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RELEVANT ASSESSMENT AND PEDAGOGIES FOR INCLUSIVE DIGITAL EDUCATION

IO4 CODE OF PRACTICE FOR HEIS ON IMPACT ANALYSIS OF INNOVATIVE PEDAGOGIES

November, 2022

Title	IO4
Deliverable n°	IO4
Approval status	Approved
Date of issue	1/02/2023
Author(s)	UNI GOETHE and FOI
Contributor(s)	Partners
Distribution list	Project Channels
Abstract:	Overview of the work performed and the results achieved within the IO4. Valuable data was gathered within the project activities and developed code of practice for teachers and especially for policy makers and educational leaders on how to prepare the monitoring and evaluation of the implementation of new teaching, learning, and assessment practices. Further, a framework of impact analysis on digital transformation plan and other strategic goals of HEI were developed. Also, the use of innovative pedagogies within the project was monitored and documented.
Key words	impact, innovative pedagogies, impact analysis, staircase approach

EXECUTIVE SUMMARY

This document includes the overview of the work performed and the results achieved within the IO4 Code of practice for HEIs on impact analysis of innovative
pedagogies The aim of this IO was to target HEI policy-makers and educational leaders. Therefore, valuable data was gathered within the project activities and developed code of practice for teachers and especially for policy makers and educational leaders on how to prepare the monitoring and evaluation of the implementation of new teaching, learning, and assessment practices. Further, a framework of impact analysis on digital transformation plan and other strategic goals of HEI was developed.

Tasks performed within this IO included:

- Literature analysis and gathering information from the partners about strategic planning and link to innovative TL
- Preparation of semi-structured interviews with decision makers (level of project partners) about their needs for evidence about efficiency of innovative approaches
- Development of methodology for measuring impact of implementation of FC and WBL in an online environment on strategic goals
- Preparation of showcase based on the performed impact analysis on two partner institutions
- Development of Code of Practice including methodology and two showcases on how and when to implement innovative approaches in online environment and how to link them with the strategic goals
- Design and preparation of e-course chapter on impact analysis
- Focus group design for impact of innovative pedagogies on HEIs strategic goals
- Revision of Code of Practice according to feedback from the focus group.

This document includes the overview of all activities and achieved results.

CONTENTS

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1. INTRODUCTION

New technologies have enormous potential to provoke changes and enable universities to meet their strategic goals. The educators and policy makers have a duty to embrace digital transformation and seize the opportunities. HEIs are confronted to question how best to achieve the development of 21st century skills, in particular which teaching and learning approaches are suitable for facilitating or enabling complex skills development (Herodotou et al., 2019). Today many HEIs have fast track already adopted educational technology tools but this change is not necessarily accompanied by respective changes in practice of TL.

Impact analysis is defined as identifying the potential consequences of a change or estimating what needs to be modified to accomplish strategic goals of HEIs.

The aim of this IO was to target HEI policy-makers and educational leaders. Therefore valuable data was gathered within the project activities and developed code of practice for teachers and especially for policy makers and educational leaders on how to prepare the monitoring and evaluation of the implementation of new teaching, learning, and assessment practices. Further, a framework of impact analysis on digital transformation plan and other strategic goals of HEI were developed. Also, the use of innovative pedagogies within the project was monitored and documented.

The development of this output was organized around the following questions:

Q1. What kind of data collection about students, TL methods are needed in order to enable informed decision making on an institutional level?

Q2. How to support HEI to estimate the impact of innovative pedagogies in meeting strategic goals and, in particular, digital transformation by using learning analytics?

The expected impact within this output is:

- HEI provided unique document with guidelines on how to measure impact on use of innovative approaches in HEIs which will enable further strategic developments of online teaching and learning process
- HEI management provided with an example of how to successfully measure the impact and to use the results to improve quality of online TL process on the individual level of teacher and students but also on the level of HE system
- HEI policy makers provided with unique conclusions of the implemented impact analysis within this strategic partnership
- HE system provided with a methodology for monitoring and evaluation of strategic planning in the field of TL related to the COVID-19 pandemic challenges
- HEI management provided evidence how innovative teaching approaches (FC and WBL) can increase students and teachers (and employers if applicable) engagement, motivation and satisfaction .

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2. LITERATURE ANALYSIS AND GATHERING INFORMATION FROM THE PARTNERS ABOUT STRATEGIC PLANNING AND LINK TO INNOVATIVE TL

2.1 LITERATURE ANALYSIS

Aim of the literature review was to perform an analysis of studies dealing with methods of impact analysis of innovative teaching formats such as Flipped Classroom. Therefore we conducted the analysis according to the following three questions:

- How to prepare the monitoring and evaluation (impact analysis) of the implementation of new teaching, learning, and assessment practices?
- What kind of data collection about students, TL methods are needed in order to enable informed decision making on course and institutional level?
- How to support HEI to estimate the impact of innovative pedagogies in meeting strategic goals?

In the analysis, we followed the recommendations on using a multi-phase process. It was performed through three phases: Phase 0—Papers extraction, Phase 1—Abstract review, Phase 2—Complete/Detailed/Full paper review.

The first step was the identification of the initial group of papers related to the research topic. A search was done in the Web of Science (WoS) database, chosen based on its ranking among academic databases and coverage of relevant research. For the search we used the following search string: "Flipped Classroom" AND ("innovation" OR "impact" OR "evaluation" OR "strategy"). The search resulted in 114 papers, from the period between 2013 and the date of the search (30.01.2022). All the identified papers were included in the next step.
The second step was the screening of the identified papers. Titles and abstracts were examined. The inclusion criteria were focused on the relevance of the papers with respect to: FC, impact analysis, evaluation, online teaching and learning, blended teaching and learning and HE. Consequently, 44 papers were recommended for further analysis. The remaining 70 papers were excluded, mostly because they were not strongly related to impact analysis. The four researchers involved cross-checked each other's recommendations, in order to ensure objectivity and reduce the potential bias. In the third step, all of the papers were retrieved for a detailed analysis. The fourth step was the eligibility assessment, in which the 44 papers were examined in detail by four researchers. Each researcher examined between ten and twelve papers, analyzing the following: Year of publication, country, study field, participants, level of HE, methodical approach, used indicators and instruments measuring impact.
Results of the review of evaluation methods and impact analysis in blended and online flipped classroom show that the majority of the selected 44 studies use a methodological approach in which both quantitative and qualitative methods were used to measure effects (fig. 1). Figure 2 shows the different study designs used to measure the impact of introducing innovative pedagogical approaches.

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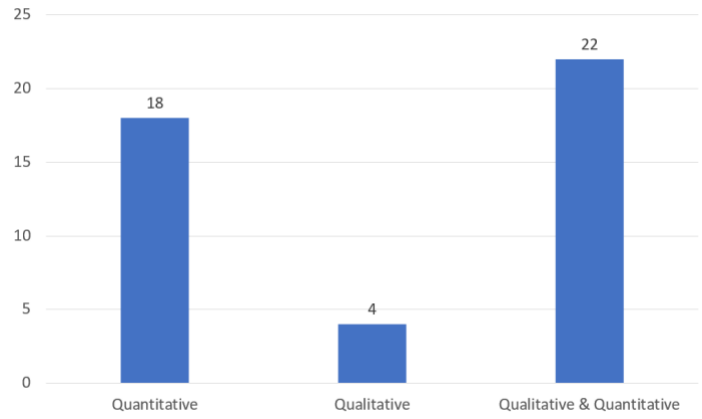

Figure 1: Methodological approaches of the examined studies

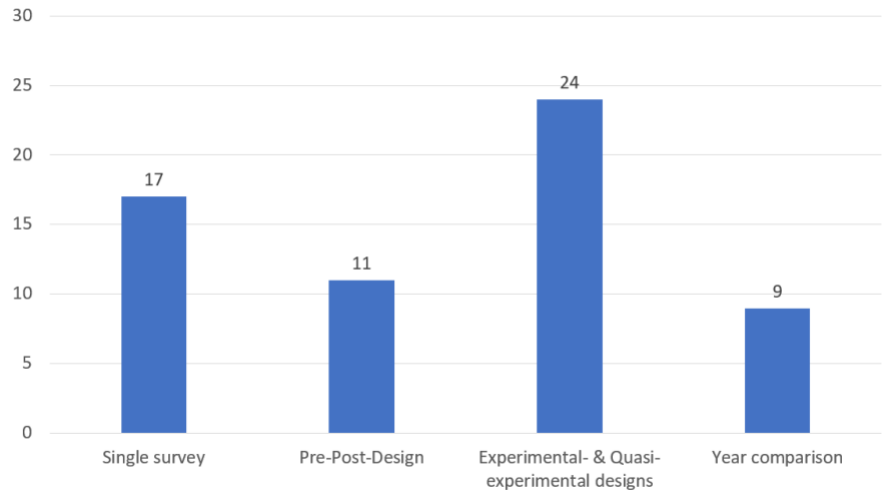

Figure 2: Study design of the quantitative research approaches

To systematize indicators and measurement tools, they were classified into a logical model according to the categories of outputs, outcomes, and impact (Fig. 3).

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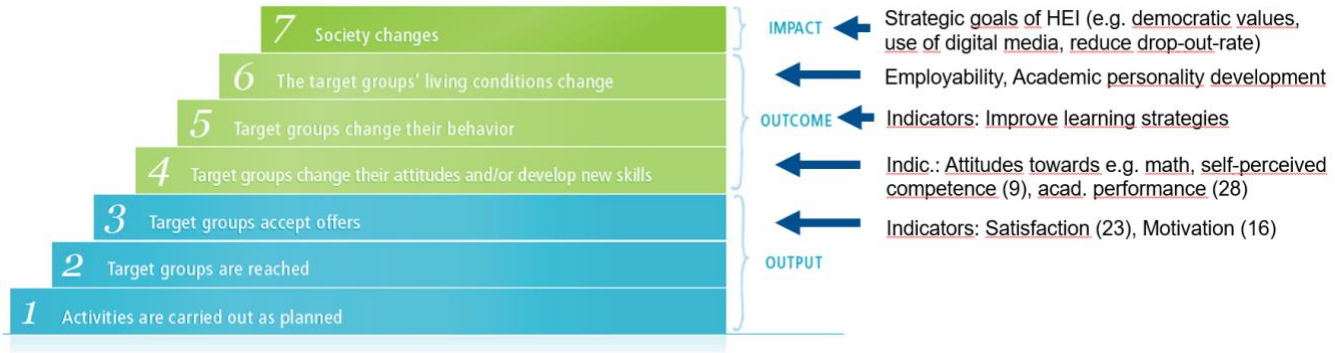

Figure 3: Systematization of the results: The results staircase

Indicators and measurement tools that have been successfully used in the studies analyzed were collected and made available to participants in the e-course chapter on impact analysis (Module 4) for their own use.

2.2 STRATEGIC GOALS OF HEIs - QUALITATIVE CONTENT ANALYSIS (QCA) OF MISSION STATEMENTS AND STRATEGY PAPERS OF PARTNER UNIVERSITIES

For an explorative survey of strategic goals of universities, the available mission statements and strategy papers of the universities participating in the RAPIDE project were evaluated with the help of a qualitative content analysis (QCA, Mayring 2015)[1]. The partner universities from different European countries with different educational systems and cultures form a good, if not representative, cross-section of the European higher education landscape. For example, the universities differ not only in the number of students, the number and orientation of the degree programs, but also in the pedagogical culture. The importance of digital teaching-learning media and technologies also differs at the locations, as does the focus on face-to-face teaching or distance learning.

