods utilised to evaluate the actual student learning outcomes varied from comparisons of performance and perception of different student cohorts, to reviews of learning journals, and questionnaires for self-evaluation [11].

As we see from Alexander's report, it is important to pay attention to the information gathered and ensure it can be utilised to measure the intended

outcomes and to allow time for the evaluation of the project. Time especially is of importance in the evaluation of a curriculum reform, as it takes years before the first students on a new curriculum have graduated and moved to serve the society, where the final outcomes of their education are thoroughly evaluated.

2.3 Gap in the literature

As Jules L. Dienstag wrote, “curriculum reform is not an event but an ongoing process of curriculum evaluation, innovation, renewal, and re-evaluation” [23]. However, he admitted that even medical schools with their constant search for improvement still lack metrics to measure the success of their reforms. This is worrying, considering the time and effort a curriculum reform takes and the disturbance a wide scale reform causes, as it implies that universities are undertaking highly disruptive projects just for the sake of change without any metrics to guide and follow these revolutions.

As seen from the literature some parts of the reforms go under strict scrutiny to establish whether they are able to meet the expectations of the planners. However, no comprehensive evaluation of the impact of an implemented curriculum reform could be found. Curricula are evaluated occasionally either by an external evaluator, like the Swedish medical schools were evaluated by the Swedish Higher Education Authority [8], or the schools themselves commission a review of their curriculum [23] [2]. These evaluations give a good overlook on the current state of the quality of the education but lack a longer term perspective. It might also be argued that the custom of analyzing ones operations only occasionally encourages disruptive reforms every ten years instead of small incremental changes when change is needed.

This thesis will aim to construct performance metrics with which the outcomes of a curriculum reform can be analyzed and monitored. The metrics should gather data with which it is possible to report on the success of the intended outcomes of a project.

Chapter 3

Balanced scorecard

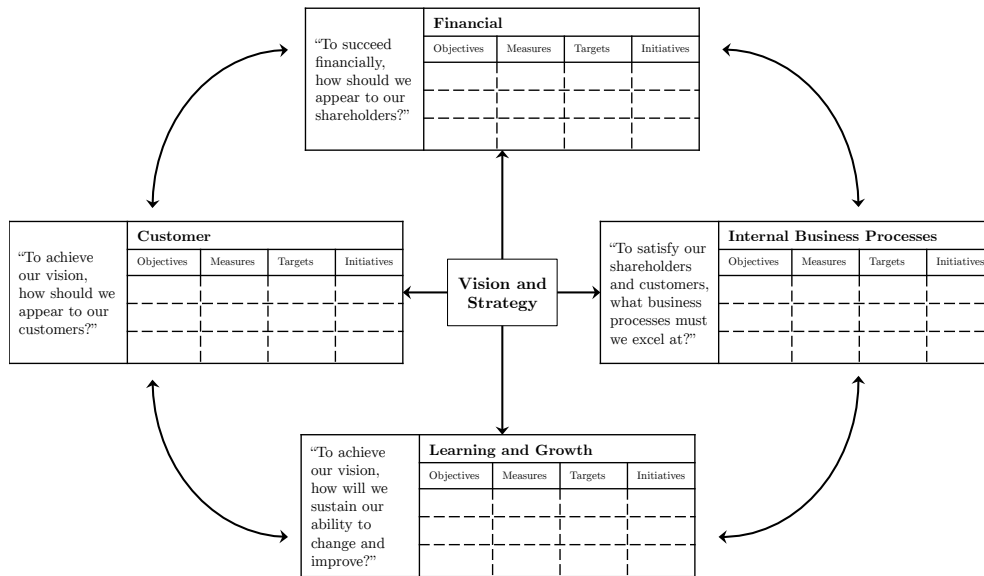
To guide the construction of performance metrics this thesis will utilise the balanced scorecard framework introduced by Kaplan and Norton in the early 90's. The metric is used extensively in the business world and the different perspectives of the scorecard will help the formation of comprehensive metrics for the evaluation of the curriculum reform project at the Faculty of Medicine at the University of Helsinki. The framework and its use is explained in the following sections.

3.1 Measures that drive performance

In the spring of 1992 Kaplan and Norton published their article on the balanced scorecard framework for measuring company performance [33]. According to the article performance measurement had for far too long focused on developing a single measure that would tell the managers how the business is performing, often through some financial measure like return on investment (ROI) or an operational indicator like cycle times. Kaplan's and Norton's response was to develop a balanced set of measures that would give a fast but comprehensive view of the state of the business.

The framework consists of four perspectives: the financial perspective, the customer perspective, the internal business perspective, and the innovation

Figure 3.1: The Balanced Scorecard: The four perspectives [34]



and learning perspective, portrayed in Figure 3.1. While giving a comprehensive overview of the business, the authors also note that the framework will prevent information overload by limiting the number of used metrics and focusing on the most relevant. A balanced overall view is needed to prevent micro-optimisation of single goals, to prevent improving the measures in one area with the cost of another.

The customer perspective should translate general mission statements regarding the customer to measures that reflect what the customers truly value. With the customer measures it is important to make them from the customers' point of view, not the organisation's point of view [33]. For example the definition of an on-time delivery is dependent on the customer's needs and expectations; some customers might be satisfied with a delivery being one or two days late and for an other anything but truly on time is unacceptable.

The customer measures must then be translated into internal process measures that state what the company must do to meet the customers' ex-

pectations. Kaplan and Norton emphasize that the internal process measures should be such that an individual employee can affect them. This way the overall corporate goals are translated to targets for everyday actions that will contribute to the organisation's success and mission.

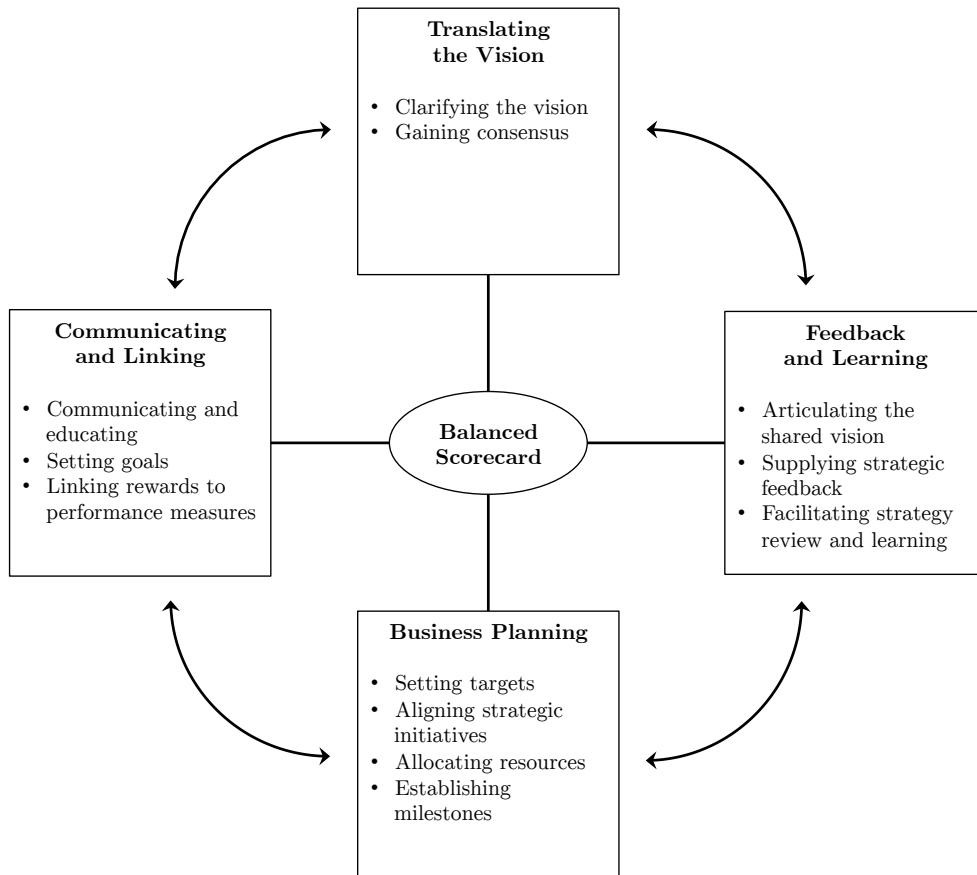
The financial perspective is what ties the customer and internal processes goals together. If improvements in internal processes are not reflected in the financial measures, it indicates that achieved potential has not been acted upon. For example improving capacity utilisation frees up capacity that should either be put to new use or gotten rid of or else the work put into improvement is wasted. The learning and innovation perspective is a forward looking perspective that is concerned with building the capacities the company needs to keep excelling in the future.

3.2 From performance measures to strategic management system

At first the balanced scorecard was meant to be just a system for measuring performance, but has since developed into a system to implement and communicate strategy. Simons [51] defined management control systems thus: "the formal, information-based routines and procedures used by managers to maintain or alter patterns in organizational activities". These systems are used in situations of change to formalise beliefs and the boundaries for acceptable strategic behavior, and to define and measure performance, thereby encouraging an ongoing discussion about the strategy.

This development into a strategic management system was noted by the original inventors Kaplan and Norton in 1996 [34], as they noted that the traditional way of managing with short-term financial measures left a gap between the development of strategy and the implementation of it. Using the balanced scorecard method allowed managers to link long-term goals to short-term actions by looking at the four perspectives and linking them together.

Figure 3.2: Managing Strategy: Four processes [34]



Building a balanced scorecard requires the four processes pictured in Figure 3.2: translating the vision, communicating and linking, business planning, and feedback and learning [34]. According to the authors these processes are key to successful strategy implementation. Translating the vision means translating the broad visionary statements into understandable and operational terms to guide the action in every day operations. Communicating and linking is ensuring that the vision is shared by all levels and departments of the organisation and that the goals of departments and individuals are aligned with the overall strategy. Kaplan and Norton observe that business planning is often a separate process from strategic mission for-

mation which eventually leads to the strategy sitting in a desk drawer and the everyday operations being independent of the strategic vision. The authors argue that the very process of creating a balanced scorecard will help bridge this divide as the measurements must be both tied to the strategy and be actionable.

The fourth process is perhaps the most relevant to this study. One manager quoted in the article [34] said: “With the balanced scorecard I can continually test my strategy.” This is to say, the balanced scorecard should give managers feedback on whether or not the strategy is working, and if not then why it is not. Kaplan and Norton identify this as double-loop learning - learning that changes peoples’ assumptions about cause-and-effect relationships, which single perspective measurements are not capable of as they do not show the interaction of actions taken in multiple areas.

3.3 Strategy Maps

To help organisations implement and a manage strategy, they need tools to help them communicate their strategy and the processes and systems vital to the strategy [35]. A such tool developed by Kaplan and Norton is the strategy map which is a visual representation of the critical objectives and the relationships among them, showing the cause and effect links by which improvements in one area lead to favourable outcomes in another. The key idea behind a strategy map is the realisation that the value of an intangible asset must be considered together with the organisation process that will eventually benefit from this asset and transform it into financial and customer outcomes. The final value arises not from individual assets but from the collection of assets and the strategy that links them together [35].

