



D3.3 Report based on result from quality insurance system of the curricula.

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Executive Summary

This report discusses the quality assurance system as employed during the execution of innovation related courses during the project. To do this a set of principles for course assessment were developed and are presented in this report. Based on these principles two actions has been taken for course assessments. First a selection of course evaluations made during the project, providing student feedback to the innovation content and pedagogics of the courses.

About the EIT HEI Initiative

The EIT HEI Initiative: Innovation Capacity Building for Higher Education has been designed with the aim of increasing the innovation and entrepreneurial capacity in higher education by bringing together HEIs in innovation value chains and ecosystems across Europe. A central philosophy of the EIT is the integration of the EIT Knowledge Triangle Model into all its activities. HEIs selected to participate in the HEI Initiative will also leverage and use the Knowledge Triangle Model as an enabler, facilitating the creation of systemic, institutional change. Additionally, HEIs selected to participate in the HEI Initiative will contribute to and leverage Smart Specialisation Strategies, the Regional Innovation Impact Assessment (RIIA) Framework, as well as align to the goals of the EIT Regional Innovation Scheme (EIT RIS). This will strengthen the links between HEIs and their local and regional ecosystems and provide an impetus to leverage additional funding sources beyond the HEI project funding period of the selected HEI projects. HEIs are encouraged to prepare applications which will support the development and implementation of six Actions in their institutions, cumulatively leading to institutional transformation, an increase in entrepreneurial and innovation capacity, and integration with innovation ecosystems.

1 Introduction

Work Package 3 (WP3) aims at enhancing the quality of innovation and entrepreneurship education. This report presents the outcome from phase 2b of the NOBALIS project. Here the principles and applications of evaluation methods for innovation and entrepreneurship courses. Examples of evaluations of teaching modules for I&E education with guidelines are presented in Appendix.

Participants in WP3 has undertaken four interrelated tasks to achieve its aim and outcomes, these are:

1. Building capacity to teach innovation and entrepreneurship
2. Developing innovation and entrepreneurship curricula
3. Transferring innovation and entrepreneurship curricula into educational contexts
4. Developing a quality assurance system for the curricula

In this final report, we report on the evaluation of a selection of teaching modules as developed and used to educate students in previous parts of the project.

2 Quality assurance system

A key task for WP3 is to develop a quality assurance system for the curricula at each HEI. A pilot scheme is presented in this section and the outcomes are presented in coming sections.

2.1 Criteria for Quality of NOBALIS courses.

As a starting point for the work regarding educational quality there are a plethora of quality criteria divided between three areas: governance and organization, conditions, and completion and results of education. The criteria are applied in order to gauge the quality of the education and its modus operandi. Furthermore, they serve as important variables to consider when deciding on possible actions and their subsequent reviewal in accordance with the participating University's internal quality assurance processes. The criteria are, in essence, identical for basic, advanced and research levels, and are consistent with the ESG assessment criteria used when auditing each university's quality assurance work regarding the contents of their educations.

The quality-assurance process involves development and control of quality as well as promotion, further development and spread of good examples. Each part of our operations has its respective objectives as basis for the quality-assurance process. This can be described through four sub steps, The NOBALIS university's quality wheel (figure 1):

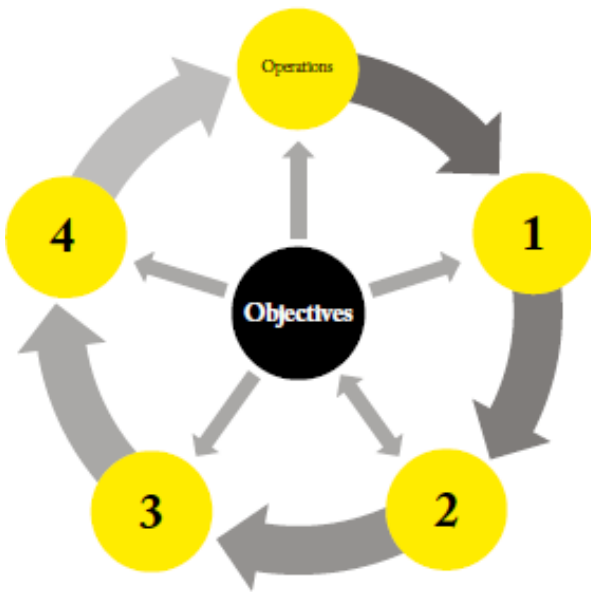


Figure 1: Operations are carried out in relation to objectives. The objectives also make up the basis for the NOBALIS quality-assurance process. 1. Assessment, 2. Analysis, 3. Measures, 4. Follow-up of measures

2.2 Assessment in relation to objectives

Analysis and identification of insufficient quality and good examples respectively. Prioritization and implementation of measures in relation to identified insufficient quality and spread of good examples. Follow-up of implemented measures the analysis (sub step 2) is carried out in relation to objectives and when needed the objectives are revised.