The survey aimed not so much to identify differences in the strategic goals of the individual universities as to identify common, overarching goals that are shared by all participating universities. The research question for the QCA was, "What teaching, learning, and educational goals are stated in the documents?" For the analysis, an inductive categorization with 2 coders was chosen, in which the categories (individual strategic goals) and, if applicable, overarching main categories were derived directly from the material.

As a result, a total of 41 different categories could be identified, which could be combined into 7 main categories in a second analysis step:

- Overarching educational goals
- Enable access to studies
- Acquisition of competencies (professional / generic)
- Exchange of knowledge
- Improving the quality of teaching and studying
- Online as a development opportunity

[1] Mayring, P. (2015). Qualitative Inhaltsanalyse: Grundlagen und Techniken (12., überarb. Aufl.). Beltz.

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- Design of university innovation processes

Table 1 lists the 41 categories of strategic goals of HEIs and their assignment to the 7 main categories.

Table 1: Strategic goals of HEIs: 41 Categories and 7 Main Categories of QCA

		Category ID	Category Name
übergeordnete Bildungsziele			
overarching educational goals		RQ1-13	***Promotion of democratic values***
		RQ1-19	***responsible citizens***
		RQ1-20	***Unity of research and teaching***
		RQ1-21	***education for scientific knowledge***
		RQ1-22	***Education for maturity***
		RQ1-25	***Preparation for professional activities***
Zugang zum Studium ermöglichen			
Enable access to studies		RQ1-3	***Flexibilization of studies***
		RQ1-6	***Heterogeneous student body***
		RQ1-15	***Accessibility, enabling access***
Kompetenzerwerb			
Acquisition of competencies	***professional competencies acquisition***	RQ1-23	***Imparting specialized knowledge***
	überfachlicher Kompetenzerwerb		
	generic competencies acquisition	RQ1-1	***Promoting the use of digital media in studies***
		RQ1-17	***Critical examination of digitalization processes***
		RQ1-18	***Promoting ICT literacy***
		RQ1-27	***21st. Century Skills/ Future Skills (S. 20)***
		RQ1-24	***Imparting methodological knowledge***
Austausch von Wissen			
Exchange of knowledge		RQ1-7	***Exchange with society***
		RQ1-8	***Exchange with the scientific community***
		RQ1-9	***Internationalization***
		RQ1-14	***Interdisciplinarity***
Verbesserung der Qualität von Lehre und Studium			
Improving the quality of teaching and studying		RQ1-2	***Research-based learning***
		RQ1-4	***Support of the learning process***
		RQ1-5	***Improving the quality of teaching and learning***
		RQ1-10	***Interactivity***
		RQ1-11	***Cooperation between students***
		RQ1-12	***Feedback culture***
		RQ1-16	***Improvement of teaching through research findings***
		RQ1-26	***Cooperation between teachers and students***
		RQ1-28	***Teaching competence as a career opportunity (SWOT, p.18).***
		RQ1-29	***Drop-out-rate***
		RQ1-30	***Study Duration***
		RQ1-34	***New models of learning, differnt types of education***
		RQ1-35	***Improve supervision ratios (SWOT, p.18)***
		RQ1-36	***Target agreements in learning (SWOT, p.18).***
Online als Entwicklungschance			
Online as a development opportunity		RQ1-31	***Blended Learning (Roadmap 2020, p.39)***
		RQ1-39	***Education Worldwide***
		RQ1-32	***Utilize potential of online education (Roadmap 2020, pp. 35, 4***
		RQ1-33	***Shape presence effectively (Roadmap 2020, p.104)***
Gestaltung universitärer Innovationsprozesse			
Design of university innovation processes		RQ1-37	***Faculty planning***
		RQ1-38	***Define planning horizon***
		RQ1-40	***Indicators and targets***
		RQ1-41	***Evaluation cycles***

If one maps the strategic goals of the universities summarized into the 7 main categories onto the levels of the Staircase Evaluation Model, it becomes clear that the identified strategic goals are primarily located on the upper levels of the model. All 7 main categories can be assigned to the OUTCOME (level 4-6) or IMPACT (level 7) areas; no strategic goals can be located in the OUTPUT area (level 1-3), as can be seen in Table 2.

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However, especially for individual courses, evaluation goals can be formulated for the lower levels (1-5). The influence of innovative pedagogies such as FC or WBL on the achievement of strategic goals is therefore difficult to ascertain via evaluation at the level of individual courses.

Table 2: Mapping of strategic goals to the levels of the Staircase Evaluation Model

IMPACT	**7**	**Society changes**	übergeordnete Bildungsziele ***overarching educational goals***
OUTCOME	**6**	**Target group´s living conditions change**	Zugang zum Studium ermöglichen ***Enable access to studies***
	5	**Target groups change their behaviour**	Austausch von Wissen ***Exchange of knowledge***
			Kompetenzerwerb ***Acquisition of competencies***
	4	**Target groups change their attitudes**	Gestaltung universitärer Innovationsprozesse ***Design of university innovation processes***
			Verbesserung der Qualität von Lehre und Studium ***Improving the quality of teaching and studying***
			Online als Entwicklungschance ***Online as a development opportunity***
OUTPUT	**3**	**Target groups accept offers**	
	2	**Target groups are reached**	
	1	**Activities are carried out as planned**	

3. SEMI-STRUCTURED INTERVIEWS WITH DECISION MAKERS (LEVEL OF PROJECT PARTNERS) ABOUT THEIR NEEDS FOR EVIDENCE ABOUT EFFICIENCY OF INNOVATIVE APPROACHES

Within the framework of Work Package IO4, five written semi-structured interviews (I1 - I5) were conducted with deans, programme directors and lecturers on the following questions.

- **Q1: In which strategic goals of your institution would didactic innovations (teaching innovations) make a significant difference?**
- **Q2: Which indicators, key figures, evidence of effectiveness are important to you when introducing (pedagogically, methodologically-didactically, technically) innovative teaching-learning scenarios?**

The interviews were analyzed based on the method of Kuckartz, U.[2]

Q1- STRATEGIC GOALS

[2] Kuckartz, Udo (2016): Qualitative Inhaltsanalyse. Methoden, Praxis, Computerunterstützung. Beltz Verlagsgruppe. Weinheim, ISBN: 9783779943860

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In the interviews, three strategic topics emerged in question 1. On the one hand, this relates to improving the course of studies up to graduation, improving the quality of teaching and achieving a role model function in teaching.

IMPROVING THE COURSE OF STUDY

Four strategic objectives emerge in the area of study progression, which can be supported by didactic innovations. As expected, it is the success of studies that is to be ensured through quality-oriented teaching. "The greatest challenge for both our regular undergraduate programmes as well as our apprenticeship programmes is to ensure that our students are able to successfully complete their programmes, and this is our greatest strategic priority." (I1) The acquisition of competences is also emphasized, which should ensure the economic and societal shaping as well as competitiveness. "Educate students that they could be competitive in the job market for a long period and become bearers of economic and social changes." (I2, I3)

Therefore, it seems necessary to design the study programme efficiently both on the didactic and on the organizational level. This requires, among other things, the introduction of new technological solutions and methodological approaches in teaching (I2). The goal is "to increase the educational process' quality and efficiency, strengthen flexible learning pathways, foster relevant student competencies." (I5)

In addition to these more process-oriented factors, student-centered approaches are highlighted as strategic goals. These are to support learners in their learning process as well as to ensure that it is satisfactory. "Educators have an important role to play in terms of providing appropriate support and implementing effective learning designs (I1) This requires continuous monitoring and development. "School should regularly reevaluate and reinvent its approaches to teaching using best practices and evidence. (I3) In addition to efficient study progression and successful graduation, another strategic objective is that this progression serves to "increase students' overall satisfaction with their study programmes and studying experience" (I5, I4).

IMPROVING THE QUALITY OF TEACHING

Didactic as well as technical innovations play an important role in the thematic area of quality of teaching and are closely linked to strategic objectives in the thematic area of study. "First of all, innovation is one of the four most important values that our university promotes and upholds in its strategy. (I5) The aim here is to exploit the potential for improvement in digitally supported teaching. "Didactic innovations have the potential to make significant differences in multiple areas of (..)l teaching." (I3)

With careful planning, both technical and methodological-didactic innovations complement each other. "... new technological solutions and methodological approaches to teaching ... increase(s) the quality of the teaching process if the innovations are wisely planned, carefully implemented, and continuously monitored. (I2) This continuous evaluation thus serves to develop a culture of quality. "Some of our School's strategic goals are the promotion of the quality culture and the development of a quality assurance system as well as the quality culture in study programmes. This translates to an internal and independent external evaluation of the quality of all the School's activities, among which competent teachers and student-centered teaching are prominent."

EXCELLENCE IN TEACHING

An extension of the subject area of quality in teaching leads to the strategic goal of becoming the innovation leader in the field at the didactic-technological level. "The vision of our faculty is to be the leading institution (...)

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and among the top five institutions within the region providing education and carrying out research (...) and to be recognised for its innovative approach to learning and teaching, the development of digital-era competences and its project activities and international partnerships." (I4)

Q2 - Indicators

The indicators used to determine the effectiveness of innovative digital teaching and learning formats also include topics that can be directly assigned to the strategic goals: Improvement of studies with indicators on learning success and satisfaction as well as the quality of teaching with indicators on quality improvement In addition, a further field is named that takes a look at institutional framework conditions and resources.

Learning success indicators

The learning success of the students is a central indicator for all interviewees, with the help of which the strategic goal achievement can be derived. "... since there is a strong relationship between the quality of innovative strategies and output indicators..." (I2). Grade point average, the number of graduations as well as re-enrolment rates and falling drop-out rates document good study progress.

Which individual factors or their interplay are particularly effective require finer measurements. "However, in future strategic planning cycle, it is recommended to introduce more indicators that are closely related to the quality of innovative strategies." (I2) This requires a small-scale approach as made possible by the use of learning analytics. "...we are currently also developing models to see whether students who are successful in module 1 also continue to do well in module 2, 3, and/or 4." (I1)

Each innovative teaching-learning approach should be assessed in terms of learning outcomes through standardized assessments as well as assessment of the support for learning provided by the respective teaching activity. "When introducing innovative teaching-learning strategies the main indicators should always be how well the students have reached the learning outcomes (measured by standardized assessment in line with the constructive alignment principles) and whether the teaching activities have helped the students reach those outcomes (quality control and student-evaluation of teaching)." (I3)

The acquisition of competences within the framework of the curriculum, the satisfaction of the students with the applied scenarios, as well as the satisfaction of the teachers are named as further indicators to be measured (I4, I5).

The satisfaction factor is rated differently, especially in relation to the students. "We believe that the key measurements are the effectiveness and usefulness of various teaching activities rather than student satisfaction with the teachers, the courses or course material." (I3)

Quality indicators

According to the responses, the topic area of quality includes the factors of evaluation of teaching, learning materials, the quality of quality measurement and the density of innovation.

Standardized assessment in line with the constructive alignment principles as well as quality control and student-evaluation of teaching (I3) related to the respective teaching-learning activities as well as to innovations are named as means of teaching evaluation.