Building a strategy map should be conducted in a top-down order with the overall destination at the top and the routes that will lead to this destination charted below. Companies often place the financial perspective from

the balanced scorecard at the top with the aim of improving shareholder value being the most important one. Kaplan and Norton note, however, that government and non-profit organisations often have the customers or constituents at the top instead of the finances [35].

The second level then is the customer value proposition, which describes how the company will distinguish itself from competitors to attract and retains the target customers. The value proposition is the step that connects a company's internal processes with the financial outcomes of customer interaction [35].

Next comes the internal process perspective, which defines the means through which the customer value proposition will be met and the improvements needed to reach the financial targets. At the bottom of the map lies the foundation of the strategy, the learning and growth perspective. Here the competencies and skills, technologies, and attitudes needed to support the strategy are defined.

The benefits argued by Kaplan and Norton arise from the sequential and systematic way the map is constructed. During the visualisation process gaps in the strategy will be revealed, after which they can be tackled. By establishing the cause-and-effect links between the strategy and the uncertain outcome of it, the hypotheses behind the strategy can be tested and corrective actions taken.

Chapter 4

Case background

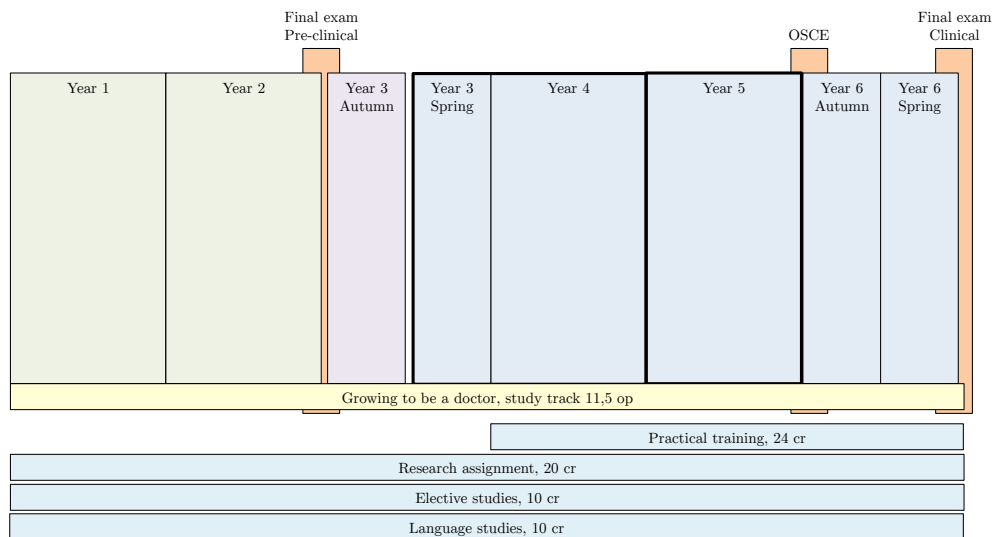
4.1 Description of the Faculty of Medicine

This case study focuses on the teaching of medicine in the Faculty of Medicine at the University of Helsinki. The undergraduate programme in medicine provides students the qualifications to legally work as a physician in Finland. In support of this function, the degree provides students with the knowledge and capabilities to seek, critically assess and correctly apply scientific information to enable life-long learning. Graduates from the school of medicine are also qualified to work as teachers or researchers in expert positions of the field. In addition to the Licentiate of Medicine degree that is discussed here, the faculty also offers the degrees of Licentiate of Dentistry and a Master of Science in the field of Translational Medicine. These two degrees are taught as separate entities in the Faculty and will not be further discussed. When referring to the Faculty of Medicine in this thesis, it is to be understood to mean only the education of medicine, leaving out the education in dentistry and translational medicine.

4.1.1 Current structure and content of the studies

The scope of the degree programme is 360 credits, and is planned to be completed in six years. The 360 consists of medical studies, 10 credits of language studies, 20 credits from a research assignment, 24 credits from mandatory practical training, two credits from teacher tutoring, and 10 credits are elective studies which can include courses from any area of study. The degree is organised into three consecutive phases: the pre-clinical phase, the clinical-theoretical phase, and the clinical phase. The first two years are dedicated to the teaching of the basic science of medicine, the so called pre-clinical years. After these two years there is one semester of clinical-theoretical medicine, and the remaining three and a half years make up the clinical phase dedicated to the teaching of clinical subject studies, advanced studies, and practical training. The structure of the studies is presented in figure 4.1.

Figure 4.1: Structure of the studies



The pre-clinical years and the clinical-theoretical semester are organised according to a predetermined schedule. Some variation in individual study

courses comes from the the scheduling of the elective and language studies that are recommended to be completed at the beginning of the studies. The clinical studies are organised as so called block studies, where the students are divided into three groups that attend the different study blocks at different times. The blocks are organised around a medical topic like the abdomen, neurology and neurosurgery. The blocks of the third and the fourth year alternate and the blocks within the fifth year alternate. The sixth year does not include as many courses so students can focus on finishing their research assignments and completing their practical training.

Students are required to do four months of mandatory training, with at least one month of surgical and internal medicine training each, one month of primary health care at a community health centre, and the remaining month can be spent at any preferred specialty. The mandatory month at a community health care is a relatively new requirement, and students who began their studies before 2012 have two months without a dictated specialty. During these training periods students should have the possibility of applying the knowledge learnt in the classroom in hands-on situations and they should learn the day-to-day activities of hospitals and health centres, the roles and responsibilities of different personnel groups, and most importantly learn to perform the basic procedures under supervision. A student can begin training after completing the third year studies.

The education at the medical school is undertaken as a collaboration of four departments: the Institute of Biomedicine educating students in the disciplines of anatomy, physiology, pharmacology, and biochemistry and developmental biology; the Hjelt-Institute, responsible of the teaching of forensic medicine and public health and occupational health; the Institute of Clinical Medicine, and the Haartman Institute, an Institute of Clinical-Theoretical medicine.

4.2 Drivers for curriculum reform

In 1994 the Faculty of Medicine at the University of Helsinki began a project to reform the undergraduate medical curriculum, the Helsinki 2000 curriculum which is the basis of the curriculum currently in use. In autumn 2011 the Faculty felt the need to once again begin a reform process to tackle the challenges faced by medical education and seize the opportunities presented. The drivers behind the curriculum reform were many and for the large part shared with medical schools world wide; the aging population and the shift to ambulatory care was changing the challenges met by physicians and increasing the demand for general practitioners, and new theories and best practises of medical education were changing the international standards of medical education. The old curriculum was both overloaded with information not catering to the needs of modern society as well as lacking in some critical components to educate students in all the roles of a modern day physician.

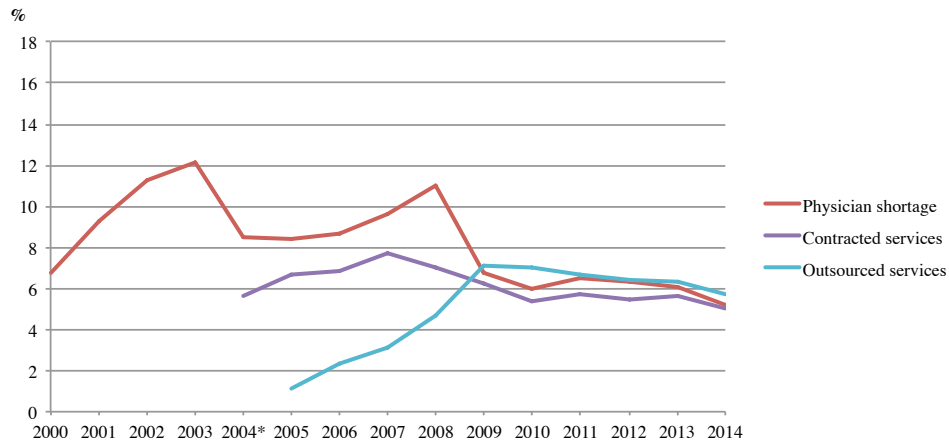
4.2.1 Physician shortage in primary health care

Health care in Finland is largely publicly funded and municipalities are required to provide health services, either through their own production in health centers or by outsourcing these services to private providers. Primary health care is also available on the private market, and employers often provide ambulatory health care to their employees through the mandatory occupational health care. Primary health care is said to be the cornerstone of Finnish health care as it is the first point of contact for patients, by referring patients to specialised medical care when needed and by providing the long-term care needed [39].

To ensure high-quality health care and patient safety, a sufficient number of general practitioners (GP) are needed. According to an annual study conducted by the Finnish Medical Association, the Finnish health centres experienced a 5.2 % physician shortage, meaning that 5.2 % of physician posts were unfulfilled in 2014, see Figure 4.2. The shortage varies between

municipalities; almost a hundred of the health centres (60 %) had no unfilled positions, while the health care district of Kainuu experienced a shortage of over 20 %, the district of Vaasa a 17 % shortage, and in the district of Satakunta the shortage got worse for the second year in a row being at 17 % in October 2014. At the same time, a third of the centers report that even if all positions were filled the number of positions is too low to fulfill the needs of the population. The reported need for new vacancies is 150 [49].

Figure 4.2: Physician shortage, contracted services and outsourcing, percentage of physicians' posts, 2000 to 2014



Source: Finnish Medical Association, Physicians in Finland 2014 [10]

As can be seen from Figure 4.2, the high shortage of 2006 to 2008 has been tackled and currently the physician shortage situation is not alarming. Municipal health centers have taken several steps to increase the attractiveness of the work. These measures include increasing the salaries, outsourcing some of the work, and increasing the support offered to new GPs. In addition, foreign physicians have been recruited to overcome the challenges of employing native physicians.

To understand the past crisis and help prevent a future one, a recent doctor's thesis looked into the psychosocial well-being and future career plans

of GPs and their drivers [39]. The most important psychosocial drivers contributing to the erosion of self-rated well-being of GPs were found to be the demands of the job and patient-related stress. The rise of occupational health care and the private sector since the 1990s has most likely had a major impact on the patient body presented at public health centers. Occupational health care is only available to the employed and private services are often out of reach for patients in lower-income groups, thus leaving the unemployed, the elderly, and families with children to rely on public health care. These patients are of all age-groups and require a wide range of services from preventive health care to the management of chronic illnesses, making the work of a public GP demanding and stressful [39]. Worth mentioning is also the perceived unattractiveness of primary health care among health professionals and society alike, even the managers at health centres do not perceive their organisation as attractive [40].

Although many of the reasons for physicians not wanting to stay in primary health care can most efficiently be addressed by tackling the issues in the health care system and the workplaces themselves, focusing on the undergraduate studies can also help address the issue. Attitudes and the knowledge and skills taught at medical faculties will affect how graduates perceive primary health care. Medical education is sometimes criticised of being too focused on hospital-based care with the expense of primary health care [32].