As for prioritized measures (sub step 3), this includes also how the follow-up should be carried out. A measure can also be preventive in order to minimize the risk of insufficient quality. The documentation of the quality assurance is available at each University.

Criteria and sub criteria are compiled in a quality matrix, which can be used to support the systematic work with quality assurance. It contains, among other things, suggestions on how to show when certain criteria have been met, when and how you should conduct a follow-up, as well as how the internal division of responsibility is structured.

2.3 Potential for Internal Follow-Up Processes.

The internal follow-up processes can be conducted within certain time intervals with the purpose of supporting a quality driven business development. The follow-up of the annual and triennial cycles is meant to identify, prioritize and support quality-enhancing actions, as well as spreading and making use of good examples in order to support quality assurance work carried out by the faculties on an operational level.

2.4 Course Evaluations

For students to be given the possibility to share their opinions on a course (through course evaluations and other follow-ups) and be able to take part of the results is mandatory by ESG and can be regulated by a Higher Education Ordinance (In Sweden; 1st Ch. 14 §).

The local rules regarding courses do exist. local rules state, among other things, that the results of the course evaluations shall be used to improve upon the course content, and that each faculty/department must develop policy documents that clarifies the allocation of responsibility and general procedures.

In order to support the NOBALIS universities in their work with the course evaluation process, a guidance document has been developed. The guidance document asks questions that stem from relevant quality criteria and connects them to the ESG parameters for course evaluations. The questions are meant to be used as points of reflection when instructions for conducting course evaluations are being constructed.

For each course/education element given and reported as a NOBALIS we would like to know for each University.

Table 1: Template for evaluation

Course	Evaluation methods	Results
<i>Name of the course/ element. Level and ECTS. Number of participants</i>	<i>How was the course/element evaluated? If specific questions were asked, please supply the specific questions</i>	<i>What were the results of the course evaluation. What were the lessons learned by giving the course/element.</i>

3 Results from Evaluation

In this section a selection of courses and their evaluations are presented.

3.1 Evaluations at SLU

Lessons learned from the course evaluation is detailed in Table 2. The course selected for this analysis is FÖ0444, which is a master level course on Innovation & Sustainability that is offered to management students.

Table 2: Evaluation at SLU

Course	Evaluation methods	Results
<i>FÖ0444 -Innovation & Sustainability; MSc, 7,5 ECT. Level and ECTS. 14 participating students</i>	<i>The course was evaluated using the Evald, which is a digital platform where students are invited to complete course evaluation, teacher can design specific questions for evaluation beyond standard questions, and the student representative can access result and write suggestions for quality improvements. Since the course was divided into four course modules, additional questions were asked about each course modules.</i>	<i>The results of the standard questions of the course evaluation shows that students were overall satisfied with the quality of the course such as their learning achievements, the teaching and learning activities, the social and physical environments, examination and work load. The specific questions about the course modules shows that the students are satisfied with these, but also identified ways to improve the course modules. The suggested improvements are captured in the course evaluations and will be implemented next time.</i>

The evaluation method deployed at SLU shows that it is valuable for the course leader to combined standard questions with specific questions. In this case, table 2, the course leader asked specific questions about each module, which provided valuable feedback from students to further improve the course. Also, and importantly, while the questionnaire allows students to rate their response, e.g. from "very poor" to "very good" (as well as "no opinion"), the online evaluation method also enables student to provide a comment associated with their ratings. The comments are important complement to the ratings. Furthermore, at SLU, we appoint student representative that support the course leader to analyse the results from the course evaluation. The student representative is paid to do so and offers valuable insights from student perspectives that are note easily captured in the evaluation.