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The quality of the learning materials or their effectiveness is also an important indicator, especially if the proportion of online-based self-study is high. "The University spends a lot of energy in helping module teams during their design and production of modules, as well as providing analytics support when a module is in presentation" (I1).

To ensure that quality does not stand still, the number of innovative teaching approaches in a certain period of time should also be recorded and evaluated. (I2)

SATISFACTION INDICATORS

Although in one interview the satisfaction factor is rated lower than other indicators that measure learning success in particular, in other interviews the satisfaction indicator is mentioned on an equal footing with others. "Innovative teaching/learning scenarios must be aligned with faculty curriculum and foster innovative approaches. This should be visible through: "... students' satisfaction with applied scenarios, teachers satisfaction, ...". (I4)

Other indicators mentioned are retention rates (I1, I2) and re-enrolment "... the percentage of students who regularly enroll in a higher year. (I2)

INDICATORS FOR INSTITUTIONAL FRAMEWORK CONDITIONS AND RESOURCES

In addition to the more teaching-related indicators, the implement ability of innovations within the given institutional framework was mentioned. "Innovative teaching/learning scenarios must be aligned with faculty curriculum and foster innovative approaches. This should be visible through: ... ease of integration in current teaching, infrastructure and resources, cost-benefit elements (especially when acquiring new and expensive equipment)."

4. METHODOLOGY FOR MEASURING IMPACT OF IMPLEMENTATION OF FC AND WBL IN AN ONLINE ENVIRONMENT ON STRATEGIC GOALS

In order to introduce a method of measuring the impact of innovative pedagogies in terms of strategic goals, the staircase model can be used (see Chapter 2 Fig. 3). At the beginning, you get to know the model and familiarize themselves with it. The first task required a short description of the case, the evaluation approach and objectives. In addition, details such as number of participants, use of media, examination performance, subject area, etc. has to be considered. In this part, the strategic goals of the institution are not yet highlighted. First and foremost, it's about thinking about your own courses. Finally, the staircase model with its seven steps has to be filled in. Output, outcome and impact have to be adapted to the framework conditions. The second part is to find appropriate methods to measure the objectives/ staircase model (output, outcome and impact). You have to find suitable measuring instruments to record the objectives of your own course. In this part, the strategic objectives should now also be integrated and linked to the individual steps/phases of the course.

Under the RAPIDE project, the methodology for measuring impact of implementation of FC and WBL in an online environment on strategic goals is developed. Its application is wider, and can cover all innovative teaching approaches, not only FC and WBL. The working acronym of the methodology is MET (methodology of measuring the innovative teaching on strategic goals).
The methodology is based on three well-known approaches: the diffusion of innovation (DOI), the balanced scorecard (BSC) and the creativity process.

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The original perspectives in the balanced scorecard are presented in the following figure (left).

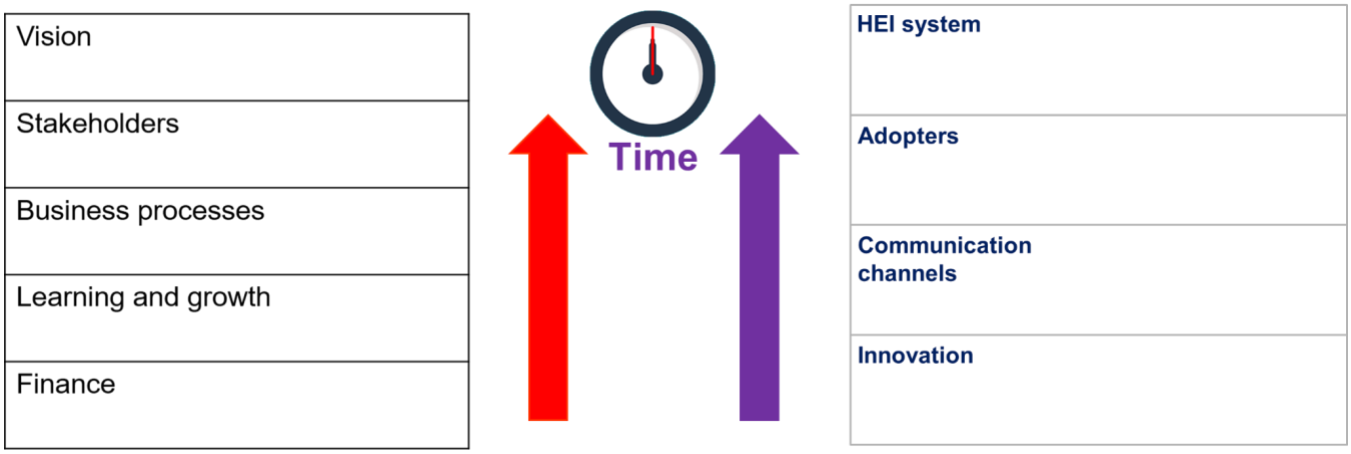

Figure 4. From DOI & BSC & creativity to MIT

The order of the perspectives, from bottom to top, is logically defined, respecting the concept of influence. The balanced scorecard is a system that supports measuring. In addition, innovative teaching approaches are innovations in the higher education system. Finally, MIT's purpose is to measure innovative teaching approaches' impact on strategic goals. When designing the MIT, the idea is to replace the original perspectives from the balanced scorecard with the diffusion of innovation theory elements. Consequently, we will develop the measurement instrument that supports the diffusion of innovation, which is exactly what we need. So, from the right side of the presented figure, you can see MIT perspectives that are based on the diffusion of innovation theory incorporated into the balanced scorecard concept. In MIT, the elements of the diffusion of innovation are ordered respecting the concept of influence, which is similar to the original balanced scorecard. The order is as follows:

- Innovation.
- Communication channels.
- Adopters.
- Higher education system.

The element of the diffusion of innovation related to time is not placed in the MIT map as one perspective. However, it is incorporated in MIT since innovation acceptance is a variable that depends on time, like the original balanced scorecard. After the core of MIT has been established, it is possible to apply regular balanced scorecard steps and create the strategies, their goals, and measures, and finally calculate the aggregated influences of strategies on the strategic goals.

There are several steps of MIT:

1. ANALYSIS OF STRATEGIC DOCUMENTS OF HEI AND IDENTIFICATION OF ITS ELEMENTS (MISSIONS, VISION, GOALS) RELATED TO EDUCATION FIELD
2. SETTING THE (STRATEGIC) GOALS RELATED TO FC, WBL AND OTHER INNOVATIVE TEACHING/LEARNING APPROACHES (ITLAs)
3. MAKE SWOT ANALYSIS FOR THE (STRATEGIC) GOAL(s) FROM STEP 2.
4. CREATE STRATEGIES
5. CREATING MEASURES (KPI) FOR STRATEGIES

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6. CREATING THE MEASUREMENT INSTRUMENT AND ITS VERIFICATION TO MEASURE STRATEGIC GOALS RELATED TO THE INOVATION SET IN STEP 2
7. CREATING THE MEASUREMENT INSTRUMENT AND ITS VERIFICATION TO MEASURE INFLUENCE OF STRATEGIC GOALS SET IN STEP 2 ON INSTITUTIONAL STRATEGIC GOALS

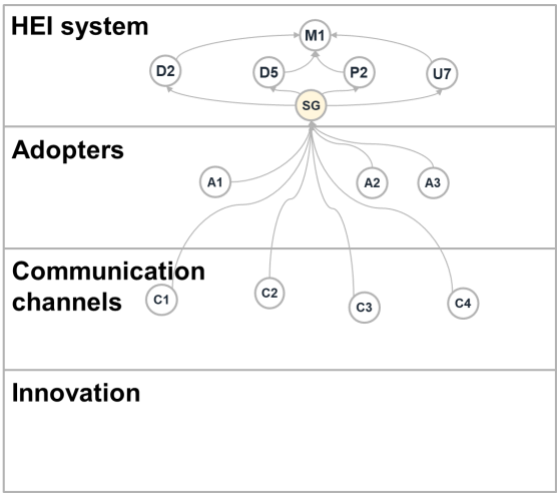

Figure 5. The example of MIT strategic map of goals/measures

Table 3: The example of measurement instrument based on MIT

Strategy	Goal	Label	Measure	L-l-h-H	WEIGHT FOR SG, %	L	H	START	CURRENT
The Management board can make official decision related to the ITLAs implementation as obligation.	Making ITLAs implementation obligated.	C1	The number of ITLAs activities that are obligated.	(0-2-4-6)	15	0	6	1	2
The Management board can introduce the courses benchmark analysis obligation (Teacher are obligated to find similar (ex.5) courses in top500 universities and make analysis on how to they deliver the content, identify the differences, and create plan for innovation of teaching process).	Benchmarks analyze.	C2	The number of courses for BA.	(0-2-4-6)	15	0	6	1	2
Connecting teachers from other universities and apply long term team teaching (share teaching materials).	Motivate team teaching.	A1	The number of cooperation in team-teaching.	(0-10-20-30)	15	0	30	2	3

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Organization of workshops by RAPIDE members related to implementing ITLAs in efficient way.	Workshops.	C3	The number of workshops.	(0-2-4-6)	20	0	6	4	4
Creating quality teaching materials and activities that are suitable for students in terms of technology requests, and didactic.	Student evaluation of e-tivities.	A2	Average score (up to 100 points)	(0-50-75-100)	10	0	100	80	80
Organization of presentation of good example practices for both students and teachers to encourage positive stress-motivation.	Students and teachers networking.	C4	The number of events.	(0-2-4-6)	5	0	6	2	2
Awarding teachers for high quality results in ITLAs.	Awarding teachers.	A3	The number of awards.	(0-3-6-9)	20	0	9	1	2
				(0-0-0-100)	0	0	100		
				(0-0-0-100)	0	0	100		
				(0-0-0-100)	0	0	100		
Increase the efficient application of ITLAs for 30 (absolute).		SG	(composite index)	0-40-75-100	100	0,00	100	**31,22**	**38,94**

The steps are explained in detail and demonstrated in different materials which are project results. Also, the MIT is evaluated as a part of the IO4 course.

5. SHOWCASE BASED ON THE PERFORMED IMPACT ANALYSIS ON TWO PARTNER INSTITUTIONS

In IO4, participants created their own impact analyses for their courses. The impact analysis was worked on in two subtasks. In the first task, the possible impacts were presented using the staircase model. In the second task, suitable measurement instruments were selected to make the effects visible. Below are two examples. These have been anonymized.

SHOWCASE 1

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Basics of curriculum development & the new legal requirements for lifelong learning in Austria

Task 2.1
Introduction

This internal university course is intended to support the development of new studies and university courses or the modification of existing studies based on the new legal requirements for lifelong learning in Austria. In the course we deal in particular with the legal framework of continuing education (as of October 2021) as well as the basics of curricular development.

