

Impact at the Core

Project Plan – 20-05.2020

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Executive summary

The world is changing rapidly and is facing many challenges which are multifaceted and complex. These challenges are ill-defined and have no pre-defined, single best solution. Following *Strategy2024*, the Erasmus University Rotterdam (EUR) embraces its responsibility for addressing these complex challenges. Universities contribute to tackling these issues in a variety of ways, but importantly by educating the next generation. It is of crucial importance that we teach this generation the skills how to deal with these challenges. Students themselves have also stressed that they expect to learn how to deal with societal issues, issues that challenge and inspire them.

Investing in impact-driven education will lead to higher quality output, (interdisciplinary) collaboration, teacher professionalization and enhancement of skills and competences of students preparing them for the future. As part of the Higher Education Quality Agreements (HEQA), the ambition to invest in impact-driven education was translated into the creation of the programme 'Impact at the Core'. A programme that aims to connect our education more strongly with society, by integrating and strengthening impact-driven education in the core of our curricula. This aim implies that we must work towards an open learning environment in which real-life problems are integrated into the curriculum and students work together with stakeholders on these problems.

Impact-driven education

In an impact-driven learning environment, students preferably work together with students from other disciplines, academic staff members and stakeholders and/or problem-owners on real societal problems. Doing so enables a multi-disciplinary, multi-faceted approach of problems that are essentially unstructured. In developing (building blocks of) a solution, students need to deploy and thereby develop their critical creative problem-solving (21st century) skills and venture different heuristics.

In impact-driven education there is thus attention for the transfer of disciplinary content (theory, knowledge) and training problem-solving skills, in interaction with practice and focused upon making a real impact on society.

There are numerous societal challenges. It is our ambition to focus upon those challenges that relate to the Sustainable Development Goals as adopted by the UN nation members in 2015.

Impact-driven education, the Erasmian way

A process of cocreation

Integrating impact-driven education into the core of our curricula on the one hand means that we must strengthen, improve and upscale *existing practices* that fit our definition of impact-driven education. Historically, EUR holds many examples of such practices. For example, students from the Erasmus Medical Centre work in city programmes to invest in health care prevention programmes. These existing initiatives illustrate our long-standing tradition as an entrepreneurial university with an open eye for the needs of society. The next coming years we will explore opportunities to professionalize these practices and to enhance their reach and impact together with the involved staff members.

On the other hand, impact-driven education will require *new forms of education* that can replace or supplement existing forms of education. These forms of education can be fostered by supporting staff members who have promising ideas (with knowledge, support or seed money). But developing new forms of education also requires cocreation on a more strategic level, fitting into the specific educational tradition of a faculty. Due to significant differences per faculty in strategy, orientation and legacy, each faculty will be challenged to (re)define a *vision on impact-driven education* in which the EUR strategy and HEQA ambitions are translated to the faculty specific context.

An evidence-based approach

This project is divided into two subsequent stages: a development and an upscaling phase. In the first two years of this project, the development phase, we will test various models of impact-driven education. By extensively evaluating these models, we learn which approaches are effective and fit into the Erasmian context. The second two years, the upscaling phase, will be used to further refine, disseminate and upscale these findings.

To ensure that our quality enhancement measures are evidence-based, we will invest in two Ph.D. projects to analyse and evaluate the educational models applied in the various projects. One of these Ph.D. projects will be shared with the Erasmus Design Initiative and will focus upon effectively applying design-based methods in our education.

Support structure: teacher professionalisation and facilities

In order to enable the development and implementation of impact-driven education, a support structure is essential. Such a structure must ensure that implementing impact-driven education does not add up to the existing workload of academic staff members. Moreover, it must equip our staff with the necessary skills to develop and engage with this kind of education.

An impact-driven community

Changing our university from a research-intensive university to an impact-driven university is not something we can do alone. We need to mobilize an active internal community of staff members and students, committed to creating impact through education. At the same time, we need to develop a strong regional network of partners, who challenge us to solve their problems and who are willing to cocreate impact-driven education.

Our approach and activities

In summary, we thus use a threefold approach:

1. We develop evidence-based impact-driven education, either through developing new forms of impact-driven education and supporting and strengthening existing practices;
2. We develop a support structure to support the implementation of impact-driven education through facilities and teacher professionalization;
3. We develop an ecosystem with internal and external stakeholders to accelerate the transition towards impact-driven education.

Ad. 1. Developing impact-driven education

In the development phase (first two years) we will test a number of different didactic approaches of impact-driven education in those faculties already able to apply impact-driven education and willing to strengthen this orientation. The effectiveness of these didactic approaches will be scientifically validated by two Ph.D. projects and shared with the community of practice. In this phase we also develop the faculty-specific educational impact strategies as a basis for the second phase.

The second two years, the upscaling phase, will be used to realize at least one form of impact-driven education in each bachelor and master programme, thereby addressing societal problems related to the SDGs. Societal impact is also translated into the intended learning outcomes. When educational initiatives use (or aim to use) a design-oriented approach, we will support these initiatives in close collaboration with the Erasmus Design Initiative.

Besides this planned and more systematic approach we also foster the innovative capacity of EUR, by supporting bottom-up initiatives (with help of a continuous call for proposals) and strengthening and professionalizing (on demand) existing practices of impact-driven education.

Ad. 2. Support for impact-driven education

To develop new and strengthen existing impact-driven initiatives, we need an adequate support system. This support system involves training and coaching for academic staff members to provide this type of education. In collaboration with the CLI, we will incorporate impact-driven teaching in teacher and tutor training programs. Support also has to do with developing an infrastructure (or online interface) to guarantee the influx of societal problems into our education and appropriate "matchmaking". Developed in collaboration with all other strategy/impact initiatives, this support structure will become the central interface for organizing interaction between external partners / stakeholders and the EUR community.

Ad. 3. Building an eco-system for impact-driven education

Through events, regular communication and knowledge sharing, an active internal impact-driven community is created. A dedicated community of practice around impact-oriented education will be set up, supported by the CLI and including representatives of all initial bachelor and master programs. The aimed-for functions of this community are organizing interaction between students, staff and external stakeholders, knowledge sharing and mutual benchmarking between impact-driven initiatives. At the same time, Impact at the Core will invest in an active network of partners that are willing to fuel impact-driven education with cases and projects. We align these efforts with the development of the EUR Public Engagement Strategy.

Key outcomes

TIMEFRAME EVALUATION	What
Annually as of September 2022 until 2024	Outcome
EUR has implemented a support system to streamline impact-driven education	Teacher, stakeholder and student satisfaction
Each programme identifies learning outcomes how students should integrate knowledge and understanding in a particular field of knowledge contributing to specific solutions. Assessment is aligned with learning outcomes.	Teacher and student satisfaction
Each programme at bachelor and master level should have a project with a real time, wicked problem	Teacher, stakeholder and student satisfaction
Each faculty develops an impact strategy for education, connected with the vision on sustainability	Shared values, shared vision
Most programmes have a teacher/student delegation in the Community of Practice	Shared values, shared vision

Budget

As described above, in the developing phase several projects are started to test various models of impact-driven education. This means the first two years will include more costs for innovation and research into the impact of these models. The upscaling phase will be used to further refine, disseminate and upscale these findings and thus include more costs for developing projects. This is summarized in the table below.

	2020 BG	2021 BG	2022 BG	2023 BG	2024 BG
Project Management	€ 79.116,00	€ 75.847,00	€ 85.839,00	€ 111.423,00	€ 113.170,00
Track 3					
Creating an impact driven institution culture	€ 36.340,00	€ 37.531,00	€ 58.299,00	€ 38.980,00	€ 59.595,00
Creation of Knowledge base	€ 22.340,00	€ 29.031,00	€ 29.799,00	€ 30.480,00	€ 31.095,00
Track 1					
Building faculty specific strategies	€ 47.937,00	€ 52.765,00	€ 46.505,00	€ -	€ -
Boosting new initiatives	€ 86.810,00	€ 246.233,00	€ 233.962,00	€ 99.713,00	€ 101.358,00
Enhancing best practices	€ 33.610,00	€ 97.142,00	€ 96.502,00	€ 103.605,00	€ 92.385,00
Refining and upscaling impact-driven forms of education	€ -	€ -	€ 447.836,00	€ 686.863,00	€ 842.191,00
Evidence based research into impact driven education	€ 11.727,00	€ 49.910,00	€ 59.892,00	€ 59.892,00	€ 59.892,00
Prototyping / testing didactic methods	€ 106.123,00	€ 283.250,00	€ 227.284,00	€ -	€ -
Track 2					
Working on the teacher skill set	€ 20.825,00	€ 18.567,00	€ 22.919,00	€ -	€ -
Creating an infrastructure and support system	€ 91.878,00	€ 160.533,00	€ 100.041,00	€ 107.587,00	€ 111.297,00
(Online) facilities to facilitate Impact-driven education	€ -	€ 11.917,00	€ 16.412,00	€ 25.378,00	€ 26.127,00
Total	€ 536.706,00	€ 1.062.726,00	€ 1.425.290,00	€ 1.263.921,00	€ 1.437.110,00

Postscript

This project plan is accomplished in close collaboration with the members of our working group in which staff members from ESSB, ESL, RSM and EUC are represented. Moreover, our mission and plans were reviewed by our Advisory Board (which includes academic staff members from all faculties, CLI and expertise from TU Delft).

I. Introduction

The world is changing rapidly and is currently facing many challenges which are multifaceted and complex. Global crises, for example regarding our health or climate, have a huge impact on our daily lives. Universities contribute to tackling these issues in a variety of ways, but most substantially by educating the next generation of decision-makers, entrepreneurs, lawyers, physicians and so on. It is therefore of crucial importance that we teach this generation how to deal with these challenges and – with the words of our Strategy2024 – how to make a *positive impact* on society.¹ In the design of *Strategy24* and the dialogue on the Quality and Innovation Calendar financed by the Higher Education Quality Agreements (HEQA), students also indicated that they prefer to work with real ‘wicked’ problems; problems society struggles with, that challenge and inspire them, and have no pre-defined, one-size-fits-all solution. Other members of our community, concerned with sustainable development, stressed that working with transition problems and the Sustainable Development Goals (SDGs) would call for a different type of problems in the ‘core’ of our curricula.² *Impact-driven education* addresses these remarks; it addresses societal problems in (academic) education, thereby learning students how to get grips on and deal with such problems.

Investing in impact-driven education has several potential impacts. It may lead to higher quality output, (interdisciplinary) collaboration, teacher professionalization and enhancement of skills and competences of students preparing them for the future.³ Furthermore, working with real problems and being responsible for coming up with applicable knowledge and solutions that has the potential to make a positive impact, greatly contributes to the intrinsic motivation of students to invest in their personal development and academic study.⁴ As part of the HEQA for the Erasmus University Rotterdam (EUR), the ambition to invest in impact-driven education is translated into the programme ‘Impact at the Core’: a programme that aims to create impact at the core of our education. The key objective of Impact at the Core is that our initial educational programmes contribute to societal (sustainability) challenges and create *positive impact* on both students, academic staff members and *the outside world*. We therefore aim to integrate impact-driven education in the core of all our (initial) education programmes during the period 2020-2024,⁵ thereby addressing societal problems related to the SDGs.⁶

Definition impact-driven education⁷

In an impact-driven learning environment, students preferably work with academic staff members and stakeholders and/or problem-owners on real societal problems. If feasible, working with multiple disciplines will enrich problem solving strategies. Doing so enables a multi-faceted approach of problems that are essentially unstructured.

¹ For the entire strategy, see https://www.eur.nl/sites/corporate/files/2019-09/eur-strategy-2020-2024_creating-positive-societal-impact_the-erasmian-way.pdf.

² See Working Group Report Sustainability in Education, 23-03-2020.

³ See *Strategy2024*.

⁴ Mulgan, G. and Townsley, O. (2016). The rise of the challenge-driven university. Retrieved March 19, 2020, from https://media.nesta.org.uk/documents/the_challenge-driven_university.pdf.

⁵ See Appendix 1 for the governance of Impact at the Core.

⁶ This condition was indicated by the University Council and fits with EUR’s strategy to take responsibility on sustainable development.

⁷ See Appendix 2 for a more elaborate definition of impact-driven education and its elements.

Students must learn to draw appropriate boundaries in order to reframe the issues to make them feasible. They deepen their understanding by persistently trying to refine and redefine the problem and thereby also the 'solution space'. In developing (building blocks of) a solution, students need to deploy and thereby develop their critical creative problem-solving (21st century) skills and venture different heuristics.

In impact-driven education there is thus attention for the transfer of disciplinary content (theory, knowledge) and training problem-solving skills, in interaction with practice and focused upon making a real impact on society. Impact-driven education therefore transforms the Erasmian student to an *E-shaped professional*: an academic professional, with a sound luggage of disciplinary knowledge, but also with a strong commitment to make a real impact on society, guided by our core values and professional standards and equipped with the necessary competencies for collaborating, system-thinking, problem-solving, creativity and so on.

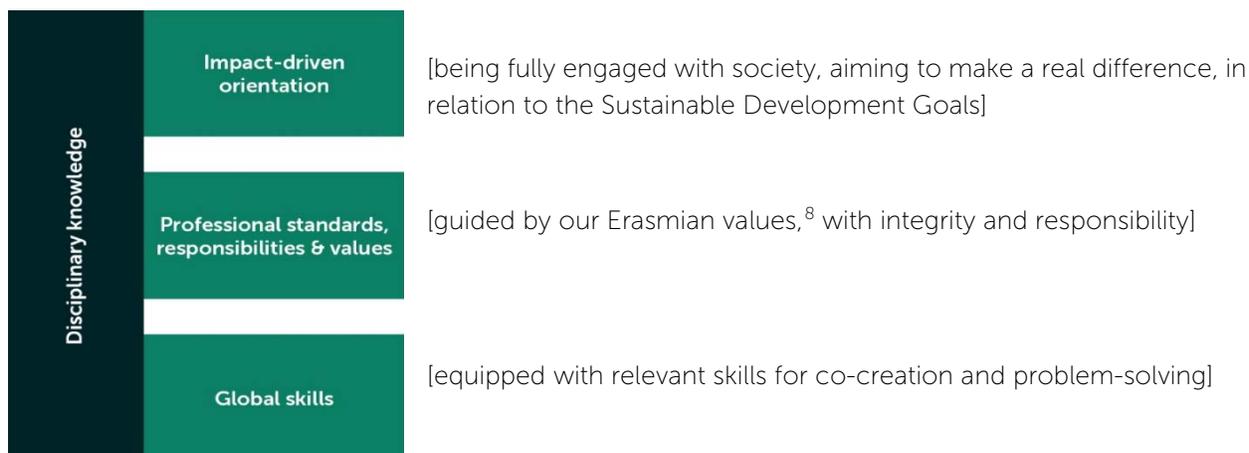


Figure 1 *The E-shaped professional*

Box 1: Differentiation from ErasmusX

One of the other EUR-wide HEQA projects is *ErasmusX*. *ErasmusX* aims to accelerate innovation of research and education through disruptive innovation, while working with challenges that create impact. With *ErasmusX*, students will have the ability to co-create their own education and explore the opportunities for learning by taking up societal challenges, working with cross disciplinary knowledge, using new technologies. Each challenge or project is linked to explore and design the didactical models of the future. Students and all other external stakeholders are welcome to join projects or projects teams. *ErasmusX* will thus test new didactical models outside the educational programmes, whereas the main focus of *Impact at the Core* is to integrate societal challenges into the educational programmes.