According to interviews medical students feel inadequately prepared for work in primary health care. The problem lies in both the content of the undergraduate medical curriculum and the health centres themselves. The health issues that primary care is most burdened with form only a minor part of the undergraduate studies - patients in primary care often have multiple health problems whereas the studies often focus on one single issue at a time. What makes the situation worse is the lack of supervision and help available for junior doctors at busy health centres. It is a vicious cycle at the moment; there are not enough general practitioners so nobody has the time to mentor

and guide junior doctors, and due to the lack of available guidance few junior doctors want to enter this hectic world of public primary health care.

4.2.2 Increasing student intake

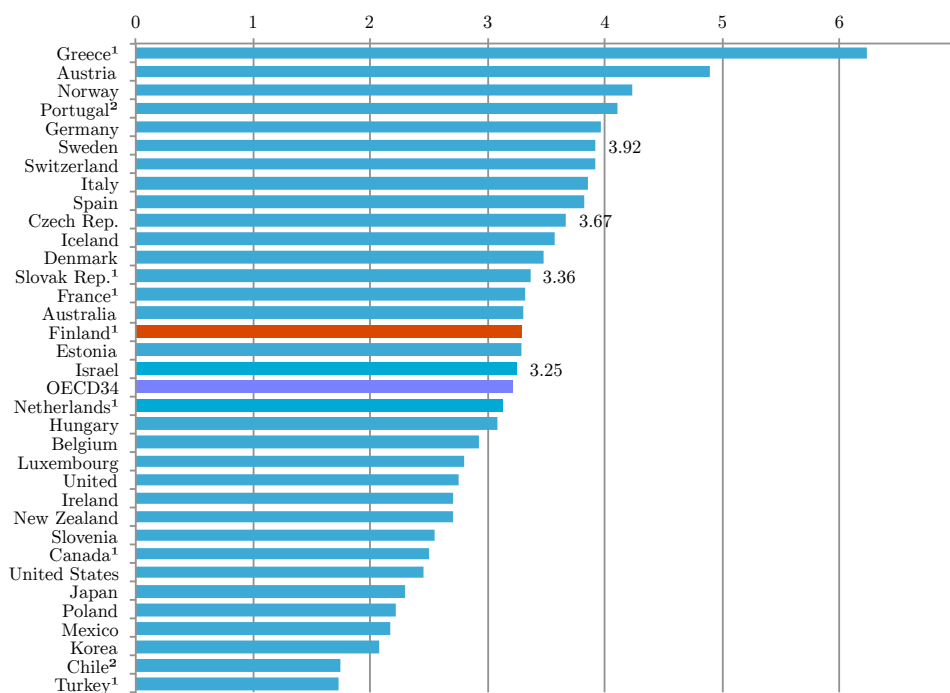
Another impact of the 2008 physicians shortage crisis are the rising intakes of Finnish medical schools. The most recent increase mandated by the Ministry of Culture and Education was negotiated in 2013, when it was agreed that the medical schools will increase their intake by 152 by the year 2016. Currently 120 students per year begin their studies towards the Licentiate of Medicine at the Faculty of Medicine in University of Helsinki, and this number will rise to 150 in 2015. This means the Faculty will have to increase its efficiency by 25%, as they will have to train 30 additional students per year with roughly the same resources. The other medical schools agreed to the following increases: University of Turku 120 to 150 (25 %); University of Tampere 105 to 145 (38 %); University of Eastern Finland 130 to 160 (23 %); University of Oulu 124 to 146 (18 %).

With this increased strain on their resources looming ahead the Faculty needs to improve their resource utilisation, or the quality of teaching could suffer. Efficiency could be sought from new teaching and learning methods, evaluating the content of the curriculum and eliminating overlapping content, and by searching for and utilising potential synergies between subjects.

In 2015 the Finnish universities will welcome 750 new medical students to their programmes whereas in Sweden the yearly intake is 1500 new students [9]. Compared to the roughly 9.7 million population of Sweden this translates to 155 new medical students per a million inhabitants, and for Finland with its 5.5 million population the number is 136 new students per one million inhabitants. The number of practicing physicians in Finland is at level with the international average, as can be seen from Figure 4.3. However, the number of physicians per population in Finland is the lowest of all the Nordic countries. It could therefore be argued that there is a need to train more physicians to reach the Nordic standard of health care, but whether this

standard is reasonable or not is another matter.

Figure 4.3: Practising physicians per 1 000 population, 2012 (or nearest year)



1. Data refer to professionally active physicians. They include practising physicians plus other physicians working in the health sector as managers, educators, researchers, etc. (adding another 5-10 % of doctors). 2. Data refer to all physicians who are licensed to practice. Source: OECD Health Statistics 2014 [3]

4.3 Aims of the reform

The mission of universities stated in the Universities Act is to:

...promote free research and academic and artistic education, to provide higher education based on research, and to educate students to serve their country and humanity. In carrying out their mission, the universities must promote lifelong learning, interact with the surrounding society and promote the impact of research findings and artistic activities on society.

From this text it is to be understood that the role of universities is to provide education and promote education for the service of society. The task of the Faculty of Medicine therefore is to train competent physicians, and support research efforts in medicine and health care. The quality of these activities has a direct impact on the quality of health services and well-being of the population in Finland. Since the 1998 curriculum reform that resulted in the Helsinki 2000 curriculum an evaluation of the Faculty was conducted. This evaluation complimented the broadness and high quality of the research conducted at the Faculty and applauded the willingness to pilot and adopt new educational philosophies, like the problem-based learning approach that was widely implemented in the Helsinki 2000 curriculum.

Integration of the studies, however, received both praise and criticism. The combination of several disciplines in the departments was seen as fostering beneficial horizontal integration, the simultaneous teaching of multiple disciplines and cross disciplinary learning. However, the departments themselves and the division of the curriculum into three distinct phases contributes to a lack of vertical integration. When the phases are separately developed and executed, possible synergies between the contents of the different phases are overlooked. With vertical integration, theory could be put into practice and be related to ethical and societal discussion immediately, instead of having to possibly wait several years for the practical implementation.

A clear philosophy about learning and teaching was also lacking at the time of the evaluation. Helsinki 2000 curriculum was a shift towards problem based learning in some areas in order to promote student-centred learning over teacher-centred learning. However, the learning method of was not adopted everywhere and the result was a hybrid-model without clear reasons for having one method of teaching in one place and another elsewhere. The report suggested that due to the lack of an explicit philosophy individuals and departments that did not favour the reform and the problem based learning methods could continue with their accustomed practises. Opportunities are lost and the aim of student-centredness has not been achieved as new teaching

methods are not adopted where there would be a good fit with the learning objectives and the content if teacher prefers to hold on to old, tried and tested methods.

Based on this evaluation and the reformers' experiences in the organisation one of the goals for the project is to *streamline and integrate the curriculum*. By streamlining the curriculum and the organisation the Faculty believes the program as a whole can be better managed. This aim ties in with another goal, namely the challenge of being able to educate 150 students instead of the former 120 without resource increases, meaning the need to increase resource utilisation by 25 %. With increased visibility synergies between different teaching events and course contents can be identified and harnessed, overlapping content eliminated, and contrasting objectives harmonised.

Goals focusing on filling the needs of society - the customer of education - have also been identified. The first of these is an emphasised focus on *primary health care*. This goal has partly risen due to the 2008 severe physician shortage in primary health care, but it is also, and perhaps more importantly so, an issue of educational quality. In the Physician 2008 [30] report the students at the Helsinki medical school in particular were unsatisfied with the quality of health centre education and instruction they received. This issue still exists, according to a survey conducted in September 2013 less than half of the sixth year students in Helsinki worked at a health centre when in the other medical schools nearly 80 % of students worked in a health centre during the summer [6]. The goal is focused on the content and the process of the program, in order for the graduates to feel more comfortable in the field of primary health care by having the needed knowledge and capabilities to face the health challenges they will encounter at a community health centre.

Being a good physician is not only about being a good clinician with the ability to implement medical knowledge. The work also requires being a good team member in the cross-professional teams of the modern health care network. As the IPEC report on Core competencies for interprofessional

collaborative practice (2011) [47] states:

It is clear that *how* care is delivered is as important as *what* care is delivered. Developing effective teams and redesigned systems is critical to achieving care that is patient-centred, safer, timelier, and more effective, efficient, and equitable [44]. Equipping a workforce with new skills and ‘new ways of relating to patients and each other’ [44] demands both retaining of the current health professions workforce and interprofessional learning approaches for preparing future health care practitioners.

Teamwork requires a multitude of competencies and skills, including communication and leadership skills. Thus, the project has set as one of its goals the *improvement of leadership competencies of students*.

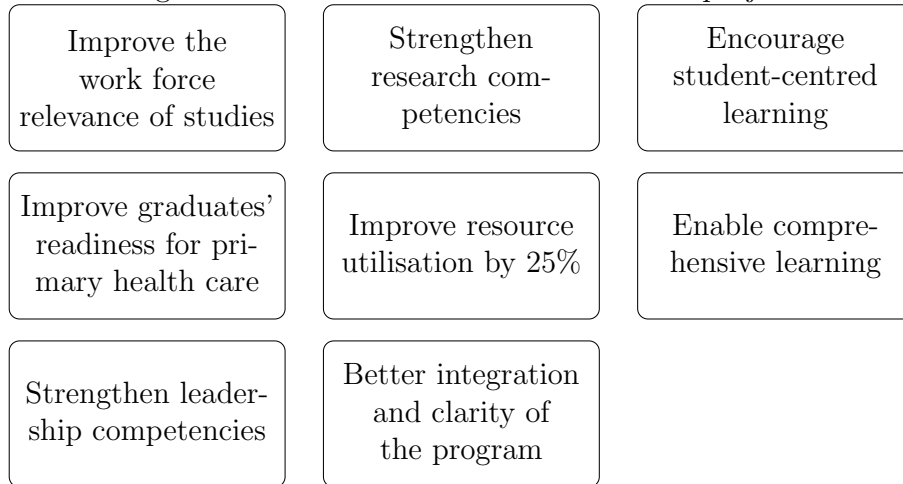
As stated in the law cited above research is an important part of the mission of Finnish universities. The Faculty of Medicine at the University of Helsinki has long been identified as having the most emphasis on research of the Finnish medical schools. However, the faculty feels that the track for *teaching of scientific research methods and ethics* is not there to the extent it needs to be. The basics of scientific thinking, the guidance to and for research, doing research, and the introduction and contact students have to the research groups and functions is lacking.

The goals for the curriculum reform project are summarised in Figure 4.4.

4.3.1 Discussion of the stated goals

The stated goals are not independent but co-dependent one goal contributing to the achievement of the other. For example, it is an easy connection to make, to state that strengthening the leadership competencies of junior doctors contributes to the work force relevance of the studies. The goals can be mapped in the spirit of a strategy map - a tool used to visualise and communicate the strategy of an organisation [35].