Intended learning outcomes of the course:

- Know the new legal framework for continuing education in Austria and the consequences for program planning (especially recognition of prior learning)
- Know the factors to be taken into account when drawing up a qualification profile
- Understand the concept of constructive alignment and the requirements of the ECTS Users' Guide
- Apply the principles of Blooms Taxonomy for formulating the learning outcomes of a planned program and its' modules
- Apply the principles of constructive alignment in the development of the modules of the new program
- Create the framework of a new study program taking into account the legal framework and the requirements of the ECTS Users Guide
- Know the new internal approval process for continuing education programs

Goals:

More efficient development of new continuing education studies that comply with the new regulatory frameworks
Faster processing of internal approval of new continuing education studies

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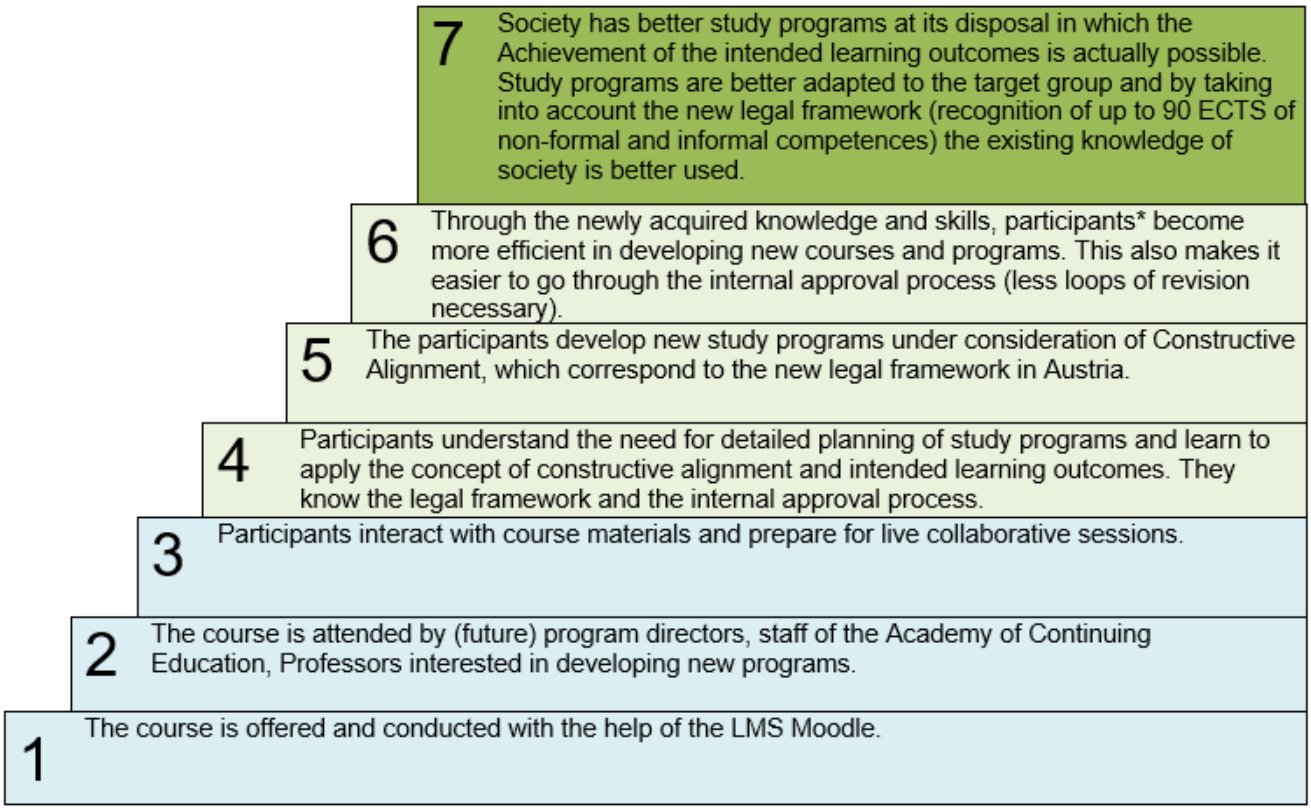
Details of the Case

Metadata Case	
Applications Domain / Study Field	Internal Training for University Staff
Place in Curriculum (Bachelor, Master, etc.)	Part of the internal continuing education program for university staff
University, Location	Sigmund Freud Private University Vienna
Course Format (which year in degree, # ECTS, length of course, type of course)	5 weeks, no ECTS
Delivery (online, face-to-face or blended)	Online, Flipped Classroom
Group size (N)	max. 20
Types of Examination	Online Quiz, Assignments to Upload
Digital Tools used in Course	LMS Moodle, interactive H5P Content, Videos
Analogue Tools used in Course	Reading Material, PPT Slides



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Task 2.3

**Think about which evaluation method you want to choose for your course. How should your survey be measured, which design do you want to use (qualitative/quantitative)?
Also think about output, outcome and impact and enter them in the table.**

Methodological approach	
Quantitative, qualitative, mixed-method	Mixed-method
Measurement (single survey, pre-post, formative...) Experimental/Quasi-experimental, year comparison...)	Single survey
Evaluated qualitative data (Interviews (single, group, focus-group), observations, ePortfolios/self-reported journals...)	Observations using the records of the Quality Assurance Department
Evaluated quantitative data (questionnaire, online-questionnaire, tests, learning analytics...)	Online questionnaire, Moodle Learning analytics

Indicators	Used instruments and scales
Output 2. The course is attended by (future) program directors, staff of the Academy of Continuing Education, Professors interested in developing new programs. Fields of activity of participants	Analysis of the participants' fields of activity with the help of a questionnaire at the beginning of the course
3. Participants interact with course materials and prepare for live collaborative sessions. Use of the learning material provided	Moodle Learning Analytics Volume of reading actions = number of viewing actions recorded by participants Tracking H5P activities Assignments completed

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Outcome	
4. Participants understand the need for detailed planning of study programs and learn to apply the concept of constructive alignment and intended learning outcomes. They know the legal framework and the internal approval process. # of successful completion of internal training # of inquiries about the new legal framework	Moodle Learning Analytics (Completion of Course in the LMS, participation in at least 2 synchronous sessions) Records of the Quality Management department on # of inquiries about the new legal framework (goal: no inquiries about legal requirements from participants of the course)
5. The participants develop new study programs under consideration of Constructive Alignment, which correspond to the new legal framework in Austria. # drafts that consider intended learning outcomes instead of being contend-driven # drafts that consider the new legal framework especially the recognition of prior knowledge	Analysis of the submitted drafts of study programs of participants of the course (observation)
6. Through the newly acquired knowledge and skills, participants become more efficient in developing new courses and programs. This also makes it easier to go through the internal approval process. # of required responses per application for approval # of processed applications for approval Average duration from submission to approval	Records of the Quality Management Department and the Senate Curriculum Committee (observation)

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Impact 7. Society has better study programs at its disposal in which the achievement of the intended learning outcomes is actually possible. Study programs are better adapted to the target group and by taking into account the new legal framework (recognition of up to 90 ECTS of non-formal and informal competences) the existing knowledge of society is better used. Professional context of the students in new programs # of programs that already consider the possible recognition of competencies acquired in the program in the conception (crediting and recognition regulations for the program). #of students for whom existing competencies were recognized (RPL) Average number of ECTS taken into account in RPL	Observation: Screening of student data This would require a database on recognition of prior learning within the institution, which does not currently exist yet

Strategic goals (of the institution)	Level on the results staircase
Expansion of academy of continuing education	Level 6

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SHOWCASE 2

Task 2.1

Introduction

This case is about a first year introduction to social science module and includes skills based activities around numeracy. Course is assessed on six assignments and one online multiple-choice quiz. I have focused on the numeracy activities which are designed to support students to develop basic skills and confidence around calculating averages, moving between percentages and raw data, and calculating percentage change.

Details of the Case

Metadata Case	
Applications Domain / Study Field	Politics
Place in Curriculum (Bachelor, Master, etc.)	Bachelor
University, Location	The Open University, UK
Course Format (which year in degree, # ECTS, length of course, type of course)	1 year, full year, compulsory, 30 ECTS
Delivery (online, face-to-face or blended)	Distance with optional (limited 4 across the year) face to face tutorials
Group size (N)	Total cohort c. 2-3000 each year
Types of Examination	Assessments x 7 (6 essays, 1 quiz)
Digital Tools used in Course	Online tutorials, asynchronous forum, online teaching and learning material
Analogue Tools used in Course	Face to face tutorials, Books

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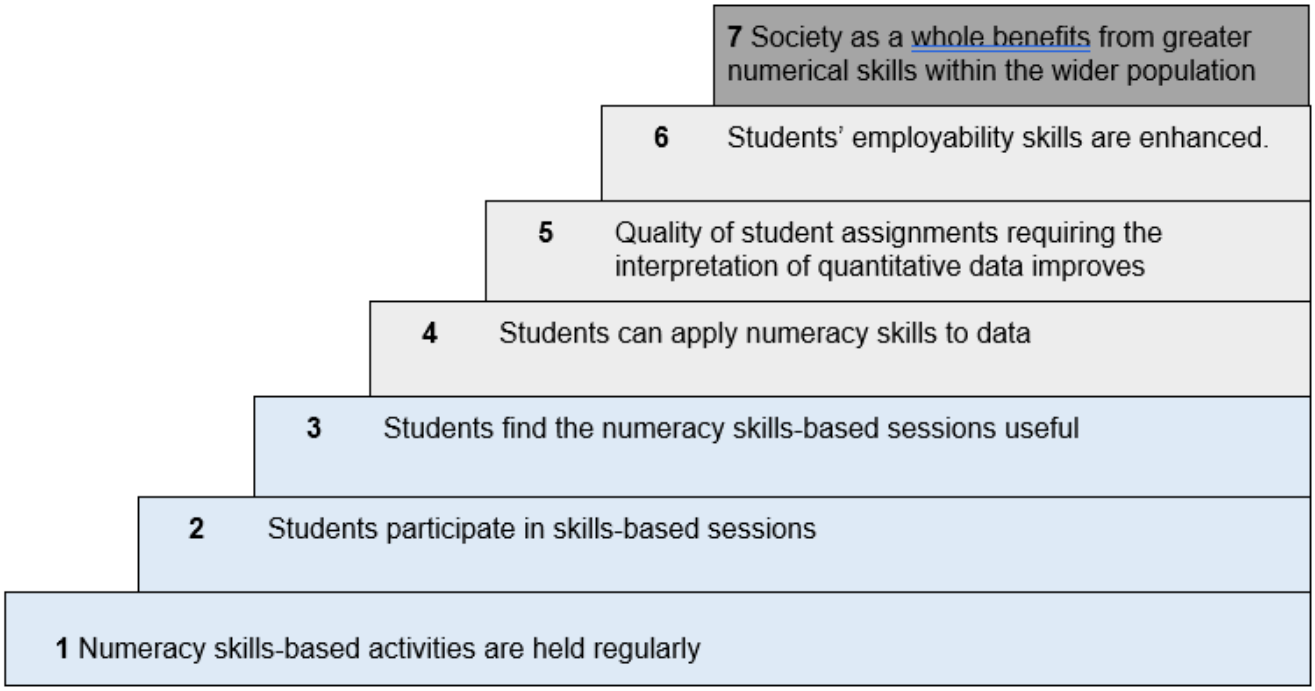

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Task 2.3 Think about which evaluation method you want to choose for your course. How should your survey be measured, which design do you want to use (qualitative/quantitative)?

Also think about output, outcome and impact and enter them in the table.