Approach

This project plan presents our ideas to integrate impact-driven education in the core of all our (initial) education programmes during the period 2020-2024, thereby addressing societal problems related to the SDGs. Integrating impact-driven education into the core of our curricula on the one hand means that we must strengthen, improve and upscale *existing initiatives* that fit our definition of impact-driven

⁸ Engaged with society, world citizen, connecting, entrepreneurial and open-minded.

education. There are many such initiatives, with a wide variety, ranging from courses built around design challenges to voluntary internships. These existing initiatives illustrate our long-standing tradition as an entrepreneurial university with an open eye for the needs of society. Professionalizing such practices might also mean that we must refine current educational practices within curricula (e.g. problem-based or case-based learning) to create more impact on society, for example by involving stakeholders in courses or by adding a design-oriented component. On the other hand, impact-driven education will require *new forms of education* that can replace or supplement existing forms. We will invest accordingly in designing new education, for example a minor on creative problem-solving for societal challenges or new courses in the various programmes. Furthermore, impact-driven education also means we should innovate the ways in which we assess students and their output.

We will realize our ambition through a combined *evidence- and energy-based approach*. At the one hand we develop, monitor and refine forms of impact-driven education to be implemented within the various programs. We consider the first two years of our project as *the development phase*, in which we will test various models of impact-driven education. By extensively evaluating these models, we learn which approaches are effective and fit into the Erasmian context. The second two years, *the upscaling phase*, will be used to further refine, disseminate and upscale these findings. At the other hand, we stimulate, promote, and strengthen bottom-up initiatives and existing practices. By using an energy-based approach, we foster the innovative capacity of the EUR by supporting bottom-up initiatives (with help of a continuous call for proposals) and strengthening and professionalizing (on demand) of existing practices of impact-driven education.

Besides developing impact-driven education, we will (1) develop a support structure to support the implementation of impact-driven education and (2) develop a community of internal and external stakeholders committed to accelerate the transition towards impact-driven and sustainability-oriented education.

Structure of this project plan

The next chapter of this project plan first outlines the learnings of an external benchmark with inspirational and ambitious examples of impactful universities and the present state of impact-driven education at EUR. The gap analysis between the external benchmark and the internal inventory leads to our plan of action to expand the impact-driven educational portfolio at EUR in chapter three. Chapter four summarizes this plan of action in a visual roadmap and chapter five presents the associated budget. Finally, chapter six presents the quality control and risk management of this project.

II. Impact-driven education: external benchmark and internal analysis

In drafting our plans to strengthen our impact-driven education portfolio, a working group with representatives from different faculties has done a preliminary study into best practices elsewhere and the present state of impact-driven education at EUR. The external benchmark was performed to learn how other universities organize their learning environment within regional or national ecosystems. Based upon the points of attention that were derived from the external benchmark, the present state of impact-driven education at EUR was inventoried and analysed. The inventory was performed through desk research and interviews with faculty representatives.

External benchmark

The external benchmark included the top 5 most impactful universities in the world (i.e. the University of Auckland, McMaster University, the University of British Columbia, the University of Manchester and King's College London)⁹ and the top 5 most impactful Dutch universities (i.e. Wageningen University, the University of Amsterdam, Radboud University Nijmegen, Tilburg University and Utrecht University)¹⁰. The learnings of this benchmark are summarized below, see for the elaborate learnings of the benchmark Appendix 3:

- All benchmark universities apply an experiential, inquiry-based or transformative learning model;¹¹
- All universities work with projects from the outside world, often in collaboration with external stakeholders. These universities have therefore different kinds of partnerships with local private and public sector organizations. To set-up these partnerships they invested in an external network and connected their education to the agenda of their local communities;
- The benchmark universities aim to help students acquire 21st century skills and have embedded values, ethics and sustainable development in their education;¹²
- The benchmark universities measure and evaluate their impact and adjust their plans accordingly;¹³
- All universities have set-up an interface to work with outside stakeholders.

Current practices at the EUR

The internal inventory established a first overview of the present impact-driven educational offering at EUR.¹⁴ This overview both covers substantial and procedural observations: partnerships with and faculty strategy in relation to outside stakeholders, an inventory of the existing support structure(s) and existing opportunities to shift towards more impactful education. Please note that this is a first and preliminary

⁹ Based upon the Times Higher Education University Impact Ranking, which assesses universities against the SDGs.

¹⁰ Based upon the Impact Ranking of Dutch Universities by ScienceWorks, which assesses universities on their entrepreneurship, collaborations, communication and societal contribution.

¹¹ See Appendix 3 for an elaboration of these learning models.

¹² Communication, creative thinking and acting, critical thinking, problem-solving, cooperation, social and cultural skills, self-direction, computational thinking, information skills, ICT skills and media literacy, see: <https://slo.nl/thema/meer/21e-eeuwsevaardigheden/>.

¹³ They use presumably indicators of the following sort: stakeholder interaction, number of projects, satisfaction of all stakeholders and student engagement. We will further substantiate and differentiate this in the first phase of the project.

¹⁴ The overviews per faculty can be found in Appendix 4.

assessment of existing courses and projects that (might) fit within the scope of Impact at the Core. Thus, this might not be seen as an exhaustive overview.

Substantive observations

At the EUR, eight schools (faculties) deliver 28 bachelor programmes and 106 master programmes for a total of 31.149 students.¹⁵ Each bachelor programme generally focuses on building a knowledge base and students apply this knowledge in a thesis or final project. In the master programme most students broaden and deepen their disciplinary knowledge base and end their studies with a master thesis in which they analyse a specific theoretical or practical problem. The following observations can be noted following the analysis of the inventoried educational offerings:¹⁶

1. Most bachelor programmes offer a (semi) closed learning environment: real-life problems are adapted to the curriculum and thus pre-structured by faculty staff through case-based, project-based or problem-based learning. Problem- and case-based learning are based upon inquiry-based learning, most faculties therefore seem to apply inquiry-based learning. Master programmes on the other hand offer more often an (semi) open learning environment: students practice as student consultants in internships, thesis projects and/or project work in courses. Many examples can be found within RSM, ESHCC and ESE. One such example is the Consultancy Project (RSM): this course challenges students to analyse a real-life problem coming from a business-client and understand the specific needs in and of a client organization.
2. Every bachelor and master programme is supported by skills education. More often these courses address sub skills such as academic writing. Broader skills as defined by the 21st century skills have no major emphasis, with an exception for academic reasoning, problem solving and taking a critical standpoint. Occasionally, a clear linkage with the SDGs is visible: RSM for example has started to incorporate the SDGs in the learning outcomes for all courses.
3. In bachelor programmes, students are only able to work together with stakeholders through certain minors and through internships. This is probably due to the fact that a minor comprises more ECs than other courses, teaches smaller student groups and thus offers more time for applying knowledge. Illustrative examples include the minors New Economic Thinking & Social Entrepreneurship (ESE) and Learning by Doing (RSM). In master programmes, there are many examples in which students solve real-life problems of an organization and present to them (e.g. Museums in Context from ESHCC). There are however only a few courses in which students work together with external stakeholders. The Seminar Applied Behavioural Economics (ESE) and Mastering Network for Innovation (RSM) are such examples. Some master programs, such as Public Administration (ESSB), have a mandatory internship.
4. There is currently some room for students to work on real-life problems and/or in collaboration with stakeholders through extracurricular activities. One such example is the Local-to-Global project from ESSB, where Dutch and international students work together on questions from society (or raised by the students themselves).

¹⁵ Erasmus University Rotterdam Annual Report 2018.

¹⁶ See Appendix 5 for the (faculty-specific) analysis of the current impact-driven educational offerings at the EUR.

Box 2: An illustrative example Design Atelier Public Administration

An inspiring example of impact-driven education embedded in one of our core programs is the *Design Atelier* within the master programs of Public Administration. In this Design Atelier, student teams work for four months on a design challenge, submitted by an external partner and go through all phases of problem solving. At the end of this period they present a tested prototype of their design, based upon a thorough understanding and their own framing of the design problem and an iterative process of exploring, testing and refining solutions. The students are supported by workshops with professional designers in which they learn creative and problem-solving skills. Researchers from the Erasmus Governance Design Studio (ESSB) contribute to the Atelier and safeguard the link between the student projects and the design research of the Studio.

Figure 2: Gap analysis of outside benchmark with current situation EUR

Green: growth potential i.r.t Strategy24 and benchmark

Orange: characteristic for the current situation in 2020 (starting position)

Learning environment	Type of Problems	Academic staff member	Students	Stakeholders
Closed <ul style="list-style-type: none"> - Project based - Case Based 	Semi Complex problems Modelled Reality Inquiry Based	Academic staff members define and structure problems, making them fit within the learning objectives	Students work on semi open assignments, autonomy is small, mostly disciplinary projects	None, fictitious or through mediation academic staff members.
Semi Open: <ul style="list-style-type: none"> - Project Based - Case Based 	Wicked, preferable sustainable, problems from the outside world.	Teacher guided, student co creation	Students work in (mostly disciplinary) groups on presenting an advice to the stakeholder.	Stakeholders present the challenge, but are not always involved in the solution process.
Open: <ul style="list-style-type: none"> - Consultancy - Applied commissioned research 	Wicked, preferably sustainable, problems in the outside world, studied in the context of university.	Outside stakeholder involvement on a programme level	Students work in (mostly interdisciplinary) groups on presenting an advice to the stakeholder.	Stakeholders are involved in every step of the process.
<ul style="list-style-type: none"> - Internship - Thesis¹⁷ 	Wicked problems in the outside world studied in the context of university.	Outside stakeholder involvement on a student level.	Students work in (mostly disciplinary) groups on presenting an advice to the stakeholder.	Stakeholders are involved in every step of the process.
External <ul style="list-style-type: none"> - Extracurricular - Voluntary work - Entrepreneurial 	Developing activities in (favour of) the outside world.	Sharing experiences with the academic community is possible, however often times not actively arranged.	Students have their own personal goals and ambitions.	Stakeholders are involved but have no direct interaction with university.

¹⁷ For this category (thesis and internship), there still is growth potential in terms of: (a) internships could be made more widely available to a larger number of students, and (b) not all theses are based upon wicked problems, for students to be identified themselves.

Organizational observations

1. There is quite some variation in the alignment of impactful education in faculty strategies. The same goes for experience on a programme level with semi-open and open learning environments and the embedding of projects and cases in regional or professional agendas. This has to do with the differences in culture and educational traditions per faculty and we should take these differences into consideration.
2. Faculties vary in size and organisational context. This is important, in relation to feasibility and scalability: to work interactively with 1000+ students might overburden faculty staff. The scaling of impact-driven courses is thus most logically related to group size and student/teacher ratio. Although for the EUR as a whole, the teacher/student ration is (27.4); per faculty there is a great variance.¹⁸ For a faculty with a lower student/teacher ratio, it will be easier to implement impact-driven education. For faculties with a higher ratio, we need to think of solutions with which we can combine plenary instruction moments with small-scale working formats.
3. There are currently no adequate support systems and/or facilities for impact-driven education. For a faculty like RSM this results in students studying real-time cases, but never actually implementing the outcomes or validating whether the prognosed outcome is feasible in the real-time world. Based upon the interviews and the first analysis, we expect that there is a strong need for an infrastructure at EUR to facilitate the influx of real-world problems into our education. This infrastructure or (online) interface is needed to facilitate and match societal issues with our education.

How to enhance impactful education

When we analyse both the learnings of the external benchmark and the internal assessment, we can conclude that impact-driven education can be enhanced through addressing the following points of attention:

1. Developing a shift from inquiry-based learning towards *experiential* (learning through reflection on doing) and *transformative* (deep, constructive and meaningful) learning to facilitate a more hands-on approach to learning that is rooted in concrete experience and reflection. By engaging with real, societal challenges, students develop knowledge, skills and values from direct experiences outside a traditional academic setting.
2. Embedding values, ethics and sustainable development within our educational programmes. In *Strategy2024* the Erasmian values were introduced, which now need to be embedded in all programmes. Because of our focus on responsible, positive impact, this means that we have to organize attention for values and ethics within our (impact-driven) education.

¹⁸ Number of registrations per FTE Academic Staff: ESE 42.1; ESHCC 21.6; ESHPM 15.9; ESL 27.2; ESPhil 30.8; ESSB 18.6; and RSM 34.1.

3. Considering the differences per faculty, a 'one-size' strategy will not suffice. It might be wise to explore per faculty what vision, ambitions and context define the specific learning outcomes on a programme level. Thus, developing a faculty vision based upon the university strategy and ambition will align faculty initiatives on a EUR level and will make room for faculty specific contexts. Since this faculty-specific approach is similar to the approach following the 'Sustainability in Education' working plan to develop a faculty-specific strategy to integrate sustainability in education, these plans converge at this point.

Box 3: Connection to 'Sustainability in Education' working plan

The 'Sustainability in Education' working plan presents an action plan to strengthen and expand sustainability in education at EUR. The basis for this type of education is formed by the UN Principles for Responsible Management Education (PRME) and the Erasmian Values. Each faculty needs to translate these principles and values to their specific faculty situation, supported through open, critical and engaged academic debates. Furthermore, sustainability in education also calls for an interdisciplinary perspective, critical mindset, the ability to collaborate across disciplines and professional and an experimental and entrepreneurial way of working to contribute to societal value creation.

Both plans thus share the ambition to impact real time, wicked problems that society is challenged with today. Through cooperation we can achieve strong synergies between both programmes. Sustainability will therefore be an essential precondition for projects to be developed under Impact at the Core.

4. Embedding impactful education on a programme level in connection with regional community agenda's, thus creating partnerships and work in liaison with stakeholders to create impact-driven education. The following questions still need to be explored:
 - a. How will we build successful partnerships with societal partners from which we can expect a sufficient and constant stream of assignments (societal problems) that are useful for project-based courses and initiatives? A more general infrastructure, shared among the various impact initiatives at EUR, is conditional for realizing impact-driven education.
 - b. How do we ensure a certain educational quality among these projects and how will we set up a framework to assess educational quality?
5. Developing an infrastructure that supports (the implementation of) an open learning environment is crucial. Developing support for academic staff members is essential to ensure that implementing impact-driven education does not add up to their existing workload. The following questions still need to be explored and tested:
 - a. How do we build a support system that analyses problems on usability and that provides a link with the existing intended learning outcomes that are leading at a program level?
 - b. How do we approach designing an interface between "demand" and "supply" in dialogue with internal and external users?
 - c. Which facilities are necessary to incorporate impact-driven education?

III. Impact-driven education, the Erasmian way

Based upon the learnings from the external benchmark and the analysis of the present state of impact-driven education at EUR, we have formulated three key objectives for the project Impact at the Core within the period towards 2024:

1. We give a significant boost to our portfolio of impact-driven education, by professionalizing current practices and developing new promising ones, in an evidence- and energy-based way.
2. We develop an adequate support system to facilitate this type of education, in close collaboration with other impact-oriented initiatives in EUR research and education.
3. We create a community at the EUR (both with external and internal stakeholders) which is committed to enhance the impact of our education and is willing to contribute to the development of impact-driven education.