Figure 4.4: Goals of the curriculum reform project



The most important goal for the project and for the Faculty of Medicine is the improvement of work force relevance. Meeting this requirement means fulfilling the mission of higher education to serve their country and humanity and the Flexnerian requirement for medical education especially to serve the society and its needs. In contrast to business settings the ultimate goal of the organisation is not financial success for the satisfaction of the stakeholders, but satisfying the stakeholders - the society and the health care system - by educating capable physicians and researchers. On the same level is the goal to increase resource efficiency by 25 %. The rationale for this goal to be placed high up as one of the goals relating to stakeholder management is the fact that the pressure to increase student intake is external, mandated by the Ministry of Education and Culture the biggest financier and stakeholder of the university.

The next tier consists of goals focused on student learning. The improvement of graduates' primary health care competencies contributes directly to the work force relevance goal, as it is derived from the fact that too few physicians specialise in primary health care leaving that area underserved. The goals to further develop the leadership and team working skills and the research competencies of the students is also clearly linked to the needs of

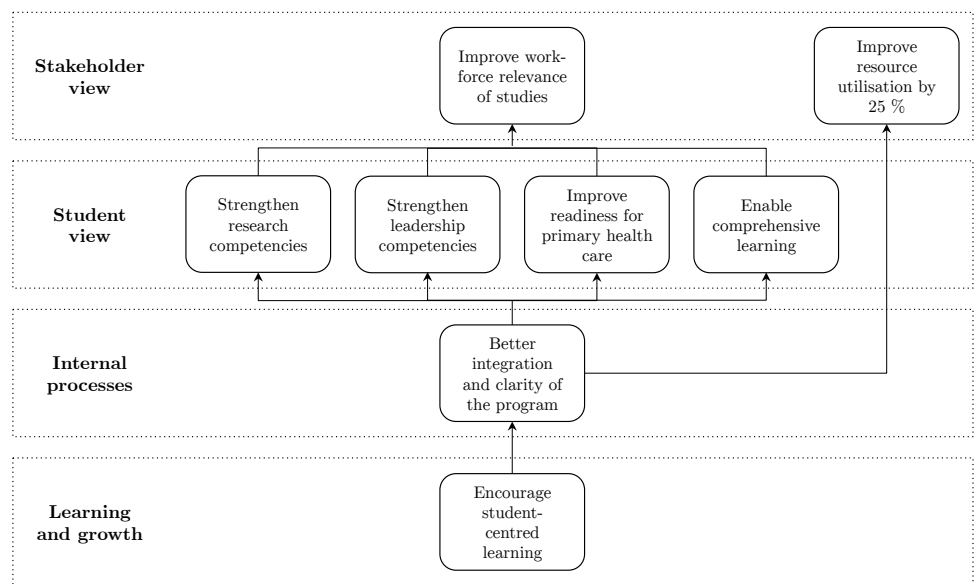
society. No physician works alone but relies on and is relied on by other professionals in the health care sector. This dependence requires the skills to be an active member of a multi-professional team. The link from improving research competencies to meeting the demands of the work force might not be as clear. Universities have the mission to promote free research, to which this goal clearly contributes, but research competencies are not only needed in research work. Clinicians in their line of work must be able to constantly look for, critically assess, and combine new and old knowledge, in other words, do research.

Enabling comprehensive learning is the aim to move away from the model, where students learn knowledge by heart without understanding the bigger picture or making connections between separate bits of knowledge. This ties in with the needs of work as making these connections will enable the comprehensive understanding of medicine and the human body needed by a physician.

To achieve all these student learning goals one must focus on the content of the curriculum and also on the learning environment, the next two tiers of the map. Creating a streamlined curriculum where knowledge and competencies are built on previous experiences will enhance the students' understanding of the bigger picture, not just learning by heart snippets of information. Modifying the program will also help strengthen the development of leadership and teamwork skills if the learning track is made explicit and it is ensured that these necessary skills are indeed part of the curriculum. The same goes for research competencies, that will benefit from a clear learning track.

Streamlining the curricular content also presents the possibility to increase resource utilisation. By first identifying overlapping or redundant content and possible synergies between courses, and then acting upon these weaknesses and opportunities, the faculty can ensure that resources are not wasted. The goal to encourage a student-centred learning culture contributes to the streamlining of the curriculum. By focusing on what the students need

Figure 4.5: Relationship between goals of the curriculum reform project



to learn instead of what the teachers want to teach, turf wars between courses can be set aside and the curriculum as a whole can be made the focus of everyone.

Chapter 5

Constructing the measures

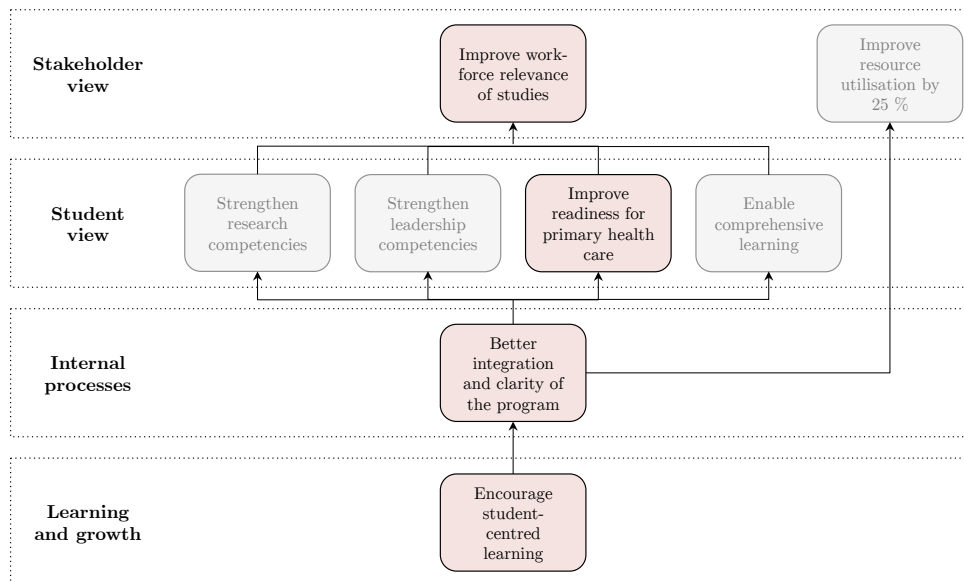
To assess the success of a project one needs feasible and reliable measurements that correspond to the stated goals for the project. In an evaluation of 104 information technology projects in higher education in Australia Alexander [11] found that in almost 90 % of the projects improving student learning outcomes was one of the intended outcomes of the project, but only one third of these projects were able to report this as an actual outcome. The review of the evaluation methods used in these project revealed a strong focus on student reaction to these various projects, rather than a focus on methods that would have measured the project's contribution to student learning outcomes.

The various goals of the Helsinki curriculum reform project require different evaluation methods. In accordance with the wishes of the customer this thesis will focus on the goal to improve the graduates' readiness to work in primary health care and the relevant other goals that contribute to this goal, highlighted in Figure 5.1.

5.1 Planned curriculum changes

The broad outlines of the curriculum change have already been mapped out, although the details of some of these changes are still under discussion. This

Figure 5.1: Goals relating to increased focus on primary health care



section will present these planned changes and link them to the stated goals.

One of the main initiatives in the curriculum planning process has been the *definition of the competencies* a graduate of the Faculty of Medicine should possess. The definition of these competencies forms the basis for the new curriculum. The competencies were formed using the Canadian Medical Education Directives for Specialists (CanMEDS) and the Tomorrow's Doctors frameworks as guides. The competencies agreed upon are the following:

1. Clinician competencies: knowledge, skills and attitudes
2. Research competencies
3. Communication skills
4. Professionalism and ethics
5. Collaboration and leadership skills
6. Health advocacy

7. Lifelong learning

Competency-based education has been around since the 1970s but has caught wide international interest since the 1990s. The competency-based educational movement is a wish to certify doctors not based on the input but rather based on the outcome of the process. By defining these concepts at the beginning of a design process the learning environments and the content of the curriculum can be designed so that they enable the students to develop the desired competencies and skills.

In the very beginning of the curriculum reform project the project group also initiated an update of the collection of learning goals for all courses. The collection of learning goals is a detailed three tiered list hierarchically listing the skills and knowledge students should possess after completing each course. The first tier expresses the things a student should actively master, the so called core curriculum. The second tier is composed of things the student should know the basic principles and mechanisms of, and the information where to revise this knowledge should it be needed. The last tier is about having the awareness and understanding of phenomena, of which the student should have the capacity to learn more after the course. The collection of learning goals should be handed to all students at the beginning of their studies to help guide their studies from the beginning. This information should also guide the teaching staff: as many courses are taught in smaller groups and by different teachers in different locations the learning goals should be reflected in each study session regardless of location and participants.

The updated collection was used to assess the structure of the curriculum: whether there were overlapping learning goals, was the curriculum proceeding in a way to support constructive linear learning, and where there might be possibilities for restructuring. The definition of core content and the awareness of this content allows control over what is being covered in the different sections of the curriculum.

A major initiative in developing the content of the curriculum is an anal-

ysis of Finnish health centre visit data collected from several health centres actively focusing on collecting the diagnoses and the ambulatory diagnosis-related groups (DRG) of each visit and contact. DRG is a system to classify cases based on their diagnosis and treatment processes into groups that describe the ‘products’ of health care. The case-mix of the visits was contrasted with the distribution of credits at the Helsinki medical school. The findings of the study highlight several discrepancies between what is studied and what physicians face in their work at community health centres. For example, the need for knowledge of psychiatry and physiatry is growing fast and the teaching of especially physical medicine and rehabilitation needs more resources and time.

These analyses and guidelines form the basis for the content update of the new curriculum. Combined with feedback from students and faculty some courses are to be integrated and some will be moved to another place in the learning course to improve the vertical integration of the curriculum. One major decision aiming for better management and integration of the curriculum is the integration of the five existing departments into one single unit. The departments have until now been independently responsible for the different phases of the curriculum - the pre-clinical, clinical-theoretical, and clinical phases - so simultaneously with the departments the formal division into these phases will also be eliminated.