Methodological approach	
Quantitative, qualitative, mixed-method	• Quantitative
Measurement (single survey, pre-post, formative...) Experimental/Quasi-experimental, year comparison...)	• Single survey, post-skills sessions (repeat each year sessions run). • Comparison of quiz results within year (between attendees and non-attendees) using learning analytics • Year on year comparison of performance of attendees/non-attendees in quiz
Evaluated qualitative data (Interviews (single, group, focus-group), observations, ePortfolios/self-reported journals...)	n/a
Evaluated quantitative data (questionnaire, online-questionnaire, tests, learning analytics...)	• Online questionnaire with a very limited number of questions to encourage completion • Use learning analytics to analyse differences in quiz (testing numeracy skills) outcomes between those who did the skills-based sessions and those who did not • Analyse learning analytics and attendance and quiz performance data year on year/overtime to look for trends in student profiles of attendees/non-attendees and high quiz performers/low quiz performers to identify potential areas for subsequent development

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Indicators	Used instruments and scales
Output: 1 Numeracy skills-based activities are held regularly 2 Students participate in skills-based sessions 3 Students find the numeracy skills-based sessions useful	**Student engagement, student satisfaction and student motivation instruments – indicative questions include:** **Did you attend a numeracy skills session?** Yes/No **If yes, did you attend 1, 2 or 3 sessions?** 1/2/3 **Did you complete the associated study material?** (All, more than half but not all, between a quarter and a half, completed some study material but less than a quarter, none at all) **How satisfied were you with the teaching material?** (Likert scale) **Before the numeracy skills-based sessions how would you rate your abilities?** • None/very little – I tend to shy away when I see statistics • Ok – I could understand basic descriptive statistics when I encountered them • Fine – I understood most of what I come across in day-to-day life

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Outcome: 4 Students can apply numeracy skills to data 5 Quality of student assignments requiring the interpretation of quantitative data improves 6 Students' employability skills are enhanced	**To what extent did your confidence in understanding when reading numeracy skills improve?** • Not all – I'm still not sure what I'm reading • Somewhat – I can understand a lot, but not all, of what I come across in day-to-day life • To a great extent – I understand everything that I come across in day-to-day life **To what extent did your confidence grow in being able *to do* calculations such as calculating averages, moving between percentages and raw data and calculating percentage changes?** • Not all – I'm still not sure how to do such calculations • Somewhat – I can do most of those calculations, but I'm not sure I have the right answer • To a great extent – I can do all of those calculations with confidence **Use learning analytics to compare quiz results of those who did numeracy skills-based sessions and those who did not both within the same academic year, and as trends over time looking at results back over different cohorts. Is there a correlation between results and attendance?** **Use learning analytics to assess if those who attend the numeracy skills-based sessions are more likely to successfully complete the module.**
Impact: 7 Society as a whole benefits from greater numerical skills within the wider population	Societal level impact – society as a whole benefits from greater numerical skills within the wider population – it would be inappropriate to set an indicator given the long-term nature, small number of students taking annual module as a whole, and geographically dispersed nature of students

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Strategic goals	Level on the results staircase
• Improve student retention overall • Improve student employability outcomes in line with requirements for UK Government Office of Students	Level 6

6. CODE OF PRACTICE INCLUDING METHODOLOGY AND TWO SHOWCASES ON HOW AND WHEN TO IMPLEMENT INNOVATIVE APPROACHES IN ONLINE ENVIRONMENT AND HOW TO LINK THEM WITH THE STRATEGIC GOALS

In order to evaluate what effect innovative pedagogies such as FC or WBL can be expected to have on the achievement of strategic goals of universities, a code of practice with several steps is recommended. The individual steps are to be carried out at different decision-making levels of the universities (university management, faculty/deanery, teaching staff) and are described below.

STEP 1: CLARIFICATION OF STRATEGIC GOALS (LEVEL: UNIVERSITY MANAGEMENT)

The first step is to clarify exactly what HEI strategic goals are to be achieved through the implementation of innovative pedagogies. To do this, these goals should be specified as precisely and accurately as possible. Often, the strategic goals to be pursued are not yet available in a formulated form. In this case, for example, an analysis of existing mission statements or strategy papers can provide clarity. Such an analysis helps to identify and formulate strategic goals and forms the basis for deciding which strategic goals can be achieved through pedagogical changes in university teaching and learning culture.

The identification of strategic goals using Qualitative Content Analysis (QCA) is exemplified in Section 2.2. A selection of possible strategic goals of HEIs that could be pursued is presented in the following list:

- Overarching educational goals
- Enable access to studies
- Acquisition of competencies (professional / generic)
- Exchange of knowledge
- Improving the quality of teaching and studying
- Online as a development opportunity
- Design of university innovation processes

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STEP 1 should take place at the HEI leadership level. The results, i.e. the identified strategic goals pursued through an introduction of innovative pedagogies, are then made available to the decision-making levels of faculty leadership/deanery for the next steps.

STEP 2: DERIVE INDICATORS (LEVEL: FACULTY LEADERSHIP / DEANERY)

Higher-level strategic goals of HEI are often more likely to be found at the higher levels of the step model for evaluation (see Chapter 2.2). Once the strategic goals have been established, the next step is to derive measurable indicators from the strategic goals that can be used to verify that the goals have been achieved.

Even if project objectives have been formulated as carefully as possible, in most cases, it is not easy to deduce whether the goal has been achieved. Therefore it is necessary to work with indicators. Indicators can be used to determine whether a certain goal or event has or a certain event has occurred or a certain effect has been achieved. In this way, indicators serve to concretize the impact goals.

Direct indicators relate directly to what they are intended to describe. They can be formulated especially for countable facts and changes such as outputs, but also easily measurable effects and can often be derived directly from the objectives. For example, one of the strategic goals of a degree program could be that students get a job as quickly as possible after graduation. If you want to check whether this goal has been achieved, a suitable indicator would be the number of students who have found a job after completing their degree program.

If effects are to be measured for which it is not directly clear how they are expressed, **indirect indicators** can be used. This is the case when primarily qualitative facts are to be described, such as satisfaction, changes in terms of attitudes, motivation or behavior. You may want to use your survey to find out if students are motivated to attend a course. Here it is important to consider how motivation can be determined. This can be expressed in different ways: Do students participate regularly in the course, do they enjoy attending the course, or do they develop a particular interest in the topics? It is clear from the examples that it is not possible to assign an indicator so clearly and directly. In fact, several indicators will be necessary in order to map the changes and to be able to make statements about the achievement of objectives.

Indicators for the various levels of the logic model
In accordance with the logic of impact, indicators can be divided into impact, outcome, output and input indicators.
Outputs are not yet effects, but they are the basis and the condition for effects to occur at all. **Input** indicators are also relevant because they provide information about the resources that go into a project. If the inputs are set in relation to the outputs and effects, questions can be answered after the data collection such as: How many outputs were achieved with how many inputs (efficiency) and how many impacts were achieved with how many inputs (effectiveness)? For example, how many courses were taught in the program and how many students get jobs after graduation.

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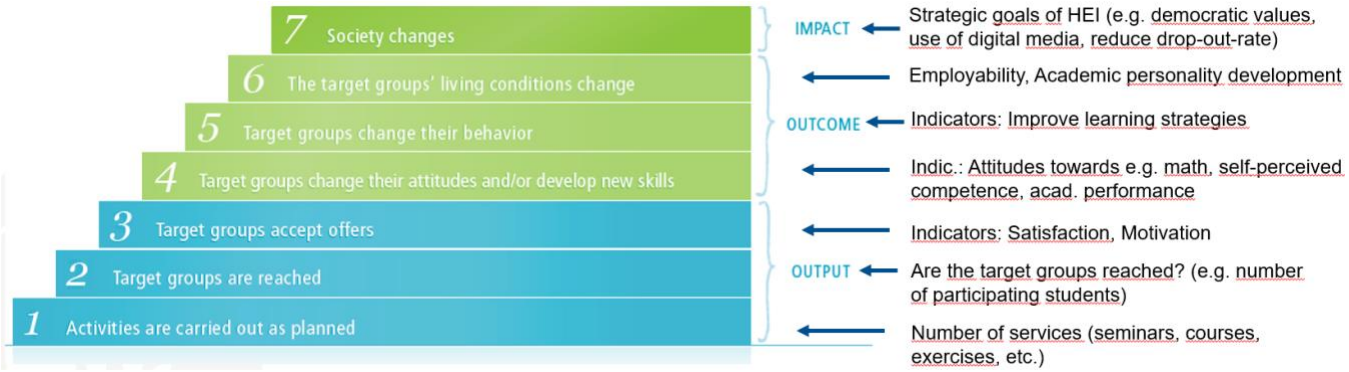

Figure 6: Examples of indicators on impacts in the area of HEI

STEP 3: OPERATIONALIZATION (LEVEL: TEACHING STAFF)

In principle, indicators should be developed for all levels of the impact logic, since the collection of data on all areas is important for impact-oriented management. This also applies if data are not collected for all areas, e.g., because the interest in knowledge is directed at a specific question or the available resources do not permit a comprehensive view. The basis and starting point for the development of indicators are the objectives of the course, program or HEI. Think about how you would know that a particular goal has been achieved. For more complex impact goals, several indicators are usually necessary in order to describe the achievement of the goal or a development with a mixture of qualitative and quantitative statements. Consider whether the indicators cover the different dimensions that your objectives and evaluation questions may have. For example, what can the achievement of an objective such as "students have higher competencies in scientific writing" express? Is there a countable dimension? What descriptive dimensions are there? Indicators should be formulated in such a way that they make it clear with whom what is to be achieved in which period of time.
When developing or selecting indicators, it is useful to look for already existing indicator sets (which you can find in professional literature, but also on the Internet, for example, from educational psychology or in the department) for inspiration.

STEP 4: EVALUATION (LEVEL: TEACHING STAFF)

The next step is to consider at what point data should be collected as information on the selected indicators. In order to be able to represent developments, the initial situation is often collected first (base line) and then the same information is collected again after the measure (e.g. course).
Baseline data is information about the initial situation before the start of the project. Without this information, it is not possible to determine whether or what developments have taken place and what effects have been achieved by a pedagogical innovation. An example of this is the development of interest in a particular study topic. If, before the start of a new course concept, the level of interest in the subject If it is not determined before the start of a new course concept how high the interest in the topic is before the start of the course, it is hardly possible to determine during or at the end of the semester whether the interest has changed. Baseline data will be compared to outcomes collected at the end of the educational intervention. This allows statements to be made about developments.

The steps of the Code of Practice described above were applied in IO4 in a total of 24 showcases. In the showcases, teachers created an evaluation model for their own course that can be used to evaluate the achievement of various strategic goals. As examples, two showcases are documented in detail in Chapter 5.

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CONCLUSION

The Code of Practice is a practical tool for decision-makers and instructors at universities who want to introduce new didactically innovative teaching formats that help to achieve the strategic goals of the institution. However, not only decision makers can benefit from the Code of Practice, it can also be useful for higher education teachers in planning courses along strategic goals.

A key challenge in applying the Code of Practice also became apparent during the focus group review (see Chapters 8 and 9): The effectiveness of individual teaching scenarios with respect to strategic goals that lie at the higher levels (impact) of the stage model of evaluation is sometimes difficult to demonstrate. However, it is precisely at these higher levels that the strategic goals of a university are often located, as also became clear through the analysis of the strategy papers of the partner universities (cf. chapter 2.3). For these (strategic) evaluation goals from the area of impact, the evaluation data collected in the context of individual courses are unsuitable as indicators. This can be countered by using other data sources collected outside the university for the evaluation and impact analysis of strategic goals.