3.2 Evaluations at LNU

As a sample course for illustration of the evaluation process at LNU, the course 11K051 was selected. This is course on the first-year course on the candidate programme "Digital business development" (DVU). The course and the program belong to the subject of Informatics, at the Faculty of Technology. The course and the program are new, in the current form, and this was the first instance of the course, given in 2023. As new course, feedback is especially important, in order to catch problems certain to be discovered in the early years of any course. Here we present the formal evaluation made according to regulations at LNU. Then we discuss the broader framework of evaluation, development and quality control.

Table 3: Evaluation at LNU

Course	Evaluation methods	Results
<i>Name of the course/ element. Level and ECTS. Number of participants</i>	<i>How was the course/element evaluated? If specific questions were asked, please supply the specific questions</i>	<i>What were the results of the course evaluation. What were the lessons learned by giving the course/element.</i>
Digitalization project: problem solving (2023) First year course, 7.5 ECTS 23 students	<i>The evaluation was made using the mandatory system designated by the university. Each course is evaluated by the student and the teacher at the end of the course. The student, anonymously, gets the opportunity to rate the course on a number of aspects, using a scale of agreeing or disagreeing with statements. For example, "the course has a high degree of pedagogic standard". Free text fields are also offered, for the students to make comments on the course in general. There is a fixed set of questions that is a default mode of the survey, however it is possible to delete or add questions. Teachers then evaluate the course for their perspective. A final suggested is then made by course responsible teacher, based on students and teacher responses, for future changes. These</i>	<i>Project work and high degree of freedom creates challenges for students. More rigor, structure for examinations was needed. New structure for the examination were created, including more individual assignments, written exam, higher structured assignments for group work, using templates.</i>

	<i>are archived and later distributed at next year's course instance.</i>	
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This formal evaluation is complemented by other actions, for example informal feedback from student during the course and reflection parts in written assignments, where students are asked to comment on assignments and suggest improvements. The course evaluation is part of the yearly development cycle, with a program meeting twice a year, as the central connecting point for quality work for the programme. At this meeting, teachers and students meet up, to discuss the courses during the semester. The meeting could also include external stakeholders, if possible. The student representatives are compensated for the time by the University. These program meetings and informal discussions are very central to the evaluation and improvement process as, generally speaking, a minority of students take the opportunity to give their feedback using the survey. Included in the appendix, as sample template of the survey is included.

3.3 Evaluations at LLU/LBTU

In quality assurance of studies LBTU applies European standards and guidelines for quality assurance in the European Higher Education Area (ESG) developed by ENQA (European Association for Quality Assurance in Higher Education).

Evaluation of study programmes in accordance with the internal quality assurance system is carried out regularly in accordance with the requirements of the standards included in Part 1 of the ESG Guidelines in accordance with the regulatory framework of LBTU and the national level.

The Rector's Order "On the Procedure for Conducting a Regular Student Survey to Assess the Quality of the Study Process at LBTU" determines the procedure for conducting a regular student survey to obtain information on student satisfaction with the study process at LBTU. The Order determines the procedure for conducting the survey, collecting, accessing and using the results, as well as informing about the survey results.

Table 4: Evaluation at LLU/LBTU

Course	Evaluation methods	Results
<i>Name of the course/ element. Level and ECTS. Number of participants</i>	<i>How was the course/element evaluated? If specific questions were asked, please supply the specific questions</i>	<i>What were the results of the course evaluation. What were the lessons learned by giving the course/element.</i>
<i>Economic Resources 1,5 ECTS (full course 3 ECTS) 17 students</i>	<i>The evaluation was carried out according to the compulsory system established by the University. The</i>	<i>The focus of this course is to develop an in-depth knowledge of the availability and role of resources at</i>