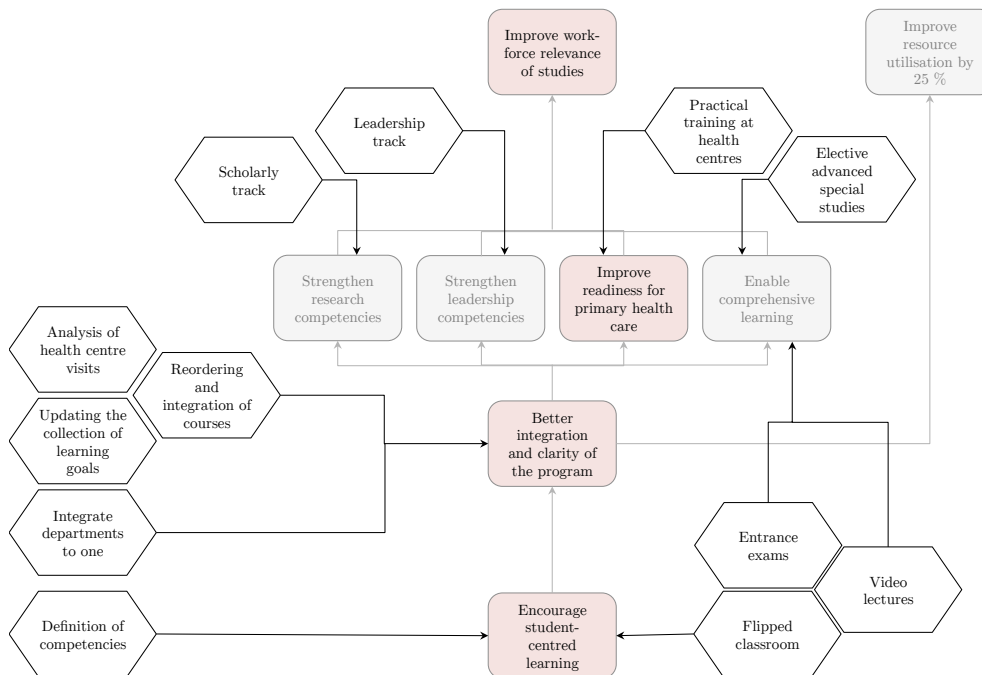
Not directly part of the curriculum reform process but closely related to it was a project with a focus on improving the mandatory practical training at hospitals and health centres. This separate work group decided two years ago to include one month of mandatory training in primary health care into the training mix, thereby changing the composition of the training to one month surgical, one month internal, one month of primary health care at a community health centre, leaving one month at any preferred specialty.

Other changes that are not directly linked to improving graduates’ willingness to become general practitioners have also been planned. To assist in the development of research skills the Faculty has decided to formulate a

clear scholarly track into the curriculum that will highlight the skills needed for conducting good quality research. A similar track will also be formulated for learning leadership and co-operation skills. These tracks are mostly formulated of already existing courses, but the links to the learning goals will be emphasized and made clear.

To activate students in the learning process and to enable comprehensive learning the Faculty will reserve four weeks each semester for elective advanced special study courses. In addition some changes to the teaching methods are planned: preliminary exams will be more widely adopted, flipped classroom learning is added to the repertoire, and most lectures are to be filmed and made available online. An open discussion on which methods are best suited for each course and its learning outcomes is encouraged.

Figure 5.2: The relation between actions and goals



The actions to be taken and the relevant goals they are related to are summarized in Figure 5.2 below. As is evident some of the goals are be-

ing addressed through multiple actions, either directly or indirectly. The upper stakeholder level goals are notably not directly addressed. However, the goal to improve the work life relevance has many related goals that are being addressed, and this goal is thus very thoroughly dealt with. The goal to increase resource utilisation is, however, somewhat neglected. Some of the changes to streamline and integrate the curriculum will likely result in efficiency improvement, but considering the pressing nature of the issue the focus on this goal and the challenges that created it has been very minimal.

5.2 Current feedback and assessment tools

The Faculty of Medicine utilises many different feedback tools to assess their own performance, some of these tools measuring student satisfaction with the study program as a whole and some are used to give feedback on individual courses. The next paragraphs go through the various feedback and assessment tools currently in place at the Faculty.

The Ministry of Education and Culture has decreed that from 2015 onwards 3 %, roughly 50 Meur, of the basic funding of Finnish universities will be distributed based on student feedback [7]. The feedback is collected from students having completed their Bachelor's degree, and the questionnaire is identical for all universities and their students. For programs that do not have a Bachelor's degree, such as medical education, the survey is sent to students who have been studying for approximately three years. The system aims to reflect on the performance of the university, with regards to their ability to support students in excelling in their studies.

The resulting Finnish Bachelor's Graduate Survey was piloted in spring 2013 and has since been collected twice a year. The survey includes questions relating to facts about the student (family background, financial situation, etc.), the opinions of the student about the university's offering and aspects of studying, and questions relating to the student's attitudes towards her studies. Most of the questions are multiple choice questions, often utilising

the Likert scale to answer the extent the student identifies with the statement. The questionnaire for the spring of 2014 are included in Appendix B.

A similar survey to the Finnish Bachelor's Graduate Surveys is the Learn-questionnaire conducted by the University of Helsinki. Students are required to answer the survey three times during their studies; on their first year of studies, at the end of their Bachelor's studies, and after graduation. The survey serves the students on an individual level, the different faculties independently, and the university as a whole. Students can follow their development through the course of their studies and map their answers in relation to other students. The faculties get feedback from their students and can use the answers to develop their teaching and study support systems. After a student has filled in the questionnaire the system imports the study progress and success of the student from the separate Oodi database, and given permission imports all the data into a research database.

To give feedback on individual courses students can use the Oodi database, which is also used for course registration and study records. The course staff can themselves construct a questionnaire, so the content varies from course to course. The problem, however, is the low percentage of students giving feedback, on average only 30 % of students attending a given course will give feedback. With such low feedback rates it is difficult to utilise the feedback to improve their course arrangements and content.

The Faculty of Medicine also has a feedback system called Amanuenssin kirja, the book of the junior house officer, the student and her instructor fill out during the mandatory practical training. The student defines the learning goals for herself, assesses how well these goals were achieved, and reflects on her learning during the training. The instructor then gives his assessment on the student's learning, in fields such as diagnostic skills, practical skills, writing of patient records, patient interaction, and interaction with the work community. The work community also gives feedback to the student and receives feedback from the student. The questions have both a numerical answer on how well the student or the community performed, as well as a

text field for elaboration of the assessment. The book is a valuable source of information on how students interact in real world situations at a place of work but this information has so far been neglected when evaluating the medical education.

Students' knowledge is assessed with course exams and essays. The accumulation of knowledge throughout the studies is assessed with a progress test. A progress test is a longitudinal, feedback oriented test to assess knowledge accumulation and retention throughout the duration of the educational programme. At the Faculty of Medicine the test is organised twice a year for all medical students, comprising of 200 true or false statements. Students are required to participate in at least one progress test each year and in at least eight tests before graduation.

For the evaluation of students' clinical skills and competence in communication, examination and interpretation, they must pass the Objective Structured Clinical Examination (OSCE) at the end of their fifth year of studies. The student has to solve around eight clinical patient cases in roughly one hour forty minutes. The test is rated solely as pass or fail, and does not provide information to help improve the educational programme. The Faculty will also be joining the European Board of Medical Assessors' (EBMA) European Knowledge Test (EKT) this coming spring. The test is similar to the progress test: it consists of 200 multiple choice questions and one of the main aims of the test is to give feedback to the participants in order to enhance their learning. Most importantly the test will lay down common standards for assessing medical knowledge and clinical competence in Europe, giving the young doctors information on their skills compared to their colleagues in the EU and providing the medical school employees with feedback. Students can participate in the test the year before graduation and the year after graduation. The test is still in pilot stage and recruiting more institutions to join.

All the feedback and assessment tools in use are listed in the table 5.1. Considering the goal of the curriculum reform project there currently is a

Feedback systems			
System	Subject	Timing	Method
Kandipalaute	Student	Once after 3rd year of studies	Multiple choice questions
Learn	Students and faculty	Freshman year, after 3rd year of studies and after graduation	Multiple choice questions
Oodi	Student	After each course	Multiple choice and open ended questions
Amanuenssin kirja	Student and instructor	After each practical training period	Multiple choice and open ended questions
Student learning assessment			
System	Subject	Timing	Method
Progress test	Student	Minimum of once a year, at least 8 completed at graduation	Multiple choice questions
Objective Structured Clinical Examination (OSCE)	Student	Spring of the 5th year of studies	Student actions assessed by examiner
European Knowledge Test (EKT)*	Student	Year before and after graduation	Multiple choice questions

Table 5.1: Feedback and assessment tools in use

*EKT will be piloted in the spring 2015, after which a full implementation will follow

lack of feedback received from graduates and their workplaces. The only formal feedback collected from the workplaces is given in the book of the medical intern.

5.3 Translating the goals into measurements

Relevant measures are needed if one wishes to evaluate whether the set goals have been achieved and where there is still potential for improvement. Being able to demonstrate the link between the changes made and the progress achieved will help the dissemination of beneficial innovations. The goals the Faculty wants to achieve and the changes together with the ties to the goals are discussed in the previous sections. This section will discuss how the goals can be measured following the balanced scorecard structure of four perspectives, the focus again being on the goals relating to the readiness to engage in primary health care.

5.3.1 Learning and growth of the organisation

Measuring the student-centricity of faculty is a difficult task, a similar problem to assessing the customer-centricity in business environments. The learning and growth view in balanced scorecards often include *measures of employee satisfaction and qualifications* [36], as it is seen that satisfied employees can focus on internal development and innovation instead of grievances at the work place, a notion also supported by Kaplan and Norton [34]. Measures of faculty qualifications in an educational setting are suggested by [14] [36] [21]. Such measures are for example the ratio of teachers with pedagogic training, professional development expenditures and classes.

On a more student-centric focus one can also monitor the *adoption of student-centric teaching methods*, for example the percentage of courses or classes that utilise the flipped classroom teaching method. One must note here that the target goal for such a metric should not necessarily be 100 % as not all courses benefit from these teaching methods.

5.3.2 Internal processes

The integration and clarification of the curriculum is perhaps the biggest and simultaneously the most ambiguous goal of the reform project. In the planning papers the members of the work group mention a multitude of issues with the current curriculum: the curriculum is made up of multiple parts that do not form a clear whole, and the curriculum as is has evolved to its current state without the direction of unifying learning outcome goals. Attention is also given to management and coordination, which also suffer from a lack of clear direction and unity. To truly measure the integration of the curriculum, these issues need to be quantified to be measured.

The curriculum is composed of several elements when it is understood in a broader sense than just a syllabus consisting of statements of content to be studied. Prideaux (2003) [48] mentions six important elements in a curriculum: content; teaching and learning strategies; assessment process; evaluation process; statements of intent; and context. Bordage and Harris (2011) [19] on the other hand identify five key elements: the competencies to be acquired; the learners; assessment; the conditions for learning; and the socio-politico-cultural context in which the learning occurs. Despite some dissimilarities these two lists of elements are quite similar, the major difference being the omission of the evaluation process in the Bordage and Harris' list.

In addition, a curriculum also has three layers: the planned curriculum, the delivered or the taught curriculum, and finally the experienced curriculum [29] [48]. The planned curriculum, also called the 'fictional curriculum' [24], describes what is designed by the curriculum planners and what the students are assumed to be learning. However, the real curriculum, what is actually taught, might differ from this plan. Then again the students might learn something completely different than what is taught, for example cram for the exams instead of try to understand the subject matter at hand.

For an integrated and aligned curriculum the alignment of both the elements and the three levels mentioned must be considered. The content of the

curriculum must be derived from clear statements of intent, both of which have to take into account the internal and external context [48]. This means teaching the content using appropriate teaching and learning strategies, and assessing the outcomes of the teaching events using assessment methods that support the intent of the curriculum. Based on these ideas the goal to integrate the curriculum can be divided into the integration of the different elements of the curriculum: aligning the content and assessment of the program, consistent methodology chosen based on a shared view of the learning and teaching strategies, and the integration of the content that proceeds in a rational sequential order to support learners' progress. The utilisation of consistent teaching methodology relies on the culture of the institution which is already discussed in measuring student-centricity and will therefore not be discussed here further.