In U2 strategic plan, there are three missions and 30 strategic goals. One of three missions is related to education, and at least four of 30 strategic goals are related to education. It is reasonable to expect that teaching innovations will significantly impact strategic goals and missions related to education. They are:

- M1 – Educate students that they could be competitive in the job market for a long period and become bearers of economic and social changes.
- D2 – Increase the efficiency of studying
- D5 - Encourage excellence, improve quality of teaching, scientific and professional activities
- P2 - Improve the quality of the teaching process
- U7 - Introduce new technological solutions and methodological approaches to teaching

If we analyze goals using the cause and effect analysis, we can conclude that didactic innovations directly influence goal U7 because didactic innovations actually are the methodological approaches to teaching that are to be introduced in U7. U7 directly influences the P2 and D5. U7 increases the quality of the teaching process if the innovations are wisely planned, carefully implemented, and continuously monitored. Consequently, the efficiency of study is increased (D2) and students become competitive in the job market.

The methodology for measuring the impact of innovative teaching and learning approaches on strategic goals is already shortly presented in Ch 4. of this report. The methodology was applied in several cases under the scope IO4 Module:

1. Faculty of organization and informatics (institution level)
2. Erythematous and papulous diseases (course level, School of medicine Zagreb)
3. Blood pressure measurement WBL for medical students (course level, School of medicine Zagreb)
4. The Workshop „AR/VR in Higher Education“ (an elective module of 4 weeks duration within the context of an eLearning certificate offered by studiumdigitale, the eLearning centre at Goethe University Frankfurt)
5. Databases (course level, Faculty of organization and informatics)
6. Introduction to Data Analysis and Visualization (course level, University of Rijeka)
7. Organizational behavioral (course level, Faculty of organization and informatics)

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Some conclusion related to the code of practice in measuring innovative teaching:

1. Measuring the innovative teaching in both institution and course level is a useful activity for teaching and learning process.
2. Measuring the innovative teaching should be implemented structurally, for example, by following respected approach (for example,using the MIT).
3. At the institution level, it is necessary that the measuring the innovative teaching on strategic goals is performed by responsible persons in the area of teaching/learning at institutional level (for examples, deans and vice-deans).
4. At the course level, the measuring should be implemented by teachers using the simpler but effective approaches than original MIT. (As a part of the RAPIDE project, a simpler variant of MIT, for course level purposes was designed.)
5. Measuring the influence of innovative teaching and learning approaches on strategic goals should include both parts: institution and courses levels: At the institutional level, higher-level indicators related to innovative teaching and learning should be established and connected to strategic goals. At the course level, lover-level parameters related to innovative teaching and learning should be connected to higher-level indicators. In this way, the horizontal measurement connection is established which enables comprehensive measurement.

7. DESIGN AND PREPARATION OF E-COURSE CHAPTER ON IMPACT ANALYSIS

The Module 4 – Impact analysis of innovative pedagogies! was developed by the teams from Goethe University Faculty of Organization and Informatics plus FOI - University of Zagreb as a result of the extensive literature review and in line with the project goal to enable education to the higher education teachers.

This last chapter of the e-course is aimed at evaluation and impact analysis in FC and WBL approaches. Similar to all Chapters a course design was created using the BDP tool in line with the plan to provide 1 ECTS teacher-participant workload (in submission process to UNIZG) using a similar build-up as used in Chapter 1 of the e-course to give participants a familiar look and feel.

This Module was planned to be taken as part of the full e-course but can also be taken as a stand-alone module. In this module, we will dive into evaluation and impact analysis in the context of Flipped Classroom(FC) and Work-Based Learning(WBL). The learning outcomes of this chapter are:

At the end of this module, participants should be able to:

- Plan the impact analysis for a FC- or WBL-based lecture with the logical model results staircase
- Measure the impact of innovative teaching like FC or WBL on strategic goals of your institution
- Investigate indicators and appropriate scales suitable for the chosen evaluation objectives
- Create an evaluation concept or a study design for the impact analysis from the selected indicators
- To encourage re-use all the materials available within this e-course have been prepared under the Creative Commons license (CC BY NC SA).

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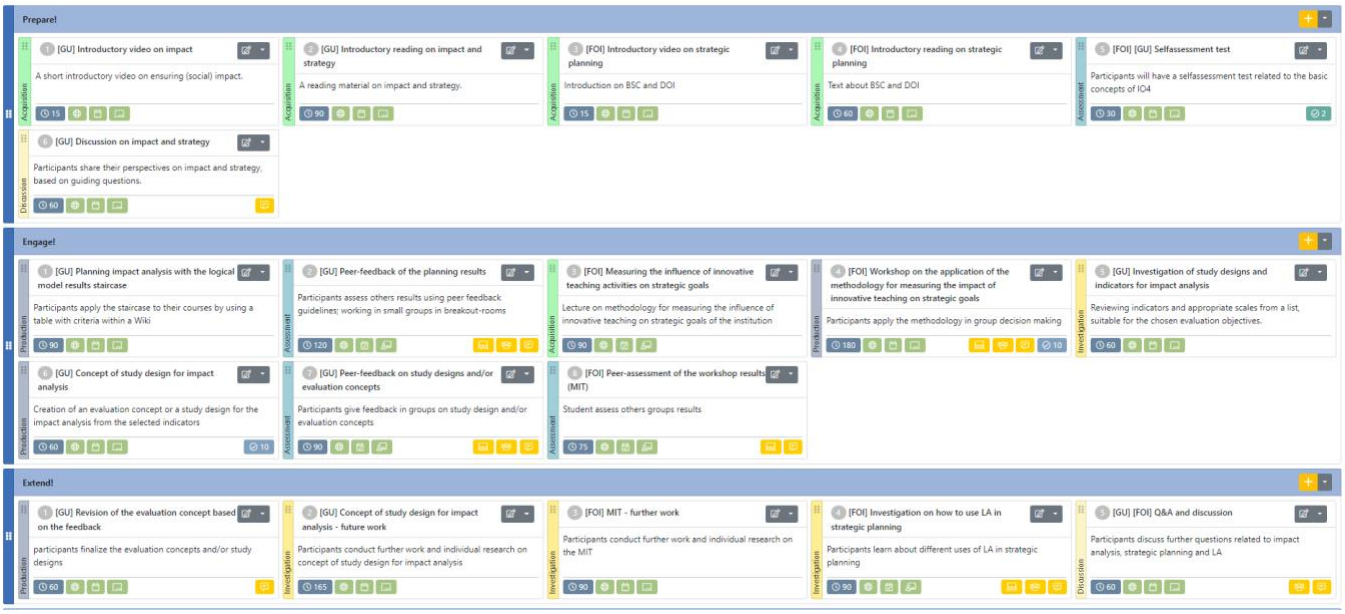

Figure 7: Screenshot of Chapter 4 Course design in BDP tool

The course consists of three phases, which form the backbone of each of the 4 RAPIDE e-course modules in-line with the flipped classroom approach:

PREPARE! – in this phase, the participants familiarize themselves with basic terms and concepts related to strategic planning in higher education as well as evaluation and impact analysis of courses. Texts and videos are available for this purpose. In a forum the participant will have the opportunity to share their experiences with the other participants. The phase will conclude with a self-assessment test and discussion on impact and strategy.

ENGAGE! – This phase focused on practical application. The participants planned their own evaluation objectives for FC or WBL courses using a step-by-step model for impact analysis and created an evaluation concept for their course. In several webinars, they will discuss and evaluate each other's concepts in small groups. Another focus is to measure the influence of innovative teaching activities and strategic goals of the institution.

EXTEND! – In this phase, we offer our participants the opportunity to go beyond the basics and learn about additional ideas and resources on evaluation, impact analysis and strategic planning in the context of learning analytics. This section is optional for participants.

Workload

As within previous chapters, Module 4 takes about 25 hours to complete (equivalent to 1 ECTS) depending on the experience and expertise of participants. The workload includes, 1-4 hours in the Prepare phase, 5- 12 hours in the Engage phase,and 10 in the (optional) Extend phase. At the beginning of the planning we could estimate the workloads of the participants and we were very interested to know if these were realistic or not.

Accreditation and Assessments

Participants who complete some activities will receive a Certificate of Attendance. Participants who complete at least 75% of the activities in the Prepare and Engage phase will get a Certificate of Completion. The workload of the module corresponds to 1 ECTS, which will be stated on the Certificate of Completion.

The teaching materials were defined in several ways:

1. Setting the hyperlinks to external sources
2. Uploading the external materials with proper referencing
3. Creating new teaching materials (guided video materials with AI speakers)
4. Creating the quiz
5. Creating different practical assignments
6. Establishing technical preconditions for live sessions

The materials are available in Module 4 at: learn.rapide-project.eu

8. FOCUS GROUP DESIGN FOR IMPACT OF INNOVATIVE PEDAGOGIES ON HEIs STRATEGIC GOALS

At the Multiplier Event on November 28, 2022, a focus group discussed the opportunities for innovative pedagogy to achieve strategic goals in HEIs. In total, 33 people participated in the focus group. The group consisted of Higher Education Teachers, Post Docs and Professors as well as decision makers (e.g. Deans) from various German universities and research institutions. Among others, the DIPF (Leibniz Institute for Research and Information in Education), the Ludwig-Maximilians-University Munich, the Technical University Darmstadt, the University of Applied Sciences Darmstadt and the Goethe University Frankfurt were represented.

The participants represented different disciplines from the fields of natural sciences, medicine, humanities and social sciences and social sciences. At the beginning of the focus group's work, the RAPIDE project, the central project goals, and the RAPIDE e-course as the central output of the project were briefly presented. Then, the focus group participants tested the Code of Practice using real case studies. For this purpose, the participants applied the staircase model for evaluation from IO4 to their own course. In doing so, the participants worked through the individual steps, first alone and then in small groups. With the help of worksheets on which the staircase model was displayed, the participants were able to write down their thoughts. In the exchange among themselves, questions were to be clarified and the concepts presented to each other. In this way, suggestions were to be made and improvements made in the form of peer feedback. In the next step, the results from the analysis of the universities' strategic goals were presented and related to the staircase model.

The final discussion showed that the Code of Practice can be a valuable help for decision makers at HEIs when they are faced with the question of what impact on the strategic goals the introduction of innovative pedagogies has at their respective institution.

9. REVISION OF CODE OF PRACTICE ACCORDING TO FEEDBACK FROM FOCUS GROUP

In the discussion at the conclusion of the focus group, participants concluded that the Code of Practice can be a viable tool for HEI decision makers and faculty in introducing new didactically innovative teaching formats that contribute to HEI strategic goals. But not only decision makers can benefit from the Code of Practice, HEI teachers can also find it useful when planning courses along strategic goals.

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Focus group participants identified a key challenge in applying the Code of Practice as demonstrating the effectiveness of teaching scenarios in terms of the higher levels (impact) of the Staircase model for evaluation. However, it is precisely at the higher levels that the strategic goals of a university are often located, as also became clear through the analysis of the strategy papers of the partner universities. For these (strategic) evaluation goals from the area of impact, however, the evaluation data collected in the context of individual courses are unsuitable as indicators. As a possible solution, the focus group therefore recommended that additional data sources collected outside the university be taken into account for the evaluation and impact analysis of the strategic goals.