	<p><i>evaluation of each course is carried out by the student and the teacher at the end of the course. The student is given the opportunity, anonymously, to evaluate the course on a number of aspects, using a scale of 1 to 5. Aspects that students will be asked to evaluate:</i></p> <p><i>At the beginning of the course, the teacher introduced the aim of the course, the results to be achieved and how to evaluate them.</i></p> <p><i>Course content was clearly presented</i></p> <p><i>The course used teaching/learning methods that facilitated learning.</i></p> <p><i>The course was conducted by the teacher in an engaging/exciting way that encouraged the participation of the students.</i></p> <p><i>The teacher provided feedback (explanation, analysis) on learning/test results</i></p> <p><i>The teacher was available for consultation and advice</i></p>	<p><i>regional, national and global scales in order to develop innovative approaches to the application and use of resources. This approach encourages not only focusing on product development but also identifying new approaches to product development.</i></p> <p><i>Students will be able to independently identify an organisation's resources and assess their competitiveness, Students demonstrate a sophisticated approach to developing a strategy based on resource-based competitive advantages.</i></p> <p><i>Most students have an understanding of resource problems but are unable to propose innovative solutions.</i></p> <p><i>Some students understand the relevance of using resources but lack the skills to synthesize knowledge and find innovative approaches to solving problems.</i></p> <p><i>This course builds a focused and reasoned case for innovative resource use through in-depth scientific research.</i></p>
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At the end of each semester, a student survey is carried out on the study courses taken during the semester and the work of the teaching staff in conducting them. The survey is conducted electronically in the University Information System. The results of the survey are available in a summarised form to the study programme director, heads of departments and each teaching staff member - his/her own evaluation. The results of the survey enable the teaching staff to evaluate and improve their work, as well as provide the study programme directors with valuable recommendations for improving the quality of the study programme. The information obtained is used by the management and heads of departments of the University for the implementation of study quality improvement measures at the university level. The results of the survey are one of the criteria in the system of motivation of teaching staff. The questionnaire is regularly revised with the involvement of representatives of the Student Self-Government.

3.4 Evaluations at EMU

The course selected for the example is DK.0021 Management and entrepreneurship that is part of entrepreneurship module doctoral students can select in their program. The entrepreneurship module was developed to offer PhD students who do not plan to build career in academia an alternative option that would support development of entrepreneurship competencies and practical experience from working outside academia. The course is open to all PhD programs.

The course has been implemented four times and one of the aims of development of its submodule Research commercialization and the review during the NOBALIS project was a critical review after first rounds of the course have been implemented and planning for the further quality improvement based on the lessons learnt from that experience and the knowledge and experience shared in the NOBALIS project.

Table 5: Evaluation at EMU

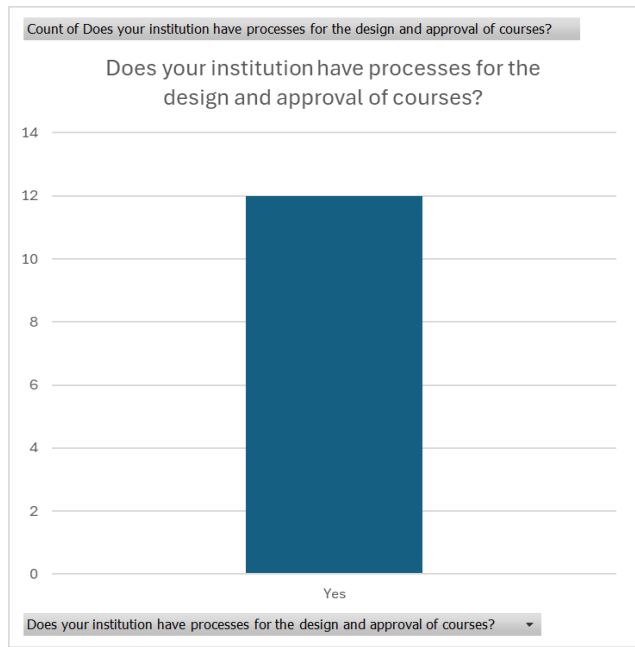
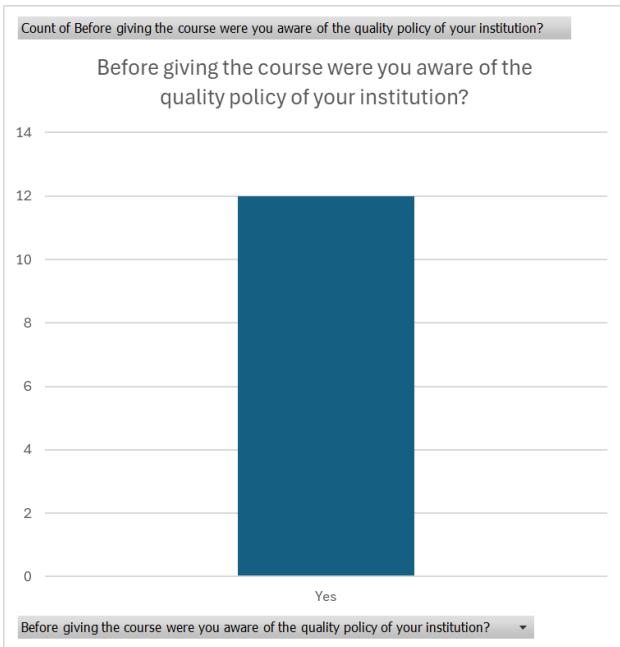
Course	Evaluation methods	Results
<i>Name of the course/ element.</i> <i>Level and ECTS.</i> <i>Number of participants</i>	<i>How was the course/element evaluated?</i> <i>If specific questions were asked, please supply the specific questions</i>	<i>What were the results of the course evaluation.</i> <i>What were the lessons learned by giving the course/element.</i>
DK.0021 Management and entrepreneurship (2023) PhD, 3 ECTS 11 students	<p><i>The evaluation followed the EMU's course evaluation requirements. At the end of each course, students provide an assessment in the university's study information system based on structured scale and open questions for additional comments. The evaluation is anonymous.</i></p> <p><i>The students are asked to evaluate aspects such as teachers' attitudes in terms of support towards and openness to students; the excellence of teaching; course materials (substance, form, suitability); feedback given to students on their work; information about the organization and requirements of the course. In addition, students are asked to provide an overall grade to the course [from A (excellent) to F(fail)].</i></p> <p><i>In addition, the implementation of the course and its specific modules was discussed in the teachers' peer-</i></p>	<p><i>While in overall the PhD students were satisfied with the course and had high scores for organization, attitudes, more attention should be paid to giving students' feedback and renewal of the materials for the course, incl. more time and integration of interesting real-life cases. The feedback on the submodules in the course and their timeframe suggested a review on if some topics should be removed in order to concentrate more deeply on more limited number of topics. The feedback will be taken in account as the course and its modules will be</i></p>