However, Impact at the Core as a whole aims to contribute to something greater than the sum of its parts: it aims to embed impact in our Erasmian DNA. On the one hand, we aim to integrate impact in the EUR's identity, on the other hand, we aim to consolidate impact in the image of the EUR.

An organization's identity refers to the shared norms, values and beliefs of all its organizational members. An organization's image, in turn, refers to the norms, values and beliefs the organization is associated with by external parties. An organization's identity largely determines its decision-making processes as well as behaviour, whereas an organization's image largely determines the interaction between the organization and external parties. Both mutually influence each other as well. As such, integrating in the EUR's identity as well as consolidating impact in the EUR's image play a significant role in realizing positive societal impact. All measures below aim to equip our students, academic staff members and stakeholders with the experiences and competencies to create positive societal impact, as indicated by the figure below.



Track 1: Developing impact-driven education

Realizing our ambition (i.e. one form of impact-driven education in each bachelor and master programmes by 2024, thereby addressing societal problems related to the SDGs) means that we must strengthen, improve and upscale *existing initiatives* that fit our definition of impact-driven education. On the other hand, impact-driven education will require *new forms of education* that can replace or supplement existing forms of education.

We will foster the transition towards impact-driven education in all faculties through a combined *evidence-based* and *energy-based* approach. The evidence-based component is based upon a systematic approach of developing, testing, refining and upscaling models of impact-driven education to learn which approaches are effective and fit into the EUR context. Besides this planned and systematic approach we also foster the innovative capacity of the EUR, by supporting bottom-up initiatives (with help of a continuous call for proposals) and strengthening and professionalizing (on demand) existing practices of impact-driven education.

We align our efforts with the strategic ambitions of each faculty, by helping them to draft a faculty-specific strategy on impact-driven education. Based upon this strategy, a faculty can determine which existing initiatives can be strengthened, improved and/or upscaled and which existing forms of education can be replaced/supplemented by new forms of education.

Energy-based: supporting existing and boosting new initiatives

1. *Boosting new initiatives*

In order to mobilize the creative capacity of the EUR staff members, we will develop a program aimed at stimulating the bottom-up development of new initiatives of impact-driven education. A call is currently under development, that offers both financial and organizational support as well as expertise and advice.¹⁹ The call will be opened before the start of the Academic Year 2020/2021.

2. *Professionalizing current practices*

In parallel, we will enhance current practices at every faculty in terms of their impact-orientation on demand.²⁰ Learning innovators and academic staff members can reach out to us if they have (or know of) a course of which they want to improve the impact-orientation of that course. The academic staff member will do the actual redesigning of the course, supported by the learning innovator, and Impact at the Core offers support (both financially and organizational) as well as expertise and advice.

Evidence-based: developing, testing and upscaling impact-driven education

3. *Testing different impact-driven forms of education (development phase 2020 – 2022)*

In the development phase we will explore and test a number of different didactic approaches of impact-driven education in those faculties already able to apply impact-driven education and willing to strengthen this orientation. For these pilots, a project lead within the faculty will be appointed. This project lead will do the actual (re)design, together with a team of relevant staff

¹⁹ See Appendix 6 for the concept funding criteria.

²⁰ From the ideal situation that outside stakeholders work with (interdisciplinary) teams of students on societal 'wicked problems'; enhancing best practices may contain redesign processes concerning one of these elements.

members and the support of Impact at the Core. The new designs will be tested on the learning cycle and assessment. The results of the different didactic approaches will be scientifically validated and shared with the Community of Practice.

4. *Building faculty-specific strategies on impact-driven education (development phase 2020 – 2022)*

Together with learning and innovation managers, educational directors, the academic lead on sustainability, academic staff members and students, a faculty-specific strategy on impact-driven and sustainability-focused education will be developed. During this strategy development process, we challenge the faculties to address the following questions:

- How to shift from inquiry-based learning towards experiential/transformational learning;
- How their disciplines contribute to sustainable development;
- How to embed values, ethics and sustainable development in their educational programmes;
- How and which outside stakeholders can interact with students and academic staff members on a programme level;
- How they can ensure the necessary complexity and focus of challenges presented to students;
- How they can enable cooperation between academic staff members and students from different disciplines;
- How they can challenge students to develop skills in semi realistic settings;
- How they can guide students in developing competencies;
- How they can guide diverse student populations in working together and provide for an inclusive learning environment;
- How they can remediate restrictions, such as scaling problems and guidelines as put forward by the ministry OCW.

These strategies will be used to select per faculties those initiatives, existing practices and new approaches that are the most suitable to (re)design and upscale given their strategic objectives and broader educational agenda.

5. *Refining and upscaling impact-driven forms of education (upscaling phase 2022 – 2024)*

Based upon the results from the development phase and the strategies of each faculty on impact-driven education, we will develop a more detailed plan for the second phase of the project. The aim of this phase is to implement in each initial (bachelor or master) educational program at EUR a form of impact-driven education.

6. *Impact-driven education – building the evidence-base*

To analyse and evaluate the educational models applied in the various projects, we will invest in two Ph.D. projects. One of these Ph.D. projects will be shared with the Erasmus Design Initiative and will focus upon effectively applying design-based methods in our education. The Academic Lead of Impact at the Core ensures that this research is performed in line with the research calendar of the EUR (among which is the 'Evaluating Societal Impact' project).²¹ The Scientific Board advises on specific research proposals.

²¹ To align research topics institutional wide, (a) CLI and (b) the Academic Lead of Erasmus Educational Research and (c) the director of CEL and (d) the Academic Lead of a particular programme (e.g. Impact at the Core) function

Box 4: Connection to 'Evaluating Societal Impact'

The EUR project 'Evaluating Societal Impact' (ESI) is currently working on developing a framework to evaluate societal impact. This framework includes the challenge of assessing the societal impact of education. We will develop a close relationship with this project to find and apply relevant criteria and tools for monitoring to assess the societal impact of our education in general and of our project initiatives in particular. We believe both projects can benefit from each other: the ESI project can use this project as an inspiring pilot environment, while the ESI project can help Impact at the Core to monitor its effectiveness.

7. Design-driven education

In close collaboration with the Erasmus Design Initiative we will contribute to the development of design-driven education, as a specific type of impact-driven education that strongly fits into the EUR Strategy. This collaboration focuses upon the development of a variety of educational formats (electives, minor, master track, in a later stage a bachelor program).²² It is our ambition to develop design-oriented forms of education that complements our current disciplinary portfolio on both the bachelor and the master level. More detailed plans will be made when final decisions about the Design Initiative are made.

Work package	Activities	Timeline
1.1. Boosting new initiatives	Open call for project ideas	Continuous
1.2. Professionalizing current practices	Professionalizing current practices on demand, in collaboration with learning innovators	Via calls
1.3. Testing different impact-driven forms of education	<ul style="list-style-type: none">- Selection of faculties and projects- Development of (new) educational offerings- Testing of (new) educational offerings- Validating and sharing of results	2020 - 2022
1.4. Building faculty-specific impact strategies	Development of faculty-specific strategies on impact-driven and sustainability education <ul style="list-style-type: none">- Strategies approved by faculty management- Refined strategies approved by faculty management	2020 - 2022 Q4 2021 Q3 2024
1.5. Refining and upscaling	Following the results from the development phase, an action plan will be formulated for the upscaling phase <ul style="list-style-type: none">- Action plan per faculty approved- Start refining and upscaling of education	2022 – 2024 Q2 2022 Q3 2022
1.6. Building the evidence-base	Researching which didactical impact-driven models are effective <ul style="list-style-type: none">- Formulation of research questions- Start Ph.D. projects- First conclusions following research- Final research reports	Continuous Q3 2020 Q4 2020 Q4 2022 Q4 2024
1.7. Design-driven education	Development of design-driven education in collaboration with the Erasmus Design Initiative	2022 – 2024

as a scientific board to evaluate specific programme related research proposals initiated by Academic Leads. Their role is advisory to the Rector Magnificus, who has the final say.

²² See Working Document Design Initiative, 27-09-2019.

Track 2: Supporting impact-driven education

To develop new and strengthen existing impact-driven initiatives, we need an adequate support system. This support system involves both the needed skills set for academic staff members to provide this type of education and an infrastructure (or online interface) to support the influx of societal problems into our education. By 2024 all faculties have access to such an infrastructure and are able to use it; and there is a full palette of services to enable our lecturers to develop and teach impact-driven education in a professional way.

1. *Teacher skill set*

To realize the goals of Impact at the Core, we need academic staff members who are able to provide this type of education. This means they should be able, in cooperation with learning innovators, to (re)design their courses to include societal problems and external stakeholders and to facilitate students in working on such problems.

To determine the necessary teacher skill set, we will organize several co-creative sessions in partnership with CLI, with academic staff members who are already teaching this way, academic staff members who might be interested, educational consultants offered by CLI and possible stakeholders. These sessions will provide us with an overview of what group of academic staff members we need to focus on and what the skills gap is for them. The next step would be to decide what training program(s) needs to be developed to teach the academic staff the necessary skills. This phase will be finished with a concrete action plan. The output of this action plan could be certain microlabs developed with respect to skills for experiential learning and modules within the Senior Teaching Qualification and Educational Leadership course (Leergang Onderwijskundig Leiderschap). However, please note that this will be an iterative process. Based on our growing knowledge base on impact-driven education, our knowledge on the needed teacher skill set will increase as well.

2. *Building a support system*

This work package will develop and institutionalize a support system to effectively support impact-driven education. Such a support system may consist of, for example, administrative support, a stakeholder management system and an online infrastructure that supports working with external stakeholders.

The approach to come to such a support structure will be two-fold:

1. We will organize brainstorm sessions to identify the requirements of such a support system and how we can best embed this within the existing educational support structure of the EUR. These brainstorm sessions will be done with experts in the field (designers), our internal stakeholders (instructors, students, L&I managers, IT and CIO office) and external stakeholders (the EUR attracts and works together with a broad range of stakeholders, these stakeholders could act differently and have different needs and expectations). We will also involve the HoKa workgroup from the University Council as they have an important role to co-create and provide feedback. Following these brainstorm sessions, we will develop an action plan on the to-be-developed support elements.
2. We will set-up a workgroup between impact initiatives (flowing from HEQA or *Strategy2024*) to create an EUR central stakeholder management system. It is of utmost importance to have an infrastructure synergy from within the university and in close collaboration with the other

projects and initiatives that involve stakeholders. The aim is to prevent overlap between initiatives, stakeholder overload and an inept internal framework.

Next to the brainstorm sessions on the support system and workgroup on the stakeholder management system, we already want to use an infrastructure prototype that supports working with external stakeholders. The first initiatives under Impact at the Core can test this prototype and provide iterative feedback. We will communicate about this process frequently with other projects (such as incubator, Design Initiative, EURx) as this data could also be potentially relevant for them.

It is important that this support structure is built with certain suitability's in mind as scalability is one of our top priorities. To be certain that this support structure is supporting the instructors, we must make sure that we aid them, instead of overwhelming them. This means that we have certain conditions for our project when researching the requirements, namely;

1. The time spend by the instructor is not extended; but rather made more efficient.
2. No extra educational time will be occupied in the overall schedule by project-based education.
3. The infrastructure should have the potential to be used by all faculties.

When the requirements are identified, we will determine which of the development options (i.e. developing inhouse, outsourcing the development or buying existing solutions – see Appendix 7) fits best with these requirements. The deliverable of this work package will therefore be an infrastructure which is used EUR-wide to facilitate impact-driven education.

3. (Online) Facilities

Impact-driven education presupposes new forms of interaction between students, between students and stakeholders and between students and academic staff members. That means we should also investigate and provide the facilities needed for this type of education. We can presumably arrange the physical facilities in conjunction with the Erasmus Design Initiative. Considering recent events, we also must consider online facilitation as an important factor for impact-driven education. The deliverables of this work package are therefore physical and online facilities that facilitate impact-driven education.

Work package	Activities	Timeline
2.1. Teacher skill set	- Co-creative sessions together with CLI and instructors to determine the necessary skills set of academic staff members	Q4 2020
	- Development of action plan on strengthening impact-driven teacher skills	Q3 2021
	- Delivery first batch of activities	Q1 2022
	- Evaluation and improvement	Q1 2023
	- Delivery full catalogue	Q1 2024
2.2. Building a support system	- Brainstorm (design) sessions to identify the requirements of a support system	Q3 2020
	- Development of support system	Q1 2021
	- First prototype infrastructure	Q3 2021
	- Midterm evaluation	Q1 2023
	- Transfer of system to CLI / others	Q4 2024

2.3. (Online) Facilities	Identification and providing of education & campus facilities. <ul style="list-style-type: none"> - Exploring needs and preferences - Development investment plan - Delivery facilities 	Q2 2021 Q1 2022 Q1 2024
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Track 3: Building a community for impact-driven education

In our view, the EUR should foster a vibrant community for developing and innovating impact-driven education. In order to become so, it is of vital importance that we invest in a community of staff and students, committed to creating impact through education. At the same time, we need to develop a strong regional network of partners, who challenge us to solve their problems and who are willing to cocreate impact-driven education.

1. *Creation of Community of Practice*

In collaboration with other innovative projects and initiatives, and within the context of the Community of Learning and Innovation (CLI), we will build an active community focused upon impact-driven education. This community consists of internal and external stakeholders. The CLI will support this Community of Practice (CoP) and we aim for the CoP to become a self-organizing community by 2024. To foster this internal impact-driven community, a communication and community strategy will be developed in close cooperation with the CLI and the Marketing & Communication Office.

Important elements for the CoP are events and knowledge sharing:

1.1. *Events*

In Appendix 4, we included an overview of current practices of impact-driven education per faculty. Out of these current practices, the best practices will be presented to the entire EUR community through a symposium (Fall 2020). Furthermore, during a panel discussion we will discuss how these practices contribute to impactful education, what major problems the academic staff members, students and stakeholders face, and, looking forward, how we can enhance impact-driven education. This symposium is also the start of the communication regarding Impact at the Core towards the EUR community.

Besides this kick-off symposium, we will organize a mid-term (2022) and final (2024) symposium featuring some of the newly developed impact-driven initiatives. Furthermore, regular communication and smaller events regarding Impact at the Core projects and initiatives will also share good examples and relevant information.

1.2. *Creation of knowledge base*

As mentioned above, knowledge sharing is an important part of building our community. And through developing new forms and upscaling existing practices of impact-driven education, Impact at the Core will surely develop new knowledge. In order to share this knowledge, an online knowledge base will be created for the Community of Practice. Through this online knowledge base, ongoing projects can be viewed, experiences will be shared and the actual knowledge base consisting of research papers and readings of outside literature and best practices will be shared.

This online knowledge base will also be the foundation for the community building and communication strategy.