The alignment of the three layers of curriculum from the intended to the tested curriculum might be difficult for the course instructors themselves to objectively assess, for to do so they have to critically assess and question their own mental models. The assessment must therefore be conducted by outsiders not involved in planning the course, the most logical choice being the students themselves. The alignment of a single course's objectives and the learning outcome can be assessed by the students in the *course feedback*, by requesting them to compare the stated learning goals, with the content and finally the assessment methods and questions. Similarly feedback on the overall curriculum alignment can be evaluated through *student feedback* received both during the studies and after graduation.

One quite obvious measure of content integration is the *amount of overlapping core curriculum content*. Each course has predefined and explicit knowledge and skills the student should possess after the completion of the course, the so called core content of the course. As in an integrated curriculum courses should be designed to follow a rational sequential order to facilitate learning where previously learned knowledge and skills serve as the foundation for subsequent learning, overlapping and repeated core content

is teaching the students the same content twice wasting faculty efforts and time.

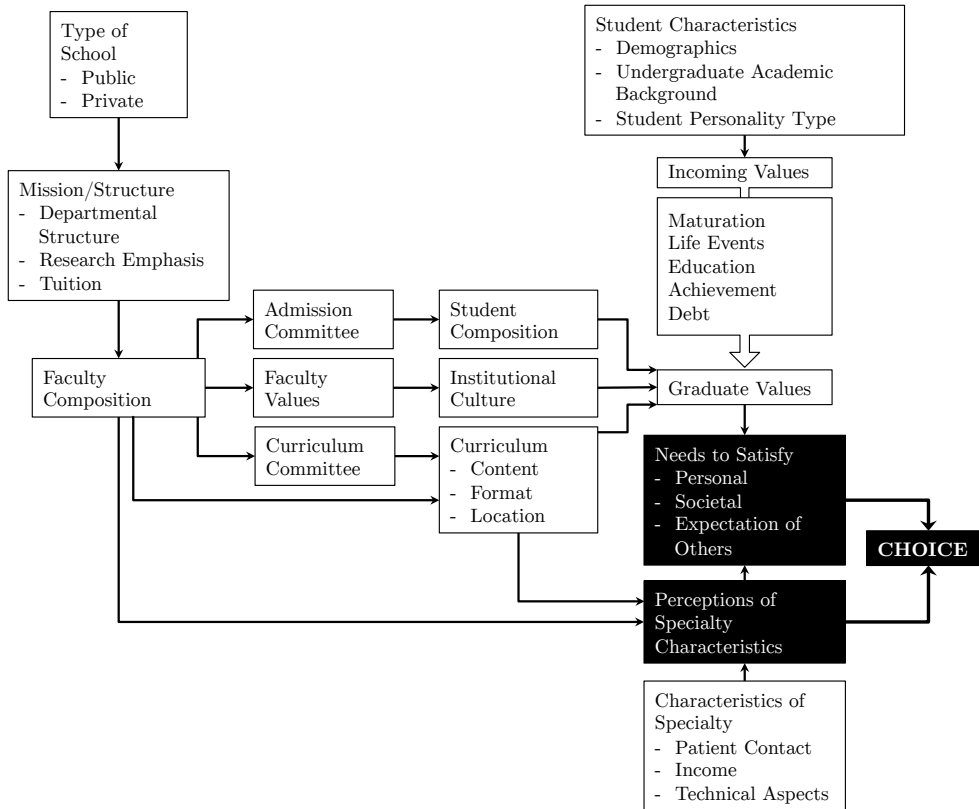
5.3.3 Student view

The student view goals all relate to the identities a licenced physician has. They must be team members and team leaders, researchers, and they must constantly be able to adapt and learn with the advances of medical knowledge and the changing society making life-long learning a necessary skill to possess. A crucial part of the identity of a physician is of course the specialty they choose for their own, a decision based on their experiences during their studies and personal traits and preferences.

Studies on graduates' specialty choice have shown that graduates' orientation to a diversity of patients and activities, and patient interaction [20] [16] are associated with a primary care career path. Bland et al (1995) found in their literature review two curricular experiences associated with an increase in students choosing primary care: a mandatory primary care clerkship and longitudinal primary care experiences. Overall, the more time students spend in primary care settings the more likely they are to choose a primary care pathway. Bland et al (1995) summarized their findings on factors affecting the specialty choice in the a framework shown in Figure 5.3.

As seen in Figure 5.3 the Faculty affects the specialty choice via multiple variables. The important variables to measure are the institutional culture and the curriculum related variables. The University of Helsinki celebrates their 375 anniversary in 2015, and its Faculty of Medicine is one of the oldest medical schools not only in Finland but also world wide. This long history has established a long academic tradition that has nurtured a very hospital centred culture in their teaching - majority of the education is given by specialist doctors and in hospitals, favouring especially the university hospital instead of the regional hospitals. To give a more comprehensive view of the field of medicine, clinical education should be given in regional and university hospitals alike as well as in health centres.

Figure 5.3: Theoretical model of variables that determine medical students' choice of specialities [16]



To evaluate how the students' patient orientation evolves throughout their studies and how the curriculum may relate to the changes, some measure of patient-centredness is recommended. The Patient-Practitioner Orientation Scale (PPOS) is often used in health-communication research to investigate both the care provider's and the care receiver's views regarding patient-centredness [52]. The scale consists of 18 questions that are answered according to a Likert-scale and gives an indication on whether the provider is more patient- or disease-centred, where a high score indicates a more patient-centred attitude. Bell et al [15] used the scale along with a questionnaire to measure how a pilot group of longitudinal clerkship students at Harvard

Medical School compared to traditional clerkship students in their perceptions and attitudes. Students at Helsinki could be asked to fill in the PPOS survey simultaneously with for example the mandatory Progress tests.

A questionnaire of preparedness along the lines of Bell et al [15] should be considered, to give more in depth insight into the factors contributing to the students confidence in patient-care. The questionnaire could be a short survey using a Likert scale inquiring the student's preparedness to practise evidence-based medicine, to understand the social context of illness and the health care system treating the illnesses and helping with different social situations.

As medical schools should educate physicians for both primary health care as well as specialised health care, the *graduates' choice of specialty* should ideally reflect this ambition. The distribution of specialties should of course not be equally distributed as the need for specialists varies.

5.3.4 Stakeholder view

To evaluate the achievement of the stakeholder goals it is vital to get feedback from the stakeholders, who in the case of higher education is the society and the workplaces of the doctors. As already mentioned, the Faculty currently has only a few sources for feedback on their graduates performance and development.

The existing sources of feedback should be used more efficiently and deliberately. The feedback from the students' various practical training periods give valuable feedback during the studies on how well the students are prepared and how well they function in the work life. Feedback at this stage will give grounds for improvements early on in the reform process instead of having to wait for the students to graduate and enter the workforce.

The graduates are currently not asked for feedback by the university. The Finnish medical association, however, has since 1988 conducted a survey every five years among the recently graduated on their experiences in medical education and at work. This survey has many relevant questions regarding

how well the basic medical education prepared the answerer for their current work, inquiring separately the preparation for the tasks of the physician working in a hospital and the preparedness for working at a health centre. In the last report from the survey sent out in 2008 some clear differences between the different Finnish schools can be seen; the schools in Eastern Finland and Tampere fared better than the other three in preparing their graduates for work in primary health care [30]. The Faculty of Medicine at University of Helsinki should aim for high scores not only in preparing their graduates for working in a hospital setting but also for work in a primary care setting.

Objective measures of the quality of the education given are readily available. The progress test scores offer a time-series of the knowledge accumulation of the students, and since the test is already in place there is plenty of data from before the reform is implemented. To get comparisons to the performance of other schools the implementation of the EKT will be beneficial. To test the improvement of or the differences in clinical skills the OSCE test scores are often used [31] [22] [45] [53]. However, in Helsinki the examination is rated merely as passed or failed and therefore can not be used as a measure of skill accumulation. The target level for different test scores should be at least to maintain the current level.

5.3.5 Summary of the suggested measures

The suggested measures to be utilised are collected in the Table 5.3.5. Most of the suggested measures are already in use, but not utilised to their fullest extent.

Perspective	Phenomenon to be measured	Measure	Source
Stakeholder view	Program quality: graduate view	Graduates' rating of preparedness and quality	Finnish medical association's Physician survey
	Program quality: workplace view	Employers' rating of students' preparation	Amanuenssin työkirja
	Intended outcome of education vs actual learning outcomes	Objective test scores on learning matter	Progress test, EKT
Student view	Values acquired by students	Development of students' patient centredness	PPOS
	Professional development	Preparedness for practice	Student questionnaire, Student feedback
	Equality of specialties in institutional culture	Distribution of graduates' specialty choices	Finnish medical association's Physician survey
Internal process view	Stated curriculum vs taught curriculum	Student evaluation of alignment of curriculum	Oodi course feedback
	Resource efficiency	Ratio of overlapping core curriculum content	Core curriculum analysis
	Well-being as a measure of innovation	Faculty and staff satisfaction and well-being	Faculty and staff surveys
Learning and growth	Staff development and quality	Faculty qualification and learning on the job	HR
	Consistency of learning philosophy	Ratio of courses utilising student-centric methods	Course plans

Table 5.2: Summary of suggested measures

Chapter 6

Discussion

The reform of the curriculum has been underway for some time and it will take long before the first graduates of the new curriculum have finished their education and entered the work force. With the basic training lasting for six years the class of 2015, the first class on the new curriculum, will graduate in 2021. The Faculty will have to wait for the final results of the curriculum reform until then, but it is of great importance to monitor the implementation and make adjustments if the initial results of the changes made are not as anticipated.

The current plans for the implementation is to roll out the new curriculum in smaller steps. In 2015 the new class will begin with the new curriculum, and in 2016 the studies of the first to the third and the fifth year are according to the new curriculum and the final transition of the fourth and sixth year will take place in 2017.

The planning process itself has been a long journey and the issues that governed the field in 2011 have evolved and new have arisen. The pressing issue of physician shortage in the health centers has eased and stabilised, the government has mandated the increase of student intake, and major changes in the Finnish health care system are currently being decided upon. Many of the improvements in the new curriculum are timeless such as the move towards student centred learning and the changing role of the medical

practitioner. One might therefore question the focus of primary health care. This, however, is perhaps unnecessary, as the population ages and the care provided is shifting to long term management of chronic illnesses and care of patients with multiple complex diseases [27], the skills and wide knowledge base utilised in primary health care are needed more and more often.

Concerning the metric of graduates' chosen specialty, the changing practices on accepting graduates for postgraduate training will affect which specialties are chosen and by whom. In Finland the postgraduate training of physicians is the responsibility of universities - an extraordinary arrangement on an international level. The coordination of postgraduate training has been lacking as there has been no formal process on how to determine the admissions to different training programs and as a result there are signs of excessive education for certain specialties and a lack of professionals in others [28]. To combat the issue, the governance of specialty training was transferred from the Ministry of Education and Culture to the Ministry of Social Affairs and Health, through whom the majority of funding has thus far been going. A more relevant change is a change in the admission of physicians to the programs. Previously licenced physicians could simply enroll to any specialty program, which however did not guarantee the needed health care positions to complete the program. Henceforth one has to apply to the programs. On which criteria the graduates are admitted to the programs, has yet to be decided.