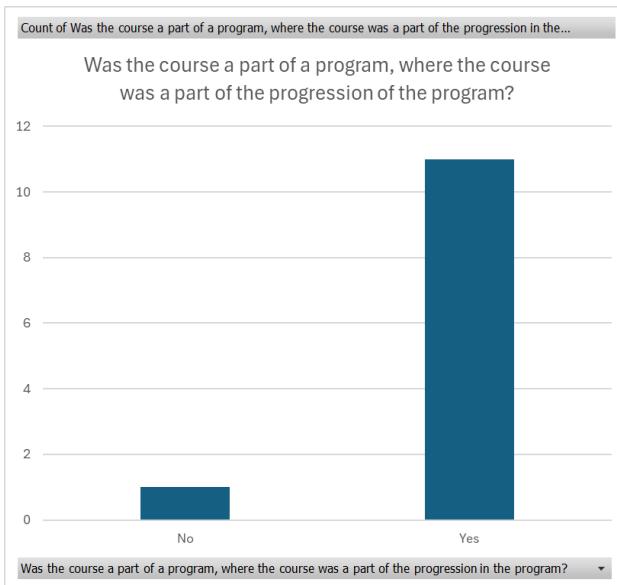
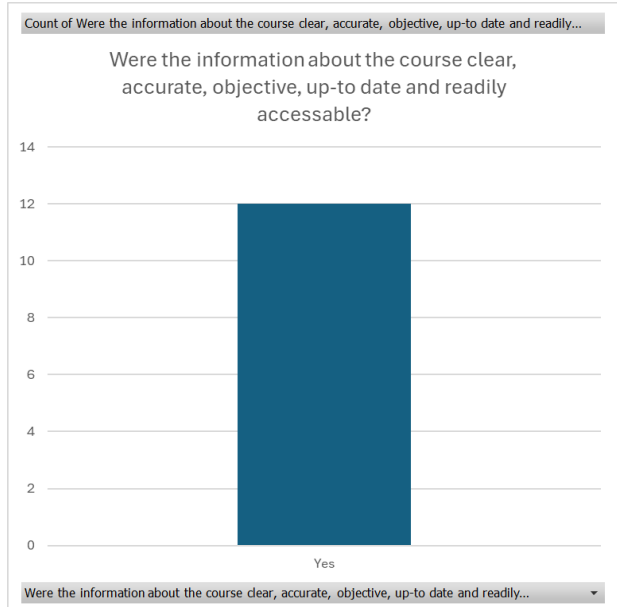