Other projects and initiatives are important to this knowledge base as well. Impact at the Core should work closely together these projects and initiatives to fully grasp all aspects of impact-driven education. We can already identify the following projects and initiatives which are relevant to our knowledge base:

- The CLI already has an existing knowledge base on teacher professionalization and support.
- The community for Personal Professional Development will develop a knowledge base on developing 21st century skills.
- The community for Personalized and Online Learning will develop a knowledge base on formative assessment.
- ErasmusX will develop a knowledge base on the use of new technology and methods to improve student agency.
- Sustainability in Education has substantive knowledge on the SDGs and how these can be incorporated into educational curricula;
- The Diversity and Inclusion Office has knowledge on how to better take advantage of our diverse student body and provide for an inclusive learning environment.

2. Societal engagement

To create an active external community, which provides us with sufficient and relevant problems to address in our education, a societal engagement strategy needs to be developed. Considering an EUR-wide Public Engagement Strategy is currently under development due to *Strategy2024*, Impact at the Core needs to join this initiative.

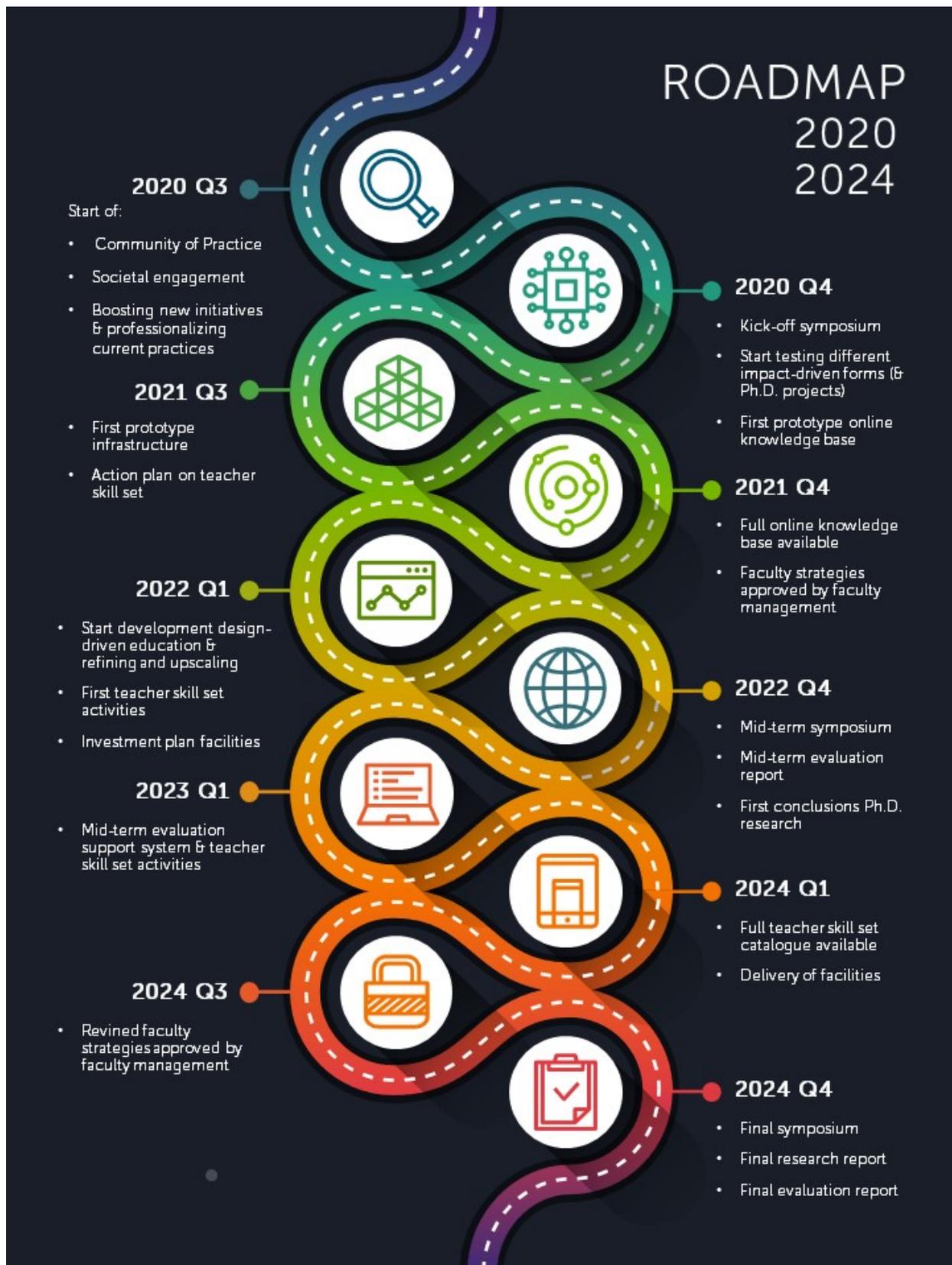
3. Evaluating our impact

Compliant with the quality guidelines of the EUR, Impact at the Core has specified project goals and defined key indicators on output (activities and products) and outcome (impact on educational quality) accordingly. These indicators and the complete procedures in place to evaluate our progress on output and outcomes are described in chapter six. In summary: triannual periodical progress reports highlight the financial realisation and progress on output and annual reflective sessions with the Community of Practice highlight the progress on outcomes. As off 2021, based upon this annual evaluation, project goals and sub-projects can be changed. This will be reflected in the budgets and updated plans for 2022, onwards. Furthermore, input from the University Council can also affect programme goals and output/outcomes.

Work package	Activities	Timeline
3.1 Creation of Community of Practice	Development and execution of community building and communication strategy <ul style="list-style-type: none"> - Start Community of Practice - CoP as self-organizing community 	Q3 2020 Q3 2024
3.1.1. Events	Regular meetings and communication activities to involve EUR community with Impact at the Core <ul style="list-style-type: none"> - Kick-off symposium - Mid-term symposium 	Q4 2020 Q4 2022

	<ul style="list-style-type: none"> - Final symposium - Regular communication 	<p>Q4 2024</p> <p>Continuous</p>
3.1.2. Creation of knowledge base	<p>Creation of online knowledge base</p> <ul style="list-style-type: none"> - Launch first prototype - Full knowledge base available 	<p>Q4 2020</p> <p>Q4 2021</p>
3.2. Societal engagement	Connecting to EUR Public Engagement Strategy	Continuous
3.3. Evaluating our impact	<p>Evaluating and communicating about our impact</p> <ul style="list-style-type: none"> - Triannual progress report - Annual reflective session 	2020 – 2024

IV. Choices and priorities: Roadmap to 2024



V. Budget

The table below summarizes the budget for Impact at the Core through 2020-2024. See the separate appendix for the detailed budget and Appendix 8 for the explanatory narrative.

	2020 BG	2021 BG	2022 BG	2023 BG	2024 BG
Project Management	€ 79.116,00	€ 75.847,00	€ 85.839,00	€ 111.423,00	€ 113.170,00
Track 3					
Creating an impact driven institution culture	€ 36.340,00	€ 37.531,00	€ 58.299,00	€ 38.980,00	€ 59.595,00
Creation of Knowledge base	€ 22.340,00	€ 29.031,00	€ 29.799,00	€ 30.480,00	€ 31.095,00
Track 1					
Building faculty specific strategies	€ 47.937,00	€ 52.765,00	€ 46.505,00	€ -	€ -
Boosting new initiatives	€ 86.810,00	€ 246.233,00	€ 233.962,00	€ 99.713,00	€ 101.358,00
Enhancing best practices	€ 33.610,00	€ 97.142,00	€ 96.502,00	€ 103.605,00	€ 92.385,00
Refining and upscaling impact-driven forms of education	€ -	€ -	€ 447.836,00	€ 686.863,00	€ 842.191,00
Evidence based research into impact driven education	€ 11.727,00	€ 49.910,00	€ 59.892,00	€ 59.892,00	€ 59.892,00
Prototyping / testing didactic methods	€ 106.123,00	€ 283.250,00	€ 227.284,00	€ -	€ -
Track 2					
Working on the teacher skill set	€ 20.825,00	€ 18.567,00	€ 22.919,00	€ -	€ -
Creating an infrastructure and support system	€ 91.878,00	€ 160.533,00	€ 100.041,00	€ 107.587,00	€ 111.297,00
(Online) facilities to facilitate Impact-driven education	€ -	€ 11.917,00	€ 16.412,00	€ 25.378,00	€ 26.127,00
Total	€ 536.706,00	€ 1.062.726,00	€ 1.425.290,00	€ 1.263.921,00	€ 1.437.110,00

Budget control

Every two months there will be an update meeting between the Project Lead and HEQA Programme Controller – The HEQA Policy Officer overseeing all projects on a higher level will join when needed. Memo's will be written regularly on the advances of the project itself and the current state of the budget. Adaptations will be made when needed in consultation with the HEQA Programme Controller. We use the PCDA (Plan-Do-Check-Act) Cycle for control and continuous improvement of processes, overall planning and budget.

VI. Quality control and risk management

This chapter describes the quality control and risk management procedures, where *quality control* oversees the realisation towards predefined goals and *risk management* prevents subpar output and outcomes. These procedures are compliant with 'Working together at Word Class Education (2017: chapter 4) and the implementationplan HOKA (2019, version 6.1).

Quality control on project level

Compliant with the quality guidelines of the EUR, Impact at the Core has specified project goals that reflect our ambition and translated these project goals in key indicators on output (activities and products) and outcomes (impact on educational quality) accordingly (see Appendix 9). In order to ensure and enhance the quality of Impact at the Core, the progress on output and outcomes is regularly assessed.

Progress on output

Triannual periodical progress reports highlight the financial realisation and progress on output. These progress reports will be shared with the Advisory Board, the educational directors of all faculties, corporate planning and control/academic affairs and the University Council.

The projects that will be defined in cooperation with faculties should also be compliant with the quality guidelines of the EUR. Each project should therefore define specified project goals and corresponding key indicators on output and outcomes. The projects should furthermore be consented to by the faculty council. Faculties should incorporate the progress on specific projects in their periodical reports and share this progress with faculty stakeholders, most specifically the Faculty Council and Educational Committees, if applicable.

Based upon these short iteration evaluations on output, project goals for both Impact at the Core and the projects in cooperation with faculties can be moderated accordingly.

Progress on outcomes

Reflection on the outcomes and the integration of impact in the EUR's identity and image will occur through the Community of Practice. Impact at the Core will organize reflective sessions at the end of each academic year with the community, as well as with the educational directors. In these reflective sessions, the community shares current practices, reflects on obstacles, risks, mitigation strategies and accelerating principles. As off 2021, based upon this annual evaluation, project goals and sub-projects can be changed. This will be reflected in the budgets and updated plans for 2022 onwards.

Quality control on institutional level²³

Strategic Dialogue Academic Lead

The Academic Lead of Impact at the Core accounts for the outcomes of the project in a bilateral conference with the Rector Magnificus. The focus of this dialogue is whether project outcomes contribute to impact in education; the enhancement of student engagement and study success; and the implementation of support systems. In preparation of the meeting, the Academic Lead outlines the

²³ See Appendix 10 for a schematic overview of the institutional quality control and enhancement procedures.

outcomes. Input is created by the progress periodical reports and reflections of the Community of Practice and the University and Faculty Councils.

Impact Platform

Since Impact at the Core is aligned with the strategic initiatives, such as the Erasmus Design Institute and Sustainability, and other HEQA initiatives, such as ErasmusX and Personal Professional Development, academic leads and key representatives periodically reflect on shared outcomes. The outcomes of the shared reflection will feed updated plans as of 2022 and will be discussed with the Rector Magnificus, Educational Directors and the University Council.

Annual reporting

The outcomes of Impact at the Core are part of the HEQA reports shared with the University Council in September and February each year. Input from the University Council can affect programme goals and outputs/outcomes.

Risk management

In the reflective sessions with the Community of Practice and with the Educational Directors, the risks related to the output and outcomes of Impact at the Core and the possible mitigation strategies will be discussed. The currently identifiable risks and possible mitigation strategies are portrayed in the table below.

Risk	Possible mitigation strategy
Related to entire project	
External unforeseen circumstances (for example Corona), causing faculties to postpone projects	Be aware of external influences and iteratively reflect on planning to determine if adaptations are needed
Experiments with impact projects show no positive impact on student engagement and/or study success	Annual evaluations and iterations enable project adjustments
Academic staff members do not approach us with ideas	Regular communication about Impact at the Core and a well-promoted open call
Support base with faculties	In consultation with faculties, we develop faculty-specific impact strategies that fits the faculty-specific situation
Lower budgets	Periodical reporting, annual evaluation and adjustments
Insufficient collaboration with other HOKA and/or impact initiatives	Frequent meetings with project leads of these HOKA and Strategy initiatives
Related to projects at faculty level	
Compatibility NVAO requirements (specifically concerning examination)	Input of learning innovators and educational consultants to meet NVAO requirements
Work pressure academic staff members and learning innovators	Assignment of extra learning innovators/educational consultants to help academic staff members change their courses and/or to elaborate plans and ideas
Providing this type of education might be difficult for academic staff members who do not participate in research in interaction with stakeholders	Investing in the skill set of academic staff members

Large scale programmes, which makes small-scale education difficult	Make use of qualified tutors for small-scale education
Related to facilitation	
Insufficient administrative support for academic staff members to incorporate impact-driven education	Investing in a proper support structure, with input from academic staff members, students and external stakeholders
Due to the lack of space on campus, we cannot provide sufficient project areas where students can work together	Communicate regularly with RE&F to explore all possibilities
Not being able to find enough projects with sufficient quality	EUR-wide societal engagement should provide us with enough stakeholders and problems

Appendix 1: Governance Impact at the Core

Project group

The project group members are completely dedicated to the project and develop and work on the overall project plan. They are responsible for all phases of the project, decide upon the project's objectives and outcomes and manage deliverables according to the plan.

Name	Function
Arwin van Buuren	Academic Lead
Daniel van Vliet	Project Lead
Linda de Vreede	Policy & Project Officer
Bieneke Verheijke	HOKA coordinator / Project Advisor Academic Affairs

Workgroup

The workgroup is designed to bring together several individuals at this university with a specific skillset and relevant knowledge. The workgroup collectively comes together to discuss the project, undertake assigned tasks and activities. It is especially relevant for the gathering of information from the several existing faculties in order to successfully achieve the project's objectives.

Name	Faculty / Department
Janneke de Jong	ESSB
Fenneke van der Grinten	ESL
Geert Brinkman	ESSB
Eveline Wijnmalen	RSM
Marisela Martinez Claros	EUC

Academic Advisory Board

The Academic Advisory Board functions as a sounding board for the project. They come together to critically reflect on the objectives and plans of the project so that they can efficiently advise the project group. Members of the Academic Advisory Board all have key positions within this or another university, experience with parts of the project objectives and therefore can be seen as experts on the subject.

Name	Faculty
Arwin van Buuren - chair	ESSB
Frank van Oort	ESE
Anne Marie Weggelaar	ESHPM
Magdalena Cholakova	RSM
Jeroen Jansz	ESHCC / CLI
Kleis Broekhuizen	ESL
Hafez Ismaili M'hamdi	Erasmus MC
Christa van Wijnbergen	EUC
Mieke van der Bijl-Brouwer	TU Delft

Appendix 2: Definition of impact-driven education

Impact-driven education has some distinct characteristics:

- It deals with real, unstructured and multifaceted societal problems (i.e. 'wicked' problems);
- Students learn to understand and approach these problems in a multidisciplinary way;
- Students learn to cooperate and to cocreate in (interdisciplinary) student teams, together with academic staff members and stakeholders;
- Students learn to diagnose and frame problems and propose clear guiding policy and action steps that would help to develop (building blocks of) a solution;
- Stakeholders and/or problem-owners are actively involved in this type of education.