In the scope of multiplier event TT in Rijeka, additional focus group was held to evaluate the MIT which is an important part od Code of practice. The MIT is consists 7 steps. There are 10 experts that participated in the focus group.

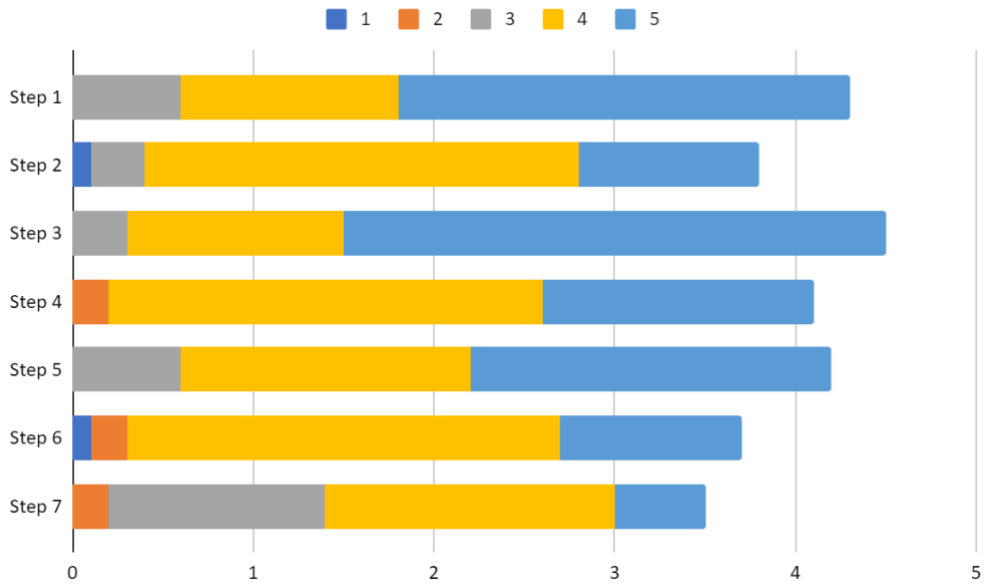

Chart 1. Understanding the MIT steps

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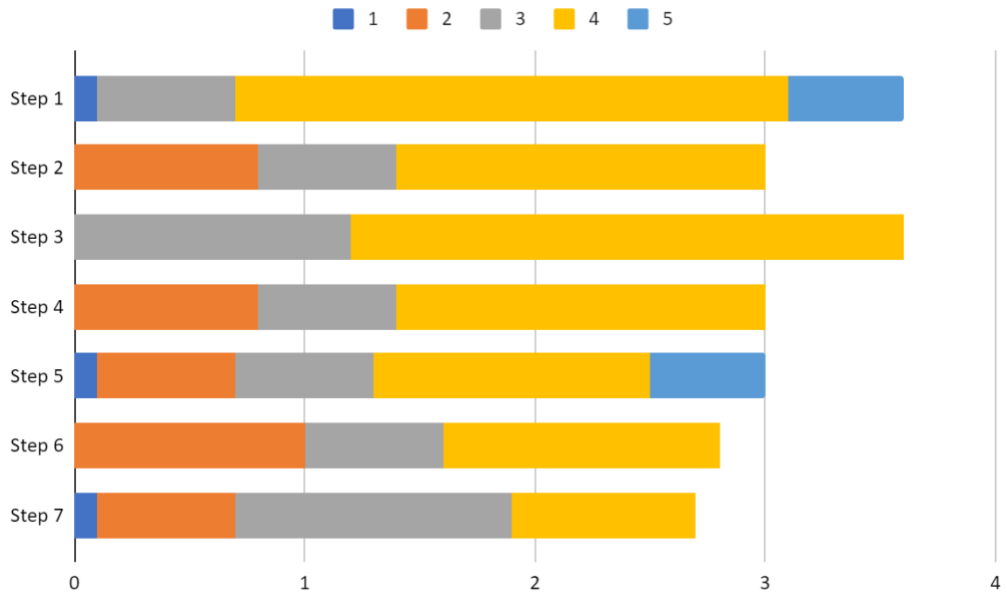

Chart 2. Complexity of the MIT

Charts 1 and 2 present the understanding the MIT by experts and its complexity. Experts evaluated MIT as a highly understandable method (all steps evaluated with grades between 3.5 and 4.5; total method understanding 4.01 out of 5). Experts evaluated MIT as a complex method (all steps evaluated with grades between 2.7 and 3.6; total method complexity is 3.1 (2.7) out of 5). Since we talk about strategic planning, it was expected that the method will be complex, however, it is still not too complex as it could be. In addition the MIT usefulness is evaluated with 4.2 out of 5, and its necessity in educational organization is evaluated as 4.1 out of 5.

The main benefits from MIT identified by experts are:

- structural approach,
- measuring instrument,
- precision in measuring,
- highly supports and motivates institutional progress and development
- high applicability,
- intuitiveness in the approach,
- analytical approach to modeling influences on strategic goals,
- transparency in planning and implementation,

The main weak points of the MIT identified by the experts are:

- time-consuming,
- complexity,
- some steps are blurry (for example, application of composite index),
- management boards could not recognize the benefits from the approach,

The evaluation through focus groups did not result with additional proposal on MIT improvement or motivated any. However, it is recommended to educate potential users on theoretical aspects of MIT because it will increase its acceptance and effectiveness.
Finally, it could be concluded that 10 experts and practitioners in the field of strategic management positively evaluated MIT.

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10. E-COURSE CHAPTER ON IMPACT ANALYSIS

10.1 E-COURSE 'LET'S GET FLIPPED'

The course was designed by the team from the Faculty of Organization and Informatics to host the following chapters to be developed within RAPIDE project:

1. Let's innovate teaching
2. Let's innovate assessment
3. Dashboard model that supports inclusive flipped classroom and work based learning and WBL
4. Impact analysis of innovative pedagogies.

The e-course is available at: learn.rapide-project.eu

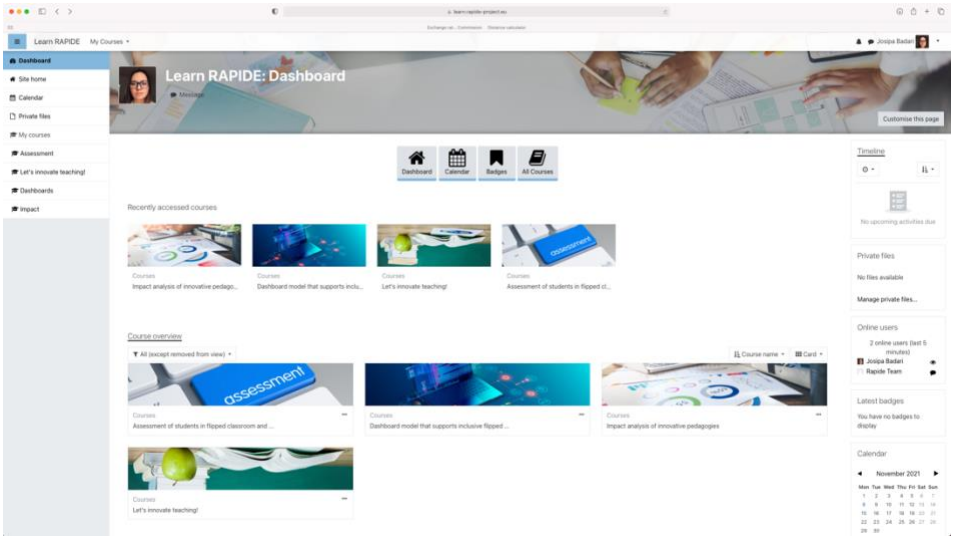

Figure 8: Print Screen of the RAPIDE online course home page

10.2 4TH CHAPTER - IMPACT ANALYSIS OF INNOVATIVE PEDAGOGIES

The chapter was developed by the teams from Goethe University and Faculty of Organization and Informatics as a result of the extensive literature review and in line with the project goal to enable education to the higher education teachers.

The chapter included concepts for evaluation and impact analysis in the context of Flipped Classroom(FC) and Work-Based Learning(WBL). It introduces the impact analysis for an FC or WBL-based course using the results staircase of the logical model. For this purpose, indicators and appropriate scales necessary for the selected evaluation objectives were researched. Finally, the selected indicators were used to create evaluation concepts or study designs for the impact analysis

Also explored how to measure the impact of innovative instruction such as FC or WBL in terms of the institution's strategic goals.

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The course consists of three phases, which form the backbone of each of the 4 RAPIDE e-course modules in-line with the flipped classroom approach:

PREPARE! – in this phase, the participants familiarize themselves with basic terms and concepts related to strategic planning in higher education as well as evaluation and impact analysis of courses.

ENGAGE! – This phase focused on practical application. Participants planned their own evaluation objectives for FC or WBL courses using a step-by-step model for impact analysis and created an evaluation concept for their course. In several webinars, they discussed and evaluated each other's concepts in small groups.

EXTEND! – In this phase, participants had the opportunity to go beyond the basics and learn about additional ideas and resources on evaluation, impact analysis, and strategic planning.

As within previous chapters, Module 4 takes about 25 hours to complete (equivalent to 1 ECTS) depending on the experience and expertise of participants. The workload includes, 1- 4 hours for preparation, 5- 12 hours in the Engage phase, and 10 in the Extend phase.

After the LTT3 event the chapter was further developed as Module 4 of the RAPIDE e-Course to be piloted with 72 registered participants in October, 2022. The module was organized according to the principles of flipped classroom and the final feedback was gathered from participants to enable module creators further work on improvements. The Module 4 and the piloting process is described in more details in the document - RAPIDE e-course Let's get flipped.

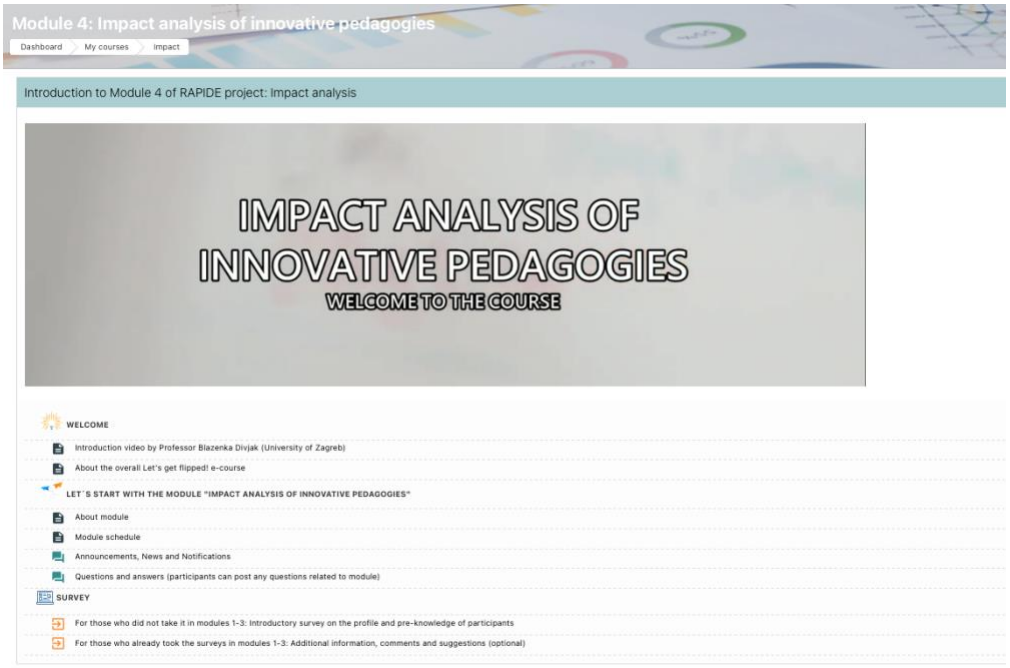

Figure 9: Print Screen of the RAPIDE online course - Chapter 4

11. LTT 3 EVENT

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On April 27th -29th, 2022 the RAPIDE consortium participated in the consortium meeting and LTT3 activity - Let's innovate support.
The meeting was conducted as a hybrid event and hosted by the Goethe University at the impressive campus Westend in Frankfurt. Partners discussed project plan for the next 6 months, preparation of LD for the workshops, presented literature review and introduction to student survey conducted at partners institutions, presented overview of strategic goals of partner institutions and presentation of best practices.
One of the aims of the LTT3 event was to provide teachers with hands-on training on strategic approach to innovative pedagogies. The LTT event gathered 20 participants from partner institutions.