The basic medical education is only one of many steps taken on the path of becoming a good physician and a life-long learner. The social surroundings, previous schooling and personality traits affect the outcome of the basic medical education, and the work life experiences and postgraduate training are equally important.

Chapter 7

Conclusions

As with the business world the world of education is in constant change. There is of course new knowledge that must constantly be included into the educational content, but most importantly the society the educational institutions are meant to serve is changing. Medical schools must adapt their methods to the emerging roles of the physician. Medicine has for the most part moved away from the acute illnesses of the 20th century to the management of chronic illnesses in the 21st century, with care moving from wards to ambulatory settings. This shift calls for co-operation not only across the medical specialties but also across multiple professions. Team work and leadership skills are of importance when interacting with other health care personnel, but also when working with the patient who, with the advances made in information technology, has almost equal access to the vast amounts of information previously accessible only to physicians and other health care professionals.

However, the main agendas behind medical curriculum reform arise not from the incremental changes in medical knowledge but from the desire to keep up with the most recent developments in the educational field. The medical knowledge of graduates has was not called into question in any of the reviewed articles. More important were the international standards and frameworks for medical education set up by various institutions. These are

nothing new as the well recognised and still often cited Flexner report [25] from 1910 demonstrates. Flexner's report is said to have shaped the medical education as we currently know it [23] and it seems that frameworks broadening the roles of physicians, such as the CanMEDS and Tomorrow's Doctors frameworks, are now leaving their mark on the curricula around the world.

The literature of educational reform currently lacks the evaluation tools to assess the success of a curricular reform. Some parts of the improvements are often piloted in small comparison groups whose success is compared to students outside the pilot [53] [31] but a comprehensive comparison of the outcome to the initial plans is lacking. Based on the change agenda and goals of the curriculum reform project at the Faculty of Medicine, a balanced scorecard for the success measures have been outlined. The measures include the four views outlined in the balanced scorecard framework albeit modified: the financial perspective has been widened to encompass the stakeholders, the client perspective is understood to mean the students, and the internal process perspective and the learning and growth perspective have remained as they are. Many of the suggested measures are either already in place or can very simply be derived from the existing assessment and feedback tools, whereas others must still be implemented.

The project planning phase has been long and some of the issues that drove the planning in the beginning have already found their solution. The new measures should be monitored during the implementation and issues should be addressed early on. With measures in place changes in the future can be planned based on observed issues and with a clear picture of the starting point for reference.

The implementation of the suggested metrics has not been touched upon in this study. However, the implementation is a crucial step and should be begun as soon as possible with the gathering and validation of existing data. Much of the needed data is available, but not all of it is valid. For example the feedback from the workplace on the mandatory training periods is often filled in by someone who is formally in charge of the student's experience but has

no first hand knowledge of the student's performance. There is still time to gather valid comparison data before the new curriculum is fully implemented and thereby correct the gaps in the existing data. It is vital that the quality of the input data is kept up and monitored, otherwise the metrics are not reliable.

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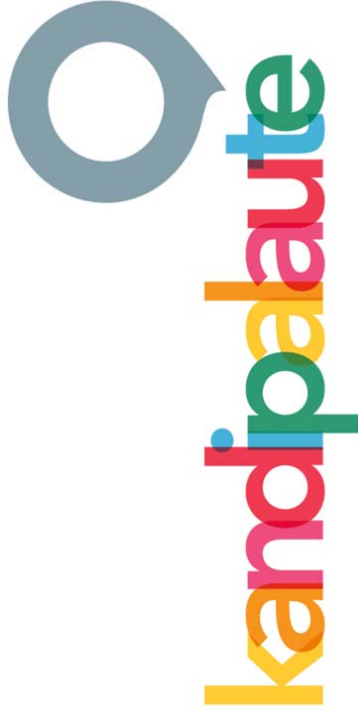
Appendix A

Kandipalaute - questions



Kandipalaute - Kandidatrespons - Finnish Bachelor's Graduate Survey 2014

- Suomi
- Svenska
- English



Dear student

Finnish universities are currently conducting a study known as the Finnish Bachelor's Graduate Survey.

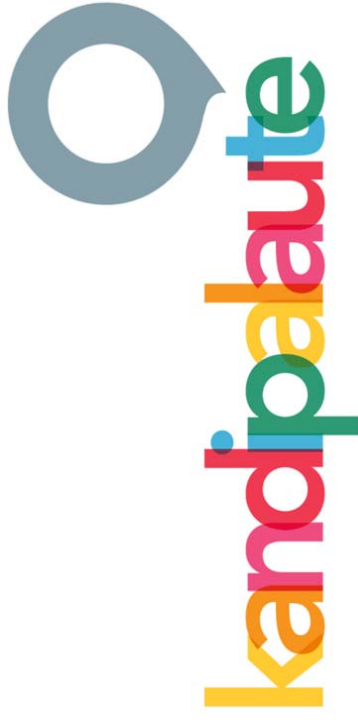
You have received this survey because you completed a Bachelor's degree in the autumn term of 2013.

The survey investigates how you feel your studies progressed and your satisfaction with your university. Many of the questions relate to the three first years of your studies, but some also concern your studies in general and/or your current situation. The final section of the survey allows you to compare your answers with those of another student group. In this survey, your answers will be compared with those obtained in a survey conducted at Finnish universities in autumn 2013.

Completing the survey takes about 20 minutes.

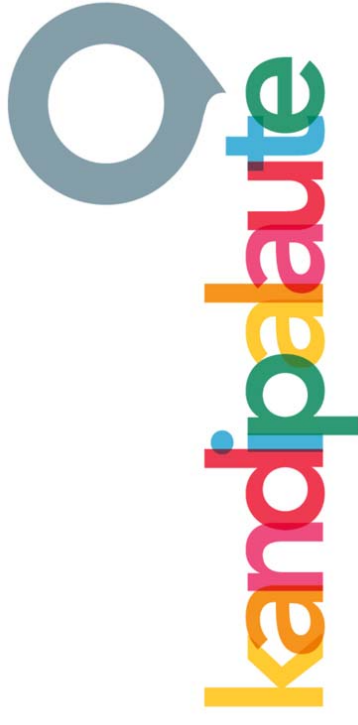
You can complete the whole survey in one go or save your answers and return later to continue. Once you have completed the whole survey and submitted your answers, the link will no longer function. The survey will close on 21 March 2014 at 23.59. Your answers will be anonymous and confidential.

Thank you for your contribution!



Do you have any employment sources parallel to your studies?

- Yes, during term time.
- Yes, but mainly during term breaks.
- Yes, during term time as well as during breaks.
- At present I do not work but intend to do so in the foreseeable future.
- At present I do not work and I do not intend to work.



Is your job (or at least one of your jobs) related to the subject you are studying?

- My job is clearly related to the subject I am studying and/or my possible future field of work.
- There is little relation between my current job and my studies or the professional career I am hoping to embark on.
- I cannot say (yet).

Extent of the job

- less than 8 hours per week
- from 8 to 19 hours per week
- more than 19 hours per week
- only during term break

How have you funded your studies?

Student loan

- Completely
- Partially
- Not at all

Student grant

- Completely
- Partially
- Not at all

Housing supplement

- Completely
- Partially
- Not at all

Scholarship

- Completely
- Partially
- Not at all

Personal income through work

- Completely
- Partially
- Not at all

Parents / Family

- Completely
- Partially
- Not at all

Other personal income

- Completely
- Partially
- Not at all

How do you assess your current financial situation?

- I do not have any financial concerns.
- Money is rather tight.
- I have big financial problems.
- I have feared that I would have to drop out of university because of financial reasons.



Are you involved in any of the following extra-curricular activities?

- Cultural/artistic activities/literature
- Athletic activities
- Games
- Handcrafting/technical activities
- Voluntary or association activities
- No, no activities of this kind.
- Other:



Are you actively involved in the activities of your student union?

"I am actively involved in the activities of my student union."

- Agree
- Somewhat agree
- Somewhat disagree
- Disagree
- I cannot assess this statement.



18%

Please state your age (in years).

Please indicate your gender.

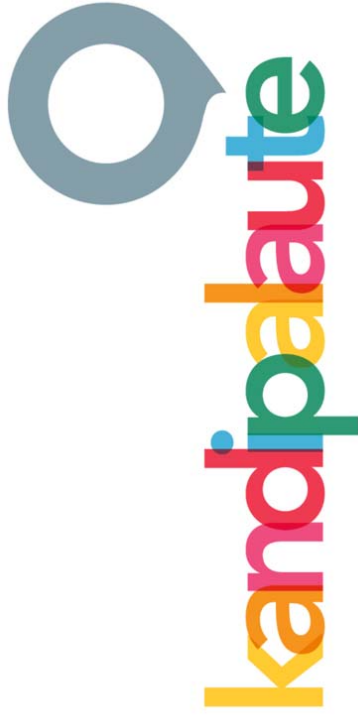
Male

Female

I do not want to answer this question.

Back

Continue



Did your parents (father and/or mother) also attend university?

- Yes.
- No.

Do you have siblings who have attended/attend university?

- Yes, my siblings have attended/are attending university.
- No, my siblings have not (yet) attended university.
- I do not have any siblings.

Please state to what extent you agree with the following statements about your studies.

The skills I acquired in my education meet my expectations.

- Agree
- Somewhat agree
- Somewhat disagree
- Disagree
- I cannot assess this statement.

My education meets my expectations.

- Agree
- Somewhat agree
- Somewhat disagree
- Disagree
- I cannot assess this statement.

The teaching was to a large extent of good quality.

- Agree
- Somewhat agree
- Somewhat disagree
- Disagree
- I cannot assess this statement.

I am satisfied with the teaching methods used.

- Agree
- Somewhat agree
- Somewhat disagree
- Disagree
- I cannot assess this statement.

Please assess the following statements:

I feel comfortable at my university.

- Agree
- Somewhat agree
- Somewhat disagree
- Disagree
- I cannot answer this question.

I am satisfied with my course of studies.

- Agree
- Somewhat agree
- Somewhat disagree
- Disagree
- I cannot answer this question.

I have family who supports and strengthens me in my studies.

- Agree
- Somewhat agree
- Somewhat disagree
- Disagree
- I cannot answer this question.

I have a circle of friends who supports and strengthens me in my studies.

- Agree
- Somewhat agree
- Somewhat disagree
- Disagree
- I cannot answer this question.

My private life is not very conducive to my studies in the moment.

- Agree
- Somewhat agree
- Somewhat disagree
- Disagree
- I cannot answer this question.

How satisfied are you currently with the following aspects of your life?