These characteristics are described in more detail below.

b. 'Wicked' problems

Real-time societal issues or "wicked problems", such as sustainability issues, are ill-defined, have no pre-defined (or single best) solution and are essentially subject to interpretation.²⁴ "Wicked problems" thus present students with incongruities that trigger them to first formulate an appropriate orientation towards the problem. Such problems presuppose that students can 'fail' in their journey to define an appropriate problem orientation and solution. However, working with real problems and being responsible for coming up with applicable knowledge and solutions that has the potential to make a positive difference, greatly contributes to the intrinsic motivation of students to invest in their personal development and academic study.²⁵

Understanding unstructured issues requires systems thinking, in order for students to understand an issue as embedded in multiple scales and domains. They deepen their understanding by persistently trying to refine and redefine the problem and thereby also the 'solution space'. Wicked problems have multiple solutions and so "depth" is also attained by weighing the pros and cons of the remaining solutions. In order to solve these problems, students need to deploy and thereby develop their critical creative problem-solving (21st century) skills and venture different heuristics.

c. Educational ecosystem

As described above, "wicked problems" cannot be solved solely in the linear manner of understanding the problem, gathering and analysing information and then formulating a solution, nor can they be solved monodisciplinary or by one isolated stakeholder.²⁶ It requires iteration in problem definition, analyses and synthesis, experimentation, as well as input from all stakeholders in all these stages. Working with wicked problem in cooperation with external stakeholders therefore leads to a new educational ecosystem:²⁷ see figure 3.

²⁴ Rittel, H.W.J. & Webber, M.M. (1984). Planning Problems are Wicked Problems. In N. Cross (Ed.), *Developments in Design Methodology* (pp. 135-144). Chichester; New York: Wiley.

²⁵ Mulgan & Townsley (2016).

²⁶ Rittel & Webber (1984).

²⁷ An education ecosystem includes all (internal and external) stakeholders of education, see: <http://www.oecd.org/cfe/leed/Outward-Looking-School-and-Ecosystem.pdf>.

In the traditional ecosystem, if researchers work on real-life problems, they interact with the outside world through their research. The researcher would then translate this knowledge to the learning environment. Usually, the teacher would orchestrate all interactions with the outside world through its network. The student would therefore never interact with the 'wicked' real world itself.

In the impact-driven ecosystem, the 'wicked' world is at the core of research and the learning environment. In the learning environment, students preferably work together with students from other disciplines and stakeholders on real-life problems. Doing so, enables a multi-disciplinary, multi-faceted approach of wicked problems. The new ecosystem is defined by (continuous) interaction between the student, teacher and (outside) stakeholder.²⁸

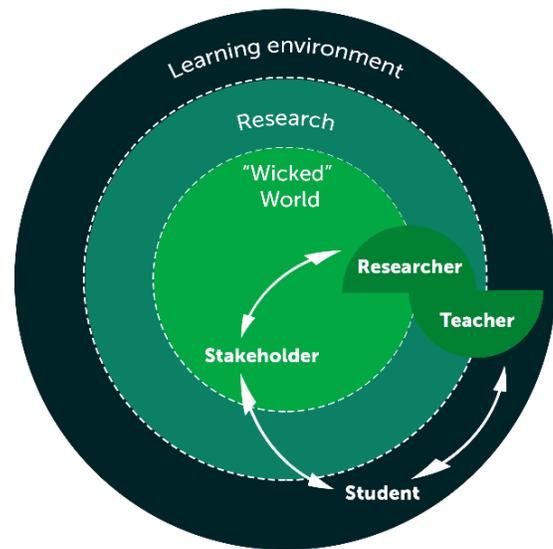


Figure 3 Educational ecosystem

c. Impact of research and education

In the impact-driven educational ecosystem as described above, the two-leggedness of academic staff is portrayed. Academic staff members can create impact through their research and their education, this section describes the interaction between these two.

Performing impact-driven research can help to develop impact-driven education. Researchers interacting with outside stakeholders in a more solution- or action-oriented way can transfer this approach into the way they teach students to become critical, creative problem solvers. Historically, EUR holds many nice examples of such practices that might be upscaled. Students from the Erasmus Medical Centre work in city programmes to invest in health care prevention programmes. Students from master programmes like Urban, Port & Transport Economics or Urban Governance work with outside stakeholders to tackle complex challenges. In Urban City Labs, students work with NGO's to address societal challenges of the Rotterdam region. In these programmes, researchers have long since experimented to tie their academic curiosity and entice students to think and work on important issues, together with representatives from the outside world. In this way, students work with professionals from the outside world, influence the way in which societal challenges are approached and help to disseminate theoretical models. However, we need to support those staff members less involved in impact-driven research to make this shift in their education. That means that an important component of this plan is devoted to docent professionalization.

At the other hand, performing impact-driven education can help to foster impact-driven research. In the traditional inquiry-based model, all kinds of collaborations between staff and students can be found. The same holds true for impact-driven education. Academic staff members can collaborate with students when working on real societal problems and can join forces to together enhance their impact as an academic. They can use the results from their impact-driven educational programmes in their own impact-driven research. Creating opportunities and sharing best practices can foster a collaborative impact-driven culture among students and staff.

²⁸ Idem.

d. The learning environment

To be able to work with real-time wicked problems, impact-driven education implies an open learning environment that allows for interaction with stakeholders and problem-owners.²⁹ According to Ibwe et al. (2018), the interaction with stakeholders has a stimulating effect on the creativity of students.³⁰ Stakeholders, for example from the industry, can be involved in university education in numerous ways, such as internships, guest lectures, summer school and common projects. The learning environment can be categorized into three categories based upon the type of industry involvement:

- A closed learning environment: real-life problems are adapted to the curriculum through case-based or project-based learning.
- A semi-open learning environment: students interact with the industry through activities outside their core curriculum, such as through internships, theses etc.
- An open learning environment: real-life problems are integrated into the curriculum and students work together with stakeholders on those problems.

In the conclusions of their case study at a large research intense Swedish university, Pantoz, Gumaelius, Buckley, and Pears (2019) highlight the benefits of student-industry activities. In line with previous research, they state that students develop more practical-oriented knowledge like interpersonal skills and communication and that students are given the opportunity to see what a potential work situation could look like (Pantoz et al., 2019). However, they also emphasise a lack of collaboration between the three actors; university, students and industry. The study also indicates that industry-student interaction does not always relate to the education and the courses the students are participating in, thus making the collaboration irrelevant to students. These observations should thus serve as points of attention when creating meaningful collaborations between academic staff members, students and stakeholders.

e. Interaction between the involved actors

Due to shifting roles in the learning environment in an ecosystem that studies real-time challenges concerning the SDGs, the relationship between an academic staff member in a teaching position and students is subject to change. Rather than providing all the knowledge, academic staff will take on a more coaching and guiding role in their education: facilitating group discussions with inside and outside stakeholders and guiding students in their learning journey. This change needs to be integrated in academic career paths and teacher professionalization. In addition, students are expected to learn from each other, as well as from the teacher and stakeholder. This change needs to be integrated into the intended learning outcomes. Furthermore, considering the extensive knowledge of the stakeholder on all aspects of the problem, students need to analyse the problem jointly with stakeholders in order to understand the problem thoroughly. Through this collaboration, the stakeholder can steer the learning experience of the students and the relevance of the solution to its own problem. Due to their collaboration, the stakeholder can also contribute to the assessment of the student. This change needs to be integrated in the facilitation of the learning process.

²⁹ Learning environments aim to maximize study success and facilitate the achievement of learning outcomes by means of engaging and challenging education. Academic staff members, outside and inside stakeholders, facilities, assignments: all these elements constitute the learning environment.

³⁰ Ibwe, K. S., Kalinga, E. A., & Mvungi, N. H. (2018). The Impact of Industry Participation on Challenge Based Learning. *International Journal of Engineering Education*, 34(1), 187–200.

Appendix 3: External benchmark

The external benchmark addressed (among others) the following questions:

- How did these universities develop shared visions on which problems need to be addressed;
- What didactical models support student learning;
- What outcomes are defined in terms of student competencies;
- What support systems are in place to support the interaction with the outside world.

Substantive Learnings

The benchmark provided many substantive learnings - i.e. the way these universities have integrated 'impact' in their education offering – which are described below.

It seems that all universities apply (at least one of) three basic learning models in order to generate impact through their educational offering:

- Experiential learning: learning from experiences (Kolb; Schon) that challenges learners to learn by doing and to construct certain outputs through reflections and iterations.
- Inquiry-based learning: a 5-step learning cycle (Hofstein, Mamlok-Naarman 2007) that challenges learners to start their learning by engaging themselves with a relevant question and then further explore, elaborate and evaluate their findings. This inquisitive approach is rooted in identifying and researching issues.
- Transformative learning: a reflective approach developed by Mezirow (1978) to learning that is rooted in challenging assumptions and redefining beliefs. Transformative learning impacts the way students understand themselves and the world and invites them to challenge earlier assumptions and redefine their view on prevalent beliefs.

In addition, the form in which impact-driven education is offered is manifold. These include curricular as well as extracurricular education. From weekend hackathon programmes (e.g. The University of Auckland's Get Good Done), to summer schools (e.g. The University of Auckland's Summerlab), to projects (e.g. McMaster's IMPACT Initiative), year-long programmes (e.g. King's College London's Civic Leadership Academy), multi-year programmes (The University of Auckland's Grand Challenges Programme), and even programmes for the entire duration of curricula (e.g. McMaster University's Stellify). Additionally, impact-driven education includes internships, work placements and volunteering programmes (e.g. University of Amsterdam's honours-module Social Entrepreneurship).

What these impact-driven educational offerings do have in common is that they all seem to originate from the ambition to help students acquiring 21st century skills through addressing relevant contemporary or future challenges faced by local, regional, national, or global society.³¹ Of the identified skills, the focus lies on critical creative problem solving, communication and collaboration. Peer-to-peer learning is for example promoted. Additionally, these universities embed ethics, social responsibility, civic engagement and the SDGs as well. Tilburg University for example focuses besides knowledge and skills upon character building, so that students are educated to become 'thinkers who do good'.³²

³¹ Communication, creative thinking and acting, critical thinking, problem-solving, cooperation, social and cultural skills, self-direction, computational thinking, information skills, ICT skills and media literacy, see: <https://slo.nl/thema/meer/21e-eeuwsevaardigheden/>.

³² Connected to the 21st century skill of self-direction.

To provide this type of education, all universities work with projects from the outside world. Wageningen University for example offers Education Project Services to connect real-life, mostly sustainable, questions from society to its courses. All universities have different kinds of partnerships with local private as well as public sector organizations. At Wageningen University, societal organizations can request research projects whereby students and researchers work together with the client on new solutions. Additionally, some universities form alliances with other universities, colleges and schools (e.g. the University of Amsterdam is part of the League of European Research Universities). The type of partnership varies from commissioned project work (e.g. UA's Solving Your Future), to consultancy work (e.g. McMaster's IBH community consulting), to co-op programmes (e.g. UBC's BIE), to entire curriculum alliances (e.g. MU's Flying Start Degree (BSc (Hons) Business Accounting) - which is an entire degree in collaboration with PwC).

In line with the values and ethics they teach, and part of their societal engagement strategy, many universities have widened their target audience by providing education to local children (e.g. UBC's Roots and Shoots Music Education Programme), local and regional vulnerable communities (e.g. McMaster Discovery Programme), as well as specific target groups such as refugees (UBC Dadaab Refugee Complex), prisoners (e.g. MU's Theatre in Prisons and Probation) or immigrants (e.g. KCL's Sanctuary Programme). Besides, many universities support lifelong learning by providing career development courses for alumni and professionals. Through alumni mentoring programmes and networking events these universities maintain close ties with their alumni.

Procedural Learnings

The scan also provided several procedural learnings – i.e. the way these universities have advanced strategies to integrate 'impact' in their education offering. These learnings are outlined below.

All university-broad strategies were developed by a core project team supported by an advisory board of key internal and external stakeholders. These strategies are oftentimes streamlined with the local community's agenda for development. The University of Manchester, for example, streamlined its plans with the strategic aims of the Greater Manchester metropolitan area. The University of Auckland, in turn, aligned its plans with the indigenous Maori values and principles. And, in order to (keep track of) progress, all universities measure and evaluate impact annually on certain indicators and adjust their plans accordingly.

Some universities (McMaster/The University of British Columbia), however, also had each faculty develop and implement its own specific strategy in order to pursue the goals outlined in the university-broad strategy. Each faculty, in turn, had set up its own core team, supported by a faculty-specific advisory board of relevant staff as well as a student board, to develop these faculty-specific strategies. One faculty – The University of British Columbia's Health and Social Development faculty – had even appointed a community advisory board in order to ensure the strategies were suited to local needs and developments.

Finally, all universities developed a structural approach and/or interface to communicate and work with outside stakeholders. These universities have therefore all set up centres for community engagement and experiential learning (e.g. MU's Legal Advice Centre), as well as volunteering (e.g. KCL's Student Board Bank) and internship platforms (e.g. UBC's Jobs and Volunteer Board). They furthermore provide dedicated spaces for innovation and entrepreneurship. Wageningen University also provides access to her research facilities to third parties.