12. QUALITY FEEDBACK

The quality feedback of the performed activity LTT3 was performed immediately after the end of the activity via google forms and reported to the project Quality Manager. The form consisted of 7 short questions which covered: Quality, content and duration of the training, Training methods, Acquired skills and knowledge, and Overall satisfaction with the training.
The final report is available to all project partners in the shared GDrive folder. The quality of the 3rd chapter Let's innovate teaching was performed during LTT3 activity via questionnaire administered on GDrive. All LTT3 participants provided their feedback. The report is available to all project partners on GDrive.

13. INCLUSIVENESS

This result is created to support higher education teachers and policy-makers to improve their skills and transcultural experience which will enable them to be more competent in further delivering the education and assessment, as well as the support within a diverse student population.
In its Communication on achieving a European Education Area (EEA) (4) by 2025, the Commission outlines two key initiatives. These aim to address pressing educational challenges related to underachievement and early leaving from education and training within the EU. As one indicator of the need for education improvement, the level of underachievement, in the EU as a whole, has increased in science and reading, while remaining stable in mathematics. It is generally recognised that underachievement and early leaving are symptoms of more deeply rooted challenges in education. **These relate to a need for education providers to have access to approaches and competences enabling them to embrace student diversity; to offer secure and inspiring learning environments; and to motivate all learners regardless of their socioeconomic background, ethnic origin or disabilities.** (https://education.ec.europa.eu/et/news/inclusive-education-in-europe-learning-from-erasmus)
This result, therefore, is in line with the conclusions of the OECD Teaching and Learning International Survey (TALIS), particularly this that teachers and trainers need continuous opportunities for professional development. (https://read.oecd-ilibrary.org/education/talis-2018-results-volume-i_1d0bc92a-en#page7)
According to the Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions the higher education and VET systems need to adapt to strengthen their key role in supporting lifelong learning and reaching out to a more diverse student body. The need for more flexible and inclusive learning paths has increased as the student population is becoming more diverse and the learning needs more dynamic. (https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52020DC0625&from=EN).

The strategic approach to implementation of innovative pedagogies enables active reflection of the institutional processes and development of a sustainable and inclusive learning environment in accordance with the principles of inclusive education as a whole, such as: Diversity enriches and strengthens all communities, society

equally values, respects, and appreciates the diverse learning styles and achievements of all students and all participants are empowered to realize their potential, while taking into account individual requirements and needs.

14. APPENDIX(ES)

Semi Structured Interviews

	Q1: In which strategic goals of your institution would didactic innovations (teaching innovations) make a significant difference?	**Q2: Which indicators, key figures, evidence of effectiveness are important to you when introducing (pedagogically, methodologically-didactically, technically) innovative teaching-learning scenarios?**
I1	The largest challenge for both our regular undergraduate programmes as well as our apprenticeship programmes is to ensure that our students as able to successfully complete their programmes, and this is our largest strategic priority (Open University UK, 2017, 2018b). As the UNI1 has an open access policy anyone who wants to start to study at the UNI1 can, irrespective of whether this person has the right knowledge, skills, competence and experience. As a result we know from lots of research that certain groups of learners are put at a disadvantage (Nguyen, Rienties, & Richardson, 2020; Richardson et al., 2015; Richardson et al., 2020), but at the same time have found time and time again that educators have an important role to play in terms of providing appropriate support and implement effective learning designs (Nguyen et al., 2018; Nguyen et al., 2017; Nguyen, Rienties, & Whitelock, 2020; Rienties et al., 2017; Rienties & Toetenel, 2016; Rizvi et al., 2019). Our research indicates that 69% of how students study at the UNI1 on a week-by-week basis is determined by how our educators design their practice. Furthermore, we have found that more innovative approaches, in particular those linked to communication activities (i.e., student to student, teacher to student, student to teacher) and frequent assessments significantly improve retention (Nguyen et al., 2017; Nguyen, Rienties, & Whitelock, 2020).	Beyond our retention figures and satisfaction data (Li et al., 2017; Ullmann & Rienties, 2021) the UNI1 spends a lot of energy in helping module teams during their design and production of modules, as well as provide analytics support when a module is in presentation (i.e., when it is live) (Hidalgo, 2018, 2021; Hidalgo & Evans, 2020). These data are regularly monitored and we are currently also developing models to see whether students who are successful in module 1 also continue to do well in module 2, 3, and/or 4. Obviously we use learning analytics to identify potential students at risk, as well as to measure the impact of learning design decisions. Also interventions made within modules are checked in terms of whether these impact students or not (Herodotou et al., 2017; Herodotou, Naydenova, et al., 2020; Herodotou et al., 2019). Similarly, in terms of apprenticeships we track how our students are doing.

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	However, as evidenced by these and other studies it is often difficult to change educators' mindsets and practices (Herodotou et al., 2021; Herodotou, Rienties, et al., 2020).	

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I2	In UNI2 strategic plan, there are three missions and 30 strategic goals. One of three missions is related to education, and at least four of 30 strategic goals are related to education. It is reasonable to expect that teaching innovations will significantly impact strategic goals and missions related to education. They are: ● M1 – Educate students that they could be competitive in the job market for a long period and become bearers of economic and social changes. ● D2 – Increase the efficiency of studying ● D5 - Encourage excellence, improve quality of teaching, scientific and professional activities ● P2 - Improve the quality of the teaching process ● U7 - Introduce new technological solutions and methodological approaches to teaching If we analyze goals using the cause and effect analysis, we can conclude that didactic innovations directly influence goal U7 because didactic innovations actually are the methodological approaches to teaching that are to be introduced in U7. U7 directly influences the P2 and D5. U7 increases the quality of the teaching process if the innovations are wisely planned, carefully implemented, and continuously monitored. Consequently, the efficiency of study is increased (D2) and students become competitive in the job market.	In the case of the UNI2 strategic plan, there are some indicators related to the previously mentioned goals: ● The third quartile of studies (per year) and the percentage of students who regularly enroll in a higher year / Ratio of enrolled students completing the program/ ● Number of students completing an undergraduate level (with an average grade higher than 3.0) ● Number of students completing a graduate level (with an average grade higher than 3.0) ● Statement of reaccreditation, external and internal Thematic Evaluation, and External Evaluation of the Quality Improvement System (Periodic) ● The success rate in continuous monitoring (the indicator is monitored on an annual level, strategic period implementation) ● Number of innovative subjects (annually) Those indicators are primarily related to the outputs of the teaching process, and less related to the direct measuring of the quality of innovative strategies. However, since there is a strong relationship between the quality of innovative strategies and output indicators, we can observe those measures as good proxy measures and indicators for innovative teaching strategies. However, in future strategic planning cycle, it is recommended to introduce more indicators that are closely related to the quality of innovative strategies.

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I3	Some of our School's strategic goals are the promotion of the quality culture and the development of a quality assurance system as well as the quality culture in study programs. This translates to an internal and independent external evaluation of the quality of all the School's activities, among which competent teachers and student-centered teaching are prominent. Didactic innovations have the potential to make significant differences in multiple areas of preclinical and clinical teaching. The School recognizes that the students applying to our School keep changing. The students' psychometric abilities, emotional maturity, expectations, approaches to studying, as well as their willingness to sacrifice a significant portion of their lives to the School and the calling keep evolving. In order to adhere to its strategic goals, the School should regularly reevaluate and reinvent its approaches to teaching using best practices and evidence. Therefore, didactic innovations should be introduced at all levels of studying – preclinical and clinical.	When introducing innovative teaching-learning strategies the main indicators should always be how well the students have reached the learning outcomes (measured by standardized assessment in line with the constructive alignment principles) and whether the teaching activities have helped the students reach those outcomes (quality control and student-evaluation of teaching). We believe that the key measurements are the effectiveness and usefulness of various teaching activities rather than student satisfaction with the teachers, the courses or course material… While our Department is both student-centered and student-oriented, we strongly believe that the core curriculum, the students' duties and the types of assessment the students are exposed to should be in the domain of the School and not the students.

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I4	The vision of our faculty is to be the leading institution in Croatia and amongst the top five institutions within the region providing education and carrying out research in the fields of informatics, organization and business, and to be recognized for its innovative approach to learning and teaching, the development of digital-era competences and its project activities and international partnerships. So, teaching innovations and innovative approaches to learning and teaching are part of our vision and strategic goals. In contemporary education it is not just important what faculty teaches, but also how it is being taught. We all know that informatics is a hot topic all over the world, but what distinguishes great faculties from good ones, when it comes to teaching, are innovative teaching strategies and implementation of contemporary didactical approaches which place emphasis on students' activity, their creative and active participation and co-creation of teaching process. Several strategic goals are related to the described elements: students' satisfaction, quality of teaching, visibility and (outside) perception of the faculty, cooperation with other faculties (sharing experiences) and leading innovation.	Innovative teaching/learning scenarios must be aligned with faculty curriculum and foster innovative approaches. This should be visible through: competency based approach (increase of targeted competencies),students' satisfaction with applied scenarios, teachers satisfaction, ease of integration in current teaching, infrastructure and resources, cost-benefit elements (especially when acquiring new and expensive equipment). The strategy is based on our real resources, takes into account trends in information sciences and the higher education system and opens up room for development in the next strategic period. The challenges that will affect the realization of our strategy are primarily related to the human resource restraints and shortages, the increasing competition in the area and the new areas of information sciences. Funding science is becoming more competitive and structured mainly through European sources with a high level of competitiveness. We have to make significant efforts to continue to develop the fields of informatics and economics and to build human resources for their implementation.
I5	First of all, innovation is one of the four most important values that our university promotes and upholds in its strategy (attached). L&T is the first of 4 main areas in our strategy. In terms of strategic objectives, we have distinguished between quantitative and qualitative indicators, so that, for example, the introduction of WBL contributes to the objective of "promoting students' practical skills". On the other hand, the introduction of FC promotes the qualitative goal of student-centered learning. Both WBL and FC contribute to the digital transformation of L&T, if implemented	In terms of key figures, this would first of all be the success of the students in achieving the planned learning outcomes (success rate in examinations), but also the quality of the learning outcomes achieved (grades), as well as a positive feedback on the course.

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