With your life in general

- 0% - completely unsatisfied
- 10%
- 20%
- 30%
- 40%
- 50%
- 60%
- 70%
- 80%
- 90%
- 100% - completely satisfied

With your circle of friends and acquaintances

- 0% - completely unsatisfied
- 10%
- 20%
- 30%
- 40%
- 50%
- 60%
- 70%
- 80%
- 90%
- 100% - completely satisfied

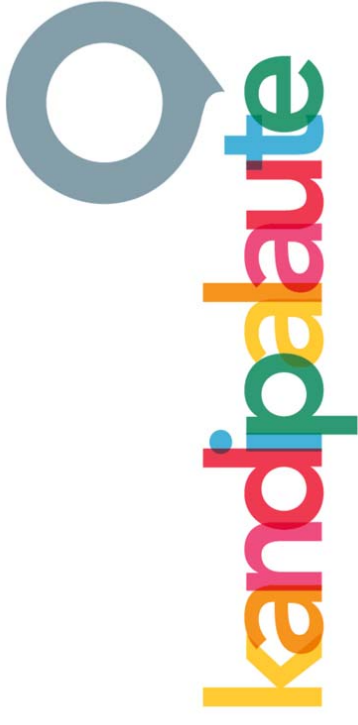
With your family life

- 0% - completely unsatisfied
- 10%
- 20%
- 30%
- 40%
- 50%
- 60%
- 70%
- 80%
- 90%
- 100% - completely satisfied



Has your current university been the first choice for your studies?

- Yes, I wanted to attend this specific university.
- Yes, I wanted to attend this specific university but another field of study.
- No, originally I wanted to go to another university.
- No, originally I wanted to go to another higher education institution.
- I transferred here from another university.
- I transferred here from another higher education institution.
- I cannot or do not want to answer this question.



How do you evaluate your performance as a student in the first years of your studies?

Please focus on actual knowledge as well as attention / involvement in class:

- I (probably) belonged to the top third of my year.
- I was (probably) amongst my year's average.
- I (probably) belonged to the bottom third of my year.
- I cannot say.

How confident are you at the moment that you will complete your master's degree successfully?

- 0% - not confident
- 10%
- 20%
- 30%
- 40%
- 50% - unsure
- 60%
- 70%
- 80%
- 90%
- 100% - completely confident
- I cannot say.

Please assess the following statements:

	Agree	Somewhat agree	Somewhat disagree	Disagree	I cannot assess this statement.
The more similar team members are, the better the group can work.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel most comfortable working in teams that were formed according to personal preferences (e.g. together with friends).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I find it exciting if teams are created at random.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel under pressure if the results of my teamwork are assessed / marked.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I work better and more productively by myself than in a team.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Working in a team means the exchange of information and attainment of transferable skills, such as dealing with conflicts.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The success of teamwork is strongly dependent on guidance provided by the teacher.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The success of study-related teamwork is easily compromised if some team members do not speak the common language well enough.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please assess the following statements:

The mandatory amount of attendance set for the study programme is appropriate.

- Agree
- Somewhat agree
- Somewhat disagree
- Disagree
- I cannot assess this statement.

The support offered in the context of my study programme (i.e. guidance) allowed me to study independently.

- Agree
- Somewhat agree
- Somewhat disagree
- Disagree
- I cannot assess this statement.

Teaching staff is open to students' questions and concerns outside class and office hours.

- Agree
- Somewhat agree
- Somewhat disagree
- Disagree
- I cannot assess this statement.

The good organisation of my personal affairs and employment activities allow me to participate in all my courses without any trouble.

- Agree
- Somewhat agree
- Somewhat disagree
- Disagree
- I cannot assess this statement.

I dedicated enough time to the required independent study.

- Agree
- Somewhat agree
- Somewhat disagree
- Disagree
- I cannot assess this statement.

Please assess the following statements:

During my studies, I have stayed abroad for a longer period of time (one semester minimum).

- Agree
- Somewhat agree
- Somewhat disagree
- Disagree
- I cannot assess this statement.

Completing my degree within the stipulated timeframe was more important to me than going abroad.

- Agree
- Somewhat agree
- Somewhat disagree
- Disagree
- I cannot assess this statement.

Preferably, I would like to work in Finland in the future.

- Agree
- Somewhat agree
- Somewhat disagree
- Disagree
- I cannot assess this statement.

Gaining international experience is essential for successfully starting a career.

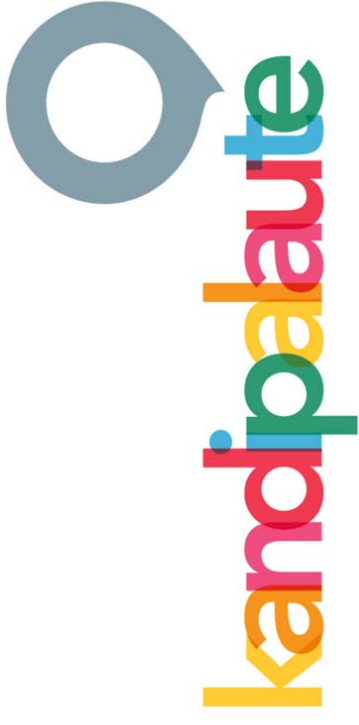
- Agree
- Somewhat agree
- Somewhat disagree
- Disagree
- I cannot assess this statement.

For my future career, it is important to be familiar with different operational methods in my profession.

- Agree
- Somewhat agree
- Somewhat disagree
- Disagree
- I cannot assess this statement.

I found it difficult to finance a study stay abroad.

- Agree
- Somewhat agree
- Somewhat disagree
- Disagree
- I cannot assess this statement.



How easy or difficult was it to find information and support on different aspects of your studies?

- very easy
- moderately easy
- moderately difficult
- very difficult

Please assess the following statements:

	Agree	Somewhat agree	Somewhat disagree	Disagree	I cannot assess this statement.
My schedule was too full (too many attendance hours per week).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The credit points given did not reflect my effort, because I had to invest a different amount of time (less or more) than instructed.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If needed, I would always know where to find a person to whom I can turn for help.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My studies were structured in such a way that it has been easy to make contact with fellow students.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The number of exams per term was too high.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was satisfied with the opportunities I had to influence and participate in my study programme.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was satisfied with the communication I had with the teaching staff.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I received sufficient feedback from the teaching staff.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The feedback I received from the teaching staff has helped me with my studies.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please state to what extent you agree with the following statements about your studies (0% = not at all, 100% = completely).

9 I had difficulty concentrating several times.	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
10 The choice of my field of study was mainly guided by my interests.	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
11 I studied with other students in study groups.	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
12 I liked being a student at my university.	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
13 I think my studies should have been more practice-orientated.	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
14 I expected my studies to be easier.	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
15 It is more important to me to have an interesting job than a high income.	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
16 I have often felt rather sad or displeased.	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%

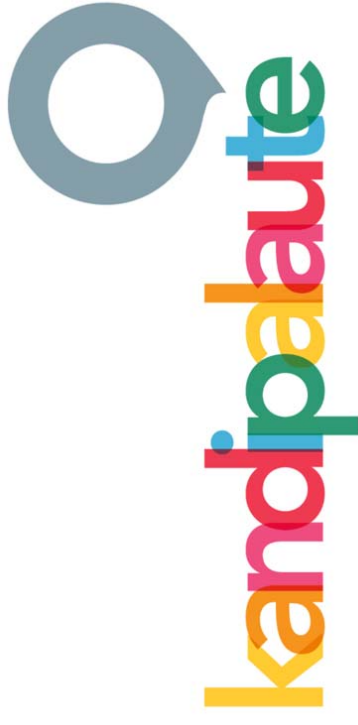
Please state to what extent you agree with the following statements about your studies (0% = not at all, 100% = completely).

71 I have received sufficient support of various kinds from my family and friends during my studies.

- 0%
- 10%
- 20%
- 30%
- 40%
- 50%
- 60%
- 70%
- 80%
- 90%
- 100%

72 I can relate the content of my studies to matters beyond my studies.

- 0%
- 10%
- 20%
- 30%
- 40%
- 50%
- 60%
- 70%
- 80%
- 90%
- 100%



Report of your results

Please choose if you want to see your personal survey results in comparison to the results of earlier Kandipalaute surveys.

- Yes, I want to see my results (they will be presented as soon as you click "continue").
- No, I do not want to see my results.

Your comments

Here you have the opportunity to leave your comments on this survey, or on your studies.



"

This is the end of the survey.

Thank you very much for your support!

"

Appendix B

Amanuenssin kirja - questions spring 2014

Questions for the student

Student Information

Name

Surname

Student ID

Year of study when beginning training: L3 L4 L5 L6

Do you have previous clinical experience?

Yes, number of training periods _____

No

Place of internship

Name of workplace

Practical training information

Place of training

Time period (dd.mm.yyyy-dd.mm.yyyy)

Title during practical training

Junior house officer

Substitute

Other, specify _____

Instructing physician _____

Learning goals for training period

Assessment of practical training period

General assessment of training period 0 1 2 3 4 5

Comments on training period

Did you receive enough instruction during your training?

0 1 2 3 4 5

Comments on instruction

Define your role during the training

1. Completely independent
2. Relatively independent
3. Equally independent work and following of senior
4. Somewhat more of following the senior physician around
5. No independence, followed a senior throughout the training

What were you allowed to do during your training period?

How well did the practical training fit in with your study phase?

0 1 2 3 4 5

Did the phase of your studies affect your training period, how?

How much do you feel you have developed as a physician during your training?

0 1 2 3 4 5

Evaluate your operation in an inter-professional work environment

0 1 2 3 4 5

Comments on operating in an inter-professional work environment

How well did you reach your learning goals?

0 1 2 3 4 5

Comments on the learning goals and their achievement

Evaluation of your training place

Did your practical training increase your interest in the specialty?

Yes No

Would you recommend your training place to you fellow students?

Yes No

Would you apply for work at your training place in the future?

Yes No

What would you improve in the training practises of the training place?

Comments to the training place?

Questions for the instructor

Instructor's background information

Name

Title

Have you received training in instructing?

Yes No

Practical training information

Place of training

Time period (dd.mm.yyyy-dd.mm.yyyy)

Name of student

Title of student during practical training

Junior house officer

Substitute

Other, specify _____

Instructing physician _____

Assessment of practical training period

Did you have a discussion at the beginning and/or at the ending of the training period with the student?

Beginning discussion

Ending discussion

Both

Neither

Do you feel you had enough time for instruction?

Yes No

Comments on instruction

Was the student given learning goals by the training place?

Yes No

Were the learning goals prepared in advance?

Yes No

Comments on the learning goals and their achievement

General assessment of the student's performance

0 1 2 3 4 5

How well did the student operate in an inter-professional environment?

0 1 2 3 4 5

Comments on student's operation in the work community

Assess the independence of the student during the training

1. Completely independent
2. Relatively independent
3. Equally independent work and following of senior
4. Somewhat more of following the senior physician around
5. No independence, followed a senior throughout the training

What was the student's role during his/her training?

Did the phase of the student's studies affect the content of her training? How?

Assess the student's skill level at the beginning and at the end of his/her training?

Beginning	0	1	2	3	4	5
End	0	1	2	3	4	5

Where there any events that affected the training period?

Comments on the training period?