Appendix 4: Faculty overviews

Overview ESHPM

<p><i>Strategic outlook & partnerships</i></p> <p>ESPHM offers multi- and interdisciplinary education by applying multiple social science disciplines. Furthermore, ESHPM has a strong connection with the Erasmus Medical Centre and is part of the Erasmus Initiative 'Smarter Choices for Better Health'.</p> <p>Within the faculty HEQA plans, there are no goals that are linked to impact-driven education. However, in its Strategy 2020-2024, ESHPM expresses the ambition to 'develop multidisciplinary courses that match the needs of various stakeholders in the healthcare sector and respond to societal issues'.</p>	<p><i>Education</i></p> <ul style="list-style-type: none"> • Zorg and Welzijn (GW208K; BA): students work together in a group on qualitative research in practice. • Technologie en innovatie (GW205K; BA): students design a (service blueprint of a) technology that solves the problem of a healthcare organization through design thinking. • Afstudeerproject (GW310; BA), students work on a relevant issue for the internship institution. • Understanding Health Behaviour (GWMINOR319; minor): students design an intervention for an actual health problem, but do not test this intervention in practice. • Health Services Innovation (GW4586M; MA): students participate in an innovation contest and will write a proposal, present this proposal to both health care professionals, managers and board members and review an innovation proposal. • Governing Healthy Cities (GW4565M; MA): students perform action research in Rotterdam and write a policy report based on this research. • Internship (GW4013) is an elective in our Master Healthcare Management Program. Students work for at least 5 months for 2 days per week side by side with a (project)manager in healthcare on an individual assignment and train professional behavior and management skills.
<p><i>Support systems</i></p> <p>There is currently no support system available, academic staff members arrange the collaboration with stakeholders through their own personal networks.</p>	<p><i>Opportunities</i></p> <p>Students work with design principles, but do not test in practice.</p>

Overview ESPhil

<p><i>Strategic outlook & partnerships</i></p> <p>ESPhil aims to intensify working with societal issues, e.g. in the new master programme under development: 'Philosophy Now: Contemporary Challenges'.</p>	<p><i>Education</i></p> <p>The course that is most relevant for Impact at the Core is Philosophy and Public Policy (FW-EL010; MA): students learn to conduct policy-oriented research and develop research-based policy reports. Furthermore, the students then visit the Ministry of Social Affairs and Employment to present and discuss their policy reports.</p>
<p><i>Support systems</i></p> <p>There is currently no support system available, academic staff members arrange the collaboration with stakeholders through their own personal networks.</p>	<p><i>Opportunities</i></p> <p>The Double Degree programme offers students the tools to critically reflect on their other discipline. This programme could seek for a form to openly engage with professionals from those disciplines. The structure of the Philosophy and Public Policy course could also be used for the more applied courses in the ESPhil curriculum.</p>

Overview ESHCC

<p><i>Strategic outlook & partnerships</i></p> <p>ESHCC has strong connections with the city of Rotterdam within arts and sciences through the Rotterdam Arts and Science Lab (RASL). And ESHCC is part of the Erasmus Initiative 'Vital Cities & Citizens'.</p>	<p><i>Education</i></p> <ul style="list-style-type: none">• Digital Content (CM2011; BA): students work on a digital content case for a particular target audience or stakeholder.• Communication Management (CM2010; BA): students perform market research for a company or organization of their choice.• Audience Engagement (CM4302; MA): students work on a practical case in which they advise an organization about a specific problem concerning audience engagement.• Participating Customers (CM4106; MA): students advise an organization on how they can incorporate customer participation in their business model.• Entrepreneurship in Media & Business (CM4109; MA): students write a business plan for a media-related startup and develop a new value proposition for an existing company.• Project: Applied Cultural Entrepreneurship (CC4160; MA): students are required to realize an artistic production with entrepreneurial engagement (cooperation between EUR/Willem de Kooning/Codarts); they can produce one performance or one exhibition, a consulting report or conduct a case study.• Heritage and Fashion (CH4128; MA): students work on a case from the European Fashion Heritage Association.• Museums in Context (CC4122; MA): students work on a case from a museum and present their proposed plan of action to the institution.• Media Economics (CM4103; MA): students perform consultancy research for Philips Healthcare on media forms used within the healthcare system (2019-2020).• Corporate Management with New Media (CM4102; MA): students formulate a communication strategy for a case study with a company they select themselves.• IBCoM Honours Programme (CM2100; BA): students work on real-life challenges.• Arts and Culture Honours Programme (CC2100; BA): this year on developing a tool with a company to assess sustainability in fashion.
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Support systems

There is currently no support system available, academic staff members arrange the collaboration with stakeholders through their own personal networks.

Opportunities

In its faculty HEQA plan, one of the ambitions is the set-up of a Hub for Innovative Education. More specific projects that are relevant for Impact at the Core following the ESHCC HEQA plans:

- Pilot case-based learning (for the purpose of the master Cultural Economics and Entrepreneurship): this pilot will explore the use of case-based teaching and learning; in cooperation with a company one case will be developed and evaluated.
- Elective 'Assessing the impact of Culture and Creativity in Society: a Service-learning approach' (for the purpose of three master programmes): in this elective students will work together with external partners to assess the impact of culture and creativity in society.
- 'Economies of values' project: a 'shared' oral history project with ethnic entrepreneurs in Rotterdam on mobility, identity and local economies, where students ought to seek, contact and interview these ethnic entrepreneurs and organize an exhibition and set up an archive of this history source material.

Overview RSM

<p><i>Strategic outlook & partnerships</i></p> <p>RSM is working towards positive change to address big societal, economic and ecological challenges. They collaborate and engage with alumni and corporate and societal partners to improve the practice of business and management.</p>	<p><i>Education</i></p> <p>Considering the nature of RSM's field of expertise, it offers quite some courses that are either using real-life case-based examples or interact with external stakeholders:</p> <ul style="list-style-type: none">• Strategic Management (BAB18): students get an opportunity to work on company-related challenges and present their solutions; often a company representative is available for these events as well.• Company Based Research Project (BMBPGBS; BMBPMI; BMBPSCM; BMBPBIM; MA): students get the opportunity to combine writing their thesis with an internship with a company. A student can come up with a business project at a company of his or her choice or can select a project from a list that the master program offers.• Sustainability Grand Challenges (BM05GBS; MA): groups will report on their solution of sustainable grand challenges in a joint report as well as present to a multi-stakeholder jury.• Consultancy Project (BM28MIM; MA): challenges students to analyse a real-life problem coming from a business-client and understand the specific needs in and of a client organization.• Mastering Network for Innovation (BMME051; MA): in a project that is run in co-operation with an organization, the students will apply the insights of this course to craft a strategy.• New Business Development (BMME079; MA): this course will collaborate with multiple companies and provide tangible business projects for the students, with the aim to address real business challenges related to new business development.• Strategic Sourcing (BMME070; MA): during a seven-week period, students work on a real PSM-related problem of real organizations.• International Product Management (BMME054; MA): assignment for L'Oréal in which students have to work on real-life questions/problems.• Social Entrepreneurship (BMME080; MA): student will get to develop a mind-breaking solution to a social problem as part of a real-
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	<p>world assignment for a renowned social enterprise.</p> <ul style="list-style-type: none"> • Master Honours Programmes (BMHON1FI; BMHONMM; BMHONBIM; BMHONSCM; BMHONMI): focus on “wicked” problems from external stakeholders in which students either work together or deliver a solution to the stakeholder. Also included is a Living management case with corporate partners. • Management van Technologie/Technology Management (BKB2013; BAB20; BA): student groups will analyse the use of technology in companies and deliver a written advice to a company. • Learning by Doing (BKBMIN020; minor): Student work on a consultancy project with existing organizations. The work they are doing is intended to benefit both the client organization and the larger community of Rotterdam. • Strategisch Bedrijfsplan / Strategic Business plan (BK1108; BT1108; BA): Students work in groups on a strategic business plan. They do this for a real-life company that they have to find themselves in the beginning of the course.
<p><i>Support systems</i></p> <p>There is no support system in place specifically for academic staff members and external stakeholders. RSM does have a career centre including Employer Relation Officers, whom communicate with partners and external stakeholders. This could be a “hub” for instructors to reach out to when they would like to work together with external partners. This could also be seen in the specific example of the International Consultancy Project of the CEMS master, where on the RSM website there is a small call for external stakeholders to participate in this consultancy project.</p> <p>There is also a dedicated internship coordinator who helps to match students with supervising faculty at each Department.</p>	<p><i>Opportunities</i></p> <p>Delivery of final products to external stakeholders in a scalable model. E.g. in the programme “Boost the Bachelor”: Innovatiemanagement/Innovation Management.</p>

Overview ESSB (including EUC)

<p><i>Strategic outlook & partnerships</i></p> <p>In its Strategy 2019-2022 'Meeting the Future Society', ESSB states the aim to adjust its education to future societal challenges and issues. More specifically, ESSB will enhance its master's degree portfolio with multidisciplinary specialisms that focus particularly on current and future issues. Two interdisciplinary master specializations have started in September 2019 (Social Inequalities and Urban Governance) and four more will start as of 2020-2021: Psychology of Digital Media, Health Psychology & Digital Interventions, Forensic and Legal Psychology, and Organisational Dynamics in the Digital Society.</p> <p>Through the following initiatives, among others, ESSB seeks the collaboration with the government, institutions and companies, and with the city of Rotterdam: Healthy'R, LDE Centre for BOLD Cities, KennisWerkPlaatsen and the Erasmus Initiative 'Vital Cities and Citizens'.</p> <p>Furthermore, ESSB has started a new knowledge lab with the City of Rotterdam: Organisations in a Smart City. The goal of this knowledge lab is to bring (academic) knowledge and practice together. The focus will be on the current theme of changes in work and organisation in an age of digitalisation and 'platformisation' of the economy.</p>	<p><i>Education</i></p> <p>ESSB and EUC education is small-scale and based around Problem Based Learning (PBL).</p> <ul style="list-style-type: none"> • Design Atelier (FSWBM-2090; MA): students work on a design project around a real-life issue for an external client. • Practical Assessment in Education and Training (FSWPE-M026; MA): students make a poster presentation, including a brochure, that includes hands-on tips for professionals. Organisations can sign up for these presentations. • Urban Governance (FSWBM-8040; MA): multidisciplinary student teams advise an organization on a real-life question; in 2019-2020 this was the city of Rotterdam. • Local-to-Global project (extracurricular): Dutch students work together with international students on questions from society (or raised by the students themselves). The accepted proposals will be further developed and executed. • Students in Pedagogical Sciences often do internships/thesis projects at external organisations. • Through the Feyenoord project of Brian Godor (internship), students research questions that address societal issues in Rotterdam. • Engaged Citizens program (EUC): an extracurricular programme in which a group of students gets the opportunity to initiate and engage in activities that commonly fall outside of the scope of their academic learning journey. • Arts and Culture program (EUC): an extracurricular programme in which students explore the relationship between arts and science. • Re-imagining Tomorrow through Arts & Sciences (EUC minor): students from various fields and backgrounds develop theoretical competences in the area of transdisciplinary research, and together with teachers and societal partners, a setting is created in which theory and practice, and academic and artistic practices interact to identify and reframe a complex societal issue.
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<p><i>Support systems</i></p> <p>There is currently no support system available, academic staff members arrange the collaboration with stakeholders through their own personal networks.</p>	<p><i>Opportunities</i></p> <ul style="list-style-type: none">• Companies would like to bring in their own challenges for the Practical Assessment in Education and Training (FSWPE-M026).• The Design Atelier is probably extended to other programmes of Public Administration, this provides for interaction in multidisciplinary student groups.• The intention is to continue Local-to-Global and extend the project to more faculties, so students can work in interdisciplinary teams.
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Overview ESE

<p><i>Strategic outlook & partnerships</i></p> <p>In its Strategic Plan 2018-2023, ESE's aim is to be relevant for society, firms and governments by giving economics-based advice and opinions on contemporary and future issues.</p> <p>ESE will develop its education accordingly, by monitoring and updating its curricula given current and future developments in business and society. ESE will furthermore invest in research and education relations with domains that are potentially relevant for our students and staff, and which add to our own programmes. Think of relationships with Humanities, Social Sciences, Management, History, Theology and Law.</p> <p>In addition, ESE to make an impact on society by continuing and expanding of (elements of) research programmes into matters relevant to the region.</p> <p>And ESE will establish a programme of regional stakeholder events in order to engage and communicate with regional stakeholders.</p> <p>ESE is also part of the Erasmus Initiative 'Smarter Choices for Better Health'.</p>	<p><i>Education</i></p> <ul style="list-style-type: none"> • Seminar Financial Case Studies (FEM21019; MA): students work in teams on financial econometric research projects, supplied by firms in the financial industry. • Seminar Case Studies in Business Analytics and Quantitative Marketing (FEM21001; MA): students work in groups on a research question, usually provided by a company. • Seminar Case Studies in Data Science and Marketing Analytics (FEM11153; MA): students solve real world management problems that are typically put forward by companies. • Seminar Ports and Global Logistics: Disruptive Scenarios (FEM11044; MA): students develop scenarios for 2040 on behalf of a company involved in global logistics. • Seminar Regional and Transport Economics (FEM11045; MA): students provide strategic advice to stakeholders (real life case study). • Seminar Logistic Case Studies (FEM21033; MA): students apply different Operations Research techniques to a real-world application presented by a company. • Seminar Applied Behavioural Economics (FEM11108; MA): students work on case studies in partnership with companies and public organizations. • Port Management and Maritime Logistics (FEB53107M; minor): students develop a strategy for the port of Rotterdam. • New Economic Thinking & Social Entrepreneurship (FEB53115; minor): students work with an existing social enterprise in groups, providing answers to real questions posed by the entrepreneurs regarding their business models, social impact, or contribution to transitioning towards a new economy. • Innovation and Marketing (FEB53112; minor): students work as consultants on a project within the domain of innovation and marketing.
<p><i>Support systems</i></p> <p>There is currently no support system available, academic staff members arrange the collaboration with stakeholders through their own personal networks.</p>	<p><i>Opportunities</i></p> <p>The development of impact-driven education could be linked to the Sustainable Development Goals Initiative of ESE.</p>

Overview ESL

<p><i>Strategic outlook & partnerships</i></p> <p>ESL is in general very aware of the fact that it is necessary and useful to make a connection in our education with society. The motto of Erasmus School of Law is a good illustration: <i>Where Law meets business and society</i>. The connection with society is easily made, since academic staff members often have direct connections with society in different ways, by research or through part-time jobs.</p> <p>ESL is involved in the 'Stichting Juridische Samenwerking aan de Maas (SJSJM)', which is a partnership between ESL, the Public Prosecution Service in the Rotterdam district and the Rotterdam District Court. ESL is furthermore part of the Erasmus Initiative 'Dynamics of Inclusive Prosperity'.</p> <p>In several courses associates/companies are involved or cooperation is found.</p>	<p><i>Education</i></p> <p>ESL offers interactive academic learning by using Problem Based Learning (PBL) in the bachelor programmes and Active Academic Learning in the master programmes. The cases used in our courses are generally based on real life and students often need to join forces in solving these cases.</p> <ul style="list-style-type: none">• Minor Arbeidsrecht: students advise a company on question based upon the practice of the company, formulated in conjunction with the organisation.• In the bachelor Criminology students individually formulate an advice to the City (council) of Rotterdam.• In the master Tax Law, part of the research for the thesis is done in a project team at an external organisation.• In the master <i>Arbeidsrecht</i> the students must work together on a case from the court of Rotterdam. An internship is obligatory, like in several other masters.• The master <i>Privaatrecht</i> develops new real-life assignments for every academic year. Additionally, there are several visits to external organisations and assignments linked to these visits.• The master <i>Toga aan de Maas</i> is a practice-oriented master which is completely linked to the Toga professions. The master has an obligatory internship and there are approximately 20 masterclasses which are constructed in cooperation with associates. The students visit these associates.• In the master <i>Aansprakelijkheid en verzekeringen</i> there are several masterclasses as well in which associates/companies are involved.• In the master Constitutional Law the students visit the Bureau of Legislation of Parliament, and work, together in a project team, on a case which prepares them for the visit. Furthermore, this master organises a moot-court in association with law firms.• Cooperation with society is an important theme in the master <i>Strafrecht</i>. Different associates/companies are involved in this master and there are several excursions. In
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	<p>every course guest-speakers or specialists from other universities participate. In this master programme, students meet former delinquents and victims as well.</p>
<p><i>Support systems</i></p> <p>There is no formal support system at ESL for contacts with other organisations.</p>	<p><i>Opportunities</i></p> <p>One of the focus points following the ESL HEQA plans is improving the connection to professional practice by using more realistic, societal, real-time problems. Several master programmes have indicated the desire to establish more interaction with society.</p> <p>Specific initiatives that are already under development:</p> <ul style="list-style-type: none"> • The master Financial law is revising its programme to realise even more contact and cooperation with everyday practice. • The master European and International Law is designing a clinic with NGO's and other relevant organisations for students to solve cases based on real life. • The bachelor courses <i>Handelsrecht</i>, <i>Ondernemingsrecht</i> en <i>Arbeidsrecht</i> will develop cases for students in cooperation with external organisations and based upon their practice.

Overview Erasmus MC

<p><i>Strategic outlook & partnerships</i></p> <p>Erasmus MC has a strong focus on collaboration: e.g. it is involved on more than 200 regional partnerships. Erasmus MC is also part of the Erasmus Initiative 'Smarter Choices for Better Health'.</p> <p>In its new strategy, Koers23, Erasmus MC also aims to connect its distinctive top education with the health(care) issues of tomorrow. Therefore, more focus will be on health: such as through prevention and lifestyle interventions. Erasmus MC works on adjusting their education in cooperation with its partners, taking into account the changing needs of patients, citizens and society.</p>	<p><i>Education</i></p> <ul style="list-style-type: none"> • Community Project (Ba3SOZP-CP): students work in groups on a real-life question from an organization. The projects provide students with insight into the role of various health organizations, which can use the project results for their own activities aimed at improving public health. • Querido Honours College: last years students have investigated through population questionnaires why some patients are not compliant as far as taking their medicine goes. • Tutoraat: Each year there is an assignment in which students take on a societal problem and prepare an opinion on that. • In the Master Nanobiology students are redirecting their research assignment to work on Corona. • Electives: several assignments are on societal problems. • Minors: several minors are aimed at attracting students from different programs so that these can collaborate and in fact teach each other different things. For example: <ul style="list-style-type: none"> • De werking van de Hersenen: van neuron tot vrije wil. • Ethiek in innovatieve gezondheidszorg • Genetics in Society
<p><i>Support systems</i></p> <p>The Community Project has a specific coordinator that arranges the contacts with external organizations and which makes sure there are enough questions for all the student groups.</p>	<p><i>Opportunities</i></p> <p>In the Erasmus MC HEQA plans, two projects are deemed relevant for Impact at the Core:</p> <ul style="list-style-type: none"> • 'Beter leren voorschrijven dankzij student-run clinic' (learn to prescribe better thanks to student-run clinic): students will independently draft, execute and check a treatment plan, under supervision of an experienced doctor. • 'Maatschappelijk betrokken artsen opleiden' (educating socially involved doctors): students will work together with students from other disciplines in learning communities on assignments focused on questions of social organizations of care and welfare. <p>Other opportunities include:</p> <ul style="list-style-type: none"> • Medical Business and Innovation: Erasmus MC collaborates with RSM to set up a track within RSMs Innovation Management program in which

	<p>Industrial Partners are asked to bring in assignments for the students.</p> <ul style="list-style-type: none">• Erasmus MC is investigating whether Problem-Solving-Education (PGO) can be implanted in the new curriculum of Medicine.• Genetics in Society: Putative new Research Master program in which the Societal impact of Genome technology is central.• Diversity and inclusivity for the Erasmus doctor. Future doctors should operate in a diverse society. Learned attitudes are necessary in order to treat patients from minority groups in an equal and non-judgmental way.
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Appendix 5: Education analysis

Analysis ESHPM

	Problem Solving by Design	Student Consultancy	Applied (commissioned) Research	Status Outside Wicked Problems	Status Actor in the transaction model
Inside <ul style="list-style-type: none"> Project based Case based 	<ul style="list-style-type: none"> Understanding Health Behaviour (GWMINOR319; minor): students design an intervention for an actual health problem, but do not test this intervention in practice. Technologie en innovatie (GW205K; BA): students design a (service blueprint of a) technology that solves the problem of a healthcare organization through design thinking. 			Modelled Reality	Teacher based
Inside/Outside <ul style="list-style-type: none"> Project based Case based 		<ul style="list-style-type: none"> Health Services Innovation (GW4586M; MA): students participate in an innovation contest and will write a proposal, present this proposal to both health care professionals, managers and board members and review an innovation proposal. 	<ul style="list-style-type: none"> Zorg and Welzijn (GW208K; BA): students work together in a group on qualitative research in practice. 	Wicked problems from the outside world	Teacher guided, student co creation
Outside/Inside <ul style="list-style-type: none"> Projects Internship Thesis 		<ul style="list-style-type: none"> Afstudeerproject (GW310; BA), students work on a relevant issue for the internship institution. 	<ul style="list-style-type: none"> Governing Healthy Cities (GW4565M; MA): students perform action research in Rotterdam and write a policy report based on this research. 	Learning in the Outside World	Outside stakeholder involvement
Outside/Outside <ul style="list-style-type: none"> Extracurricular Voluntary Entrepreneur 			<ul style="list-style-type: none"> Internship (GW4013): students work side by side with a (project)manager an individual assignment. 	Developing activities in (favour of) the outside world	Sharing experiences with the academic community

Analysis ESPhil

	Problem Solving by Design	Student Consultancy	Applied (commissioned) Research	Status Outside Wicked Problems	Status Actor in the transaction model
Inside <ul style="list-style-type: none"> • Project based • Case based 				Modelled Reality	Teacher based
Inside/Outside <ul style="list-style-type: none"> • Project based • Case based 			Philosophy and Public Policy (FW-EL010; MA): students learn to conduct policy-oriented research and develop research-based policy reports. Furthermore, the students then visit the Ministry of Social Affairs and Employment to present and discuss their policy reports.	Wicked problems from the outside world	Teacher guided, student co creation
Outside/Inside <ul style="list-style-type: none"> • Projects • Internship • Thesis 				Learning in the Outside World	Outside stakeholder involvement
Outside/Outside <ul style="list-style-type: none"> • Extracurricular • Voluntary • Entrepreneur 				Developing activities in (favour of) the outside world	Sharing experiences with the academic community

Analysis ESHCC

	Problem Solving by Design	Student Consultancy	Applied (commissioned) Research	Status Outside Wicked Problems	Status Actor in the transaction model
Inside <ul style="list-style-type: none"> Project based Case based 		<ul style="list-style-type: none"> Entrepreneurship in Media & Business (CM4109; MA): students write a business plan for a media-related startup and develop a new value proposition for an existing company. Corporate Management with New Media (CM4102; MA): students formulate a communication strategy for a case study with a company they select themselves. 	<ul style="list-style-type: none"> Communication Management (CM2010; BA): students perform market research for a company or organization of their choice. 	Modelled Reality	Teacher based
Inside/Outside <ul style="list-style-type: none"> Project based Case based 		<ul style="list-style-type: none"> Digital Content (CM2011; BA): students work on a digital content case for a particular target audience or stakeholder. Audience Engagement (CM4302; MA): students work on a practical case in which they advise an organization about a specific problem concerning audience engagement. Participating Customers (CM4106; MA): students advise an organization on how they can incorporate customer participation in their business model. Museums in Context (CC4122; MA): students work on a case from a museum and present their proposed plan of action to the institution. Media Economics (CM4103; MA): students perform consultancy research for Philips Healthcare on media forms used within the healthcare system (2019-2020). Heritage and Fashion (CH4128; MA): students work on a case from the European Fashion Heritage Association. 	<ul style="list-style-type: none"> IBCoM Honours Programme (CM2100; BA): students work on real-life challenges. Arts and Culture Honours Programme (CC2100; BA): this year on developing a tool with a company to assess sustainability in fashion. 	Wicked problems from the outside world	Teacher guided, student co creation
Outside/Inside <ul style="list-style-type: none"> Projects Internship Thesis 		<ul style="list-style-type: none"> Project: Applied Cultural Entrepreneurship (CC4160; MA): students are required to realize an artistic production with entrepreneurial engagement (cooperation between EUR/Willem de Kooning/Codarts); they can produce one performance or one exhibition, a consulting report or conduct a case study. 		Learning in the Outside World	Outside stakeholder involvement
Outside/Outside <ul style="list-style-type: none"> Extracurricular Voluntary Entrepreneur 				Developing activities in (favour of) the outside world	Sharing experiences with the academic community

Analysis RSM

	Problem Solving by Design	Student Consultancy	Applied (commissioned) Research	Status Outside Wicked Problems	Status Actor in the transaction model
Inside <ul style="list-style-type: none"> Project based Case based 		<ul style="list-style-type: none"> Strategic Business plan (BK1108; BT1108; BA): students work in groups on a strategic business plan for a real-life company (that they have to find themselves). 		Modelled Reality	Teacher based
Inside/Outside <ul style="list-style-type: none"> Project based Case based 	<ul style="list-style-type: none"> Social Entrepreneurship (BMME080; MA): students will develop a solution to a social problem as part of a real-world assignment for a renowned social enterprise. 	<ul style="list-style-type: none"> Strategic Management (BAB18; BA): students work on several company problems which address concurrent strategic challenges of existing organizations. Commonly, a representative of (at least one of) the company(ies) is present in class. Technology Management (BKB2013; BAB20; BA): student groups will analyse the use of technology in companies and deliver a written advice to a company. Consultancy Project (BM28MIM; MA): students analyse a real-life problem coming from a business-client International Product Management (BMME054; MA): assignment for L'Oréal in which students have to work on real-life problems. 	<ul style="list-style-type: none"> Sustainability Grand Challenges (BM05GBS; MA): groups will report on their solution of sustainable grand challenges in a joint report as well as present to a multi-stakeholder jury. 	Wicked problems from the outside world	Teacher guided, student co creation
Outside/Inside <ul style="list-style-type: none"> Projects Internship Thesis 		<ul style="list-style-type: none"> Mastering Network for Innovation (BMME051; MA): in a project that is run in co-operation with an organization, the students will apply the insights of this course to craft a strategy. New Business Development (BMME079; MA): students address real business 	<ul style="list-style-type: none"> Company Based Research Project (BMBPGBS; BMBPPI; BMBPSCM; BMBPBIM; MA): students get the opportunity to combine writing their thesis with an internship with a company. A student can come up with a business project at a company of his or her choice or can select a 	Learning in the Outside World	Outside stakeholder involvement

		<p>challenges related to new business development.</p> <ul style="list-style-type: none"> • Master Honours Programmes: focus on "wicked" problems from external stakeholders in which students either work together or deliver a solution to the stakeholder. Also included is a Living management case with corporate partners. • Learning by Doing (BKBMIN020; minor): students work on a consultancy project with existing organizations, intended to benefit both the client organization and the larger community of Rotterdam. 	<p>project from a list that the master program offers.</p>		
<p>Outside/Outside</p> <ul style="list-style-type: none"> • Extracurricular • Voluntary • Entrepreneurial 				<p>Developing activities in (favour of) the outside world</p>	<p>Sharing experiences with the academic community</p>

Analysis ESSB (including EUC)

	Problem Solving by Design	Student Consultancy	Applied (commissioned) Research	Status Outside Wicked Problems	Status Actor in the transaction model
Inside <ul style="list-style-type: none"> Project based Case based 				Modelled Reality	Teacher based
Inside/Outside <ul style="list-style-type: none"> Project based Case based 		<ul style="list-style-type: none"> Practical Assessment in Education and Training (FSWPE-M026; MA): students make a poster presentation, including a brochure, that includes hands-on tips for professionals. Organisations can sign up for these presentations. 		Wicked problems from the outside world	Teacher guided, student co creation
Outside/Inside <ul style="list-style-type: none"> Projects Internship Thesis 	<ul style="list-style-type: none"> Design Atelier (FSWBM-2090; MA): students work on a design project around a real-life issue for an external client. 		<ul style="list-style-type: none"> In the Feyenoord project of Brian Godor (internships), students research questions that address societal issues in Rotterdam. Students in Pedagogical Sciences often do internships/thesis projects at external organisations. 	Learning in the Outside World	Outside stakeholder involvement
Outside/Outside <ul style="list-style-type: none"> Extracurricular Voluntary Entrepreneurial 		<ul style="list-style-type: none"> Local-to-Global project (extracurricular): Dutch students work together with international students on questions from society (or raised by the students themselves). The accepted proposals will be further developed and executed. 	<ul style="list-style-type: none"> Engaged Citizens program (EUC): an extracurricular programme in which a group of students gets the opportunity to initiate and engage in activities that commonly fall outside of the scope of their academic learning journey. Arts and Culture program (EUC): an extracurricular programme in which students explore the relationship between arts and science. 	Developing activities in (favour of) the outside world	Sharing experiences with the academic community

Analysis ESE

	Problem Solving by Design	Student Consultancy	Applied (commissioned) Research	Status Outside Wicked Problems	Status Actor in the transaction model
Inside <ul style="list-style-type: none"> Project based Case based 		<ul style="list-style-type: none"> Seminar Ports and Global Logistics: Disruptive Scenarios (FEM11044; MA): students develop scenarios for 2040 on behalf of a company. 		Modelled Reality	Teacher based
Inside/Outside <ul style="list-style-type: none"> Project based Case based 		<ul style="list-style-type: none"> Seminar Regional and Transport Economics (FEM11045; MA): students provide strategic advice to stakeholders (real life case study). Port Management and Maritime Logistics (FEB53107M; minor): students develop a strategy for the port of Rotterdam. Innovation and Marketing (FEB53112; minor): students work as consultants on a project within the domain of innovation and marketing. 	<ul style="list-style-type: none"> Seminar Financial Case Studies (FEM21019; MA): students work in teams on specific (theoretical or empirical) financial econometric research projects, supplied by firms in the financial industry. Seminar Case Studies in Business Analytics and Quantitative Marketing (FEM21001; MA): students work in groups on a research question, usually provided by a company. Seminar Case Studies in Data Science and Marketing Analytics (FEM11153; MA): students solve real world management problems put forward by companies. Seminar Logistic Case Studies (FEM21033; MA): students address a real-world application presented by a company. 	Wicked problems from the outside world	Teacher guided, student co creation
Outside/Inside <ul style="list-style-type: none"> Projects Internship Thesis 		<ul style="list-style-type: none"> Seminar Applied Behavioural Economics (FEM11108; MA): students work on case studies in partnership with companies and public organizations. New Economic Thinking & Social Entrepreneurship (FEB53115; minor): students work in groups with an existing social enterprise, providing answers to real questions posed by the entrepreneurs regarding their business models, social impact, or contribution to transitioning towards a new economy. 		Learning in the Outside World	Outside stakeholder involvement
Outside/Outside <ul style="list-style-type: none"> Extracurricular Voluntary Entrepreneurial 				Developing activities in (favour of) the outside world	Sharing experiences with the academic community

Analysis ESL

	Problem Solving by Design	Student Consultancy	Applied (commissioned) Research	Status Outside Wicked Problems	Status Actor in the transaction model
Inside <ul style="list-style-type: none"> • Project based • Case based 		In every bachelor the students learn through problem-based learning (PBL).		Modelled Reality	Teacher based
Inside/Outside <ul style="list-style-type: none"> • Project based • Case based 		<ul style="list-style-type: none"> • In the bachelor Criminology students individually formulate an advice to the City (council) of Rotterdam. • In the master <i>Arbeidsrecht</i> the students must work together on a case from the court of Rotterdam. • The master <i>Privaatrecht</i> develops new real-life assignments for every academic year. • In the master <i>Aansprakelijkheid en verzekeringen</i> there are several masterclasses as well in which associates/companies are involved. • In the master Constitutional Law the students visit the Bureau of Legislation of Parliament, and work, together in a project team, on a case which prepares them for the visit. Furthermore, this master organises a moot-court in association with law firms. 		Wicked problems from the outside world	Teacher guided, student co creation
Outside/Inside <ul style="list-style-type: none"> • Projects • Internship • Thesis 		<ul style="list-style-type: none"> • Minor <i>Arbeidsrecht</i>: students advise a company on question based upon the practice of the company, formulated in conjunction with the organisation. • The master <i>Toga aan de Maas</i> is a practice-oriented master which is completely linked to the Toga professions. The master has an obligatory internship and there are approximately 20 masterclasses which are constructed in cooperation with associates. The students visit these associates. 	<ul style="list-style-type: none"> • In the master Tax Law, part of the research for the thesis is done in a project team at an external organisation. 	Learning in the Outside World	Outside stakeholder involvement
Outside/Outside <ul style="list-style-type: none"> • Extracurricular • Voluntary • Entrepreneurial 		The master <i>Gezondheidsrecht</i> organises several lectures given by different organisations, which are open to students from other faculties. The student union organises internships and organises meetings with law firms and hospitals. This can lead to a research project at this organisation, which can be used as input for a thesis. Students from the master Tax Law assist <i>Stichting Belwinkel Rotterdam</i> in order to help taxpayers with their tax forms. In the Honours Programme students organise several meetings with different organisations in which cases based on real life are used. In My Future the alumni are involved in developing the skills-programme. The master Commercial Law has many extracurricular activities, for example, a student-teacher diner. In the master <i>Ondernemingsrecht</i> , a masterclass is organised at a law firm.		Developing activities in (favour of) the outside world	Sharing experiences with the academic community

Analysis Erasmus MC

	Problem Solving by Design	Student Consultancy	Applied (commissioned) Research	Status Outside Wicked Problems	Status Actor in the transaction model
Inside <ul style="list-style-type: none"> Project based Case based 		<ul style="list-style-type: none"> Tutoraat: Each year there is an assignment in which students take on a societal problem and prepare an opinion on that. 	<ul style="list-style-type: none"> Electives: several assignments are on societal problems. 	Modelled Reality	Teacher based
Inside/Outside <ul style="list-style-type: none"> Project based Case based 			<ul style="list-style-type: none"> In the Master Nanobiology students are redirecting their research assignment to work on Corona. 	Wicked problems from the outside world	Teacher guided, student co creation
Outside/Inside <ul style="list-style-type: none"> Projects Internship Thesis 			<ul style="list-style-type: none"> Community Project (Ba3SOZP-CP): students work in groups on a real-life question from an organization. The projects provide students with insight into the role of various health organizations, which can use the project results for their own activities aimed at improving public health. 	Learning in the Outside World	Outside stakeholder involvement
Outside/Outside <ul style="list-style-type: none"> Extracurricular Entrepreneurial 			<ul style="list-style-type: none"> Querido Honours College: last years students have investigated through population questionnaires why some patients are not compliant as far as taking their medicine goes. 	Developing activities in (favour of) the outside world	Sharing experiences with the academic community

Appendix 6: Concept funding criteria

The following funding criteria have been formulated for project applications and pilot innovations:

- The project aim fits into the focus of Impact at the Core;
- There is no HEQA and/or enough faculty- or CLI-funding available;
- The project is aimed at initiating a new initiative or strengthening / upscaling an existing one;
- The project is co-funded by the faculty/department;
- Knowledge and experience out of the project is actively disseminated within the learning community of Impact at the Core and/or CLI;
- All projects are subject to the quality guidelines of Impact at the Core (TBD), e.g. PDCA / evidence-based research and evaluation;
- Involved staff members are willing to apply ideas developed by Impact at the Core;
- Funding is only necessary for a fixed time frame, after which the initiative is financed by regular educational funding.

Applications for funding below €5.000 will be approved by the Project Management Officer / Academic Lead, applications for funding between €5.000-€40.000 will be discussed with the Impact at the Core Advisory Board and applications for funding above €40.000 will be discussed with the Educational Directors.

Appendix 7: Development options infrastructure

Option 1

The first option is a lean stripped version in which there is only a physical structure in place. This would mean we would establish an “educational counter” in which a project team supervises everything and is the backbone of the structure. This is in line with some other universities such as the University of Wageningen and the Design Institute in Potsdam, where external stakeholders can approach the university online with an interesting project. The university then looks if they have an availability within their education to implement that project. With this option there is still a big role for the instructor as they must set up the project assignments for within the course with the help of the project team. There could also be a difficulty in if the instructor wants to involve an external stakeholder into their education as the project team must look for a good match if not available within the existing stakeholder portfolio, the brokerage with the external stakeholder is therefore mostly inside - out. The customizability of this option is extensive.

Option 2

The second option is an online infrastructure in which we create an online platform where students and instructors alike can post project opportunities, find and work on projects in their education. This platform could be used by all faculties across the university. This streamlines the processes and steps to be taken by the instructor to successfully implement project-based learning into their course or program. With this option there is no difference in time spend by the instructor in comparison with regular teaching methods. The brokerage with the external stakeholder is both inside – out and outside – in. This because both the instructor and the external stakeholder could reach out for projects. For the customizability of the platform we cannot make assumptions yet; this highly depends on the form of development that we will use for an online infrastructure.

Developing in-house, buying solutions & outsourcing

There are several ways to develop the above-mentioned solutions for a support system or infrastructure. In the upcoming phase we will have to explore what the best option is. This can be for the complete infrastructure or be a mix of several options. Currently we are seeing these potential options;

1. We develop the infrastructure ourselves. This allows us to exactly set up the support platform just like we as a university want according to our collected needs. It also gives us the opportunity to potentially let other initiatives link to the platform.
2. We use existing software to facilitate the online platform and use a separate environment for additional support. A good example of an already existing educational project-based learning infrastructure used by foreign universities that have project-based learning as a central teaching method is Riipen.
3. We outsource the development of our infrastructure to third parties. We will research the needs among the EUR community and set up a list with requirements. Third parties will be able to develop this.

Appendix 8: Budget narrative

Overhead expenditures vs work packages expenditures

Impact at the Core aims to limit the overhead costs, so most of the budget is available for the to be executed work packages. When looking at our multiple year budget overview, we aim to have a maximum of 20% to be spend on overhead costs. In the table below you can find the percentage of overhead costs related to the complete budget for that financial year.

FY2020	FY2021	FY2022	FY2023	FY2024
15%	7%	6%	9%	8%

Most of the overhead costs are related to the salary of the project team and academic lead that execute the overall project management and office supplies such as phones, desks and electronics.

Growth of Project Team

A growth of the project team has been accounted for in the budget, as well as the growth in salary of all project team members. After doing our initial planning in a Gantt chart, a resource planning was made to be able to allocate the right resources and to see which resources are still needed. We will therefore need to hire the following positions to help realizing the several work packages:

- Communication and Community Officer
- Learning & Innovation Officer
- Business Developer
- PhD 1 & 2
- Project Management Officer

All positions are accounted for 1,0 FTE. There is also a possibility we must hire a second Project Management Officer because of the high influx in projects during the final phase (2022 – 2024).

Framework budgeting Impact at the Core

For the work packages that are part of Supporting impact-driven education (Track 2) and Building a community for impact-driven education (Track 3) it is already feasible to project a more exact spending as this is executed by the Impact at the Core project team. However, the work packages of Developing impact-driven education (Track 1) fluctuate in spending because initiators of projects underneath these work packages are academics and faculty members. We are not yet able to completely pre-define these costs on an annual basis and especially on a detailed spending level.

Work packages within Track 1: Developing Impact-driven education

1. Boosting new initiatives

There will be an open call for projects from academics which we support financially and organizational and with expertise and advice. We have no indication yet how many applications we will receive and what kind of support they need. We therefore reserved a set maximum amount now for this work package that we will iteratively reflect on.

2020	2021	2022	2023	2024
€60.000	€200.000	€200.000	€50.000	€50.000

2. Professionalizing current practices

In line with the faculty strategy and in liaison with learning innovators and involved academic staff members, several courses will be selected that can be enhanced in terms of impact-driven education. The enhanced design will be tested on the learning cycle, assessment and facilities. These enhanced practices (or its underlying format or pedagogical principles) will be shared within the Community of Practice and, if possible, diffused to other faculties. We project the following number of projects per year underneath this work package:

2020	2021	2022	2023	2024
2	10	11	12	10

As these are already existing current practices, we estimate that we need a 2-month cycle per project to work out the details. We allocated 0,2 FTE as compensation for both the academic staff members and respective L&I consultant of the faculty to work on this. Benchmark salaries were 100.000 gross yearly (academic staff member) and 80.000 gross yearly (L&I Consultant).

5. Refining and upscaling impact-driven forms of education

Based upon the results from the development phase and the strategies of each faculty on impact-driven education, we will develop a more detailed plan for the second phase of the project. The aim of this phase is to implement in each initial (bachelor or master) educational program at EUR a form of impact-driven education. We project the following number of projects per year underneath this work package:

2020	2021	2022	2023	2024
0	0	20	30	40

We estimate that we need a 5-month cycle per project to work out the details. We allocated 0,2 FTE as compensation for both the academic staff member and respective L&I consultant of the faculty to work on this. Benchmark salaries were 100.000 gross yearly (academic staff member) and 80.000 gross yearly (L&I consultant).

Appendix 9: Key indicators

TIMEFRAME EVALUATION	What	How	What	How
Annually as of September 2022 until 2024	Output	Measure	Outcome	Measure
EUR facilities				
EUR has implemented a support system to streamline impact-driven education	Implementation support system	Compliance Check: Bilateral meeting Academic Lead IaC/Programme lead	Teacher, stakeholder and student satisfaction	MTO facilitation per faculty Focus group evaluation per faculty (8) Evaluation Faculty Directors (qualitative)
EUR Programme Portfolio				
Each programme identifies learning outcomes how students should integrate knowledge and understanding in a particular field of knowledge contributing to specific solutions. Assessment is aligned with learning outcomes	Part of examination plan on course level (qualitative analysis OER): - Critical mindset - Sustainability - Communication - Application and integration of disciplinary knowledge in solving real time problems	Compliance Check: Bilateral Conferences EB and Faculty Board	Teacher and student satisfaction	Focus group evaluation per faculty Strategic Dialogue: Bilateral Conferences EB and Faculty Board/IaC
Each programme at bachelor and master level should have a project with a real time, wicked problem	134 real time projects, with outside stakeholders (source: course description Osiris) Of which: 40% with sustainable challenges	Compliance Check: Bilateral Conferences EB and Faculty Board	Teacher, stakeholder and student satisfaction	Focus group evaluation per faculty Strategic Dialogue: Bilateral Conferences EB and Faculty Board/IaC
Faculty level				
Each faculty develops an impact strategy for education, connected with the vision on sustainability	8 faculty strategies on impact education	Compliance Check: Bilateral Conferences EB and Faculty Board/IaC	Shared values, shared vision	Strategic Dialogue: Bilateral Conferences EB and Faculty Board/IaC
Most programmes have a teacher/student delegation in the Community of Practice	100-140 members of the Community of Practice	Compliance Check: Faculty and IaC	Shared values, shared vision	Focus group evaluation per faculty Strategic Dialogue: Bilateral Conferences CLI and IaC

In collaboration with other parties at the EUR, we aim to achieve the following output and outcomes:

TIMEFRAME EVALUATION	What	How	What	How
Annually as of September 2022 until 2024	Output	Measure	Outcome	Measure
EUR facilities				
CLI has incorporated impact learning in teacher/tutor training programs	1 micro lab bachelor 1 micro lab master	Compliance Check: Bilateral Conference Academic Director CLI	Teacher satisfaction	Teacher Satisfaction 7> 10-point scale Qualitative evaluation Strategic Dialogue: Bilateral Conference Academic Director CLI
CLI supports the Community of Practice	134 members of all faculties are part of the active CoP, which: <ul style="list-style-type: none"> • has at least 2 annual meetings; and • an online knowledge base 	Compliance Check: Bilateral Conference Academic Director CLI/Academic Lead Impact at the Core	Teacher, stakeholder and student satisfaction	Focus group evaluation per faculty Strategic Dialogue: Bilateral Conference Academic Director CLI
EUR has implemented a central stakeholder management system	Implementation stakeholder management system	Compliance Check: Bilateral Conference Strategy2024 programme manager	Teacher, stakeholder and student satisfaction	MTO facilitation per faculty Focus group evaluation per faculty Evaluation Faculty Directors (qualitative)
EUR has implemented facilities to support impact-driven education for students and teachers	Implementation facilities	Compliance Check: Bilateral Conference Director RE&F	Teacher, stakeholder and student satisfaction	MTO facilitation per faculty Focus Group Evaluation per faculty Evaluation Faculty Directors (qualitative)
EUR has a societal engagement strategy	<i>Tbd</i>	Compliance Check: Bilateral Conference Strategy2024 programme manager	Stakeholders recognize EUR for its impact	Strategic Dialogue: Bilateral Conference Strategy2024 programme manager
EUR Programme Portfolio				
EUR offers design-driven education	<i>Tbd</i>	Compliance Check: Bilateral Conference EB and Academic Lead Erasmus Design Initiative	Teacher, stakeholder and student satisfaction	Strategic Dialogue: Bilateral Conference EB and Academic Lead Erasmus Design Initiative
Intended learning outcomes identify on a program level how students analyse a specific problem and prototype specific solutions	Part of examination plan on course level (qualitative analysis OER): <ul style="list-style-type: none"> - Critical mindset - Design-thinking - Application and integration of (disciplinary) knowledge in solving problems 	Compliance Check: Bilateral Conference EB and Academic Lead Erasmus Design Initiative	Teacher, stakeholder and student satisfaction	Strategic Dialogue: Bilateral Conference EB and Academic Lead Erasmus Design Initiative

Appendix 10: Institutional quality control and enhancement

Instrument	Dialogue	Planning	Actor
Verticale lijn, doelmatigheid			
Control HoKa Periodical Reporting	Experts and controllers Faculty Directors	3x annually	CPC
Financial and outcome reporting	Bilateral conferences fall	September February June	CPC
	February Consultation U council		CPC/AZ
External reporting in annual report Erasmus University audit 19, 21, 24			
Verticale lijn, quality			
Progress	Bilateral progress conferences Expert meetings	2 annually 4 annually	AZ
Compliancy Check	Bilateral conference spring	May/June	CPC/AZ ism HR
Strategic Analysis		1 annually	CPC/AZ
Reflections Participations		1 annually	AZ ism BZ
	September Consultation U council		AZ/CPC
External reporting in annual report Erasmus University audit 19, 21, 24			
Horizontale lijn (lerende gemeenschappen)			
Annual Outcome report	Educational Directors EB & Deans U council consultation	September pj	CLI, AZ, CPC, HR
Outcome Educational Research		December 2024	CLI, Programmes
INSTELLINGSTOETS KWALITEITSZORG '24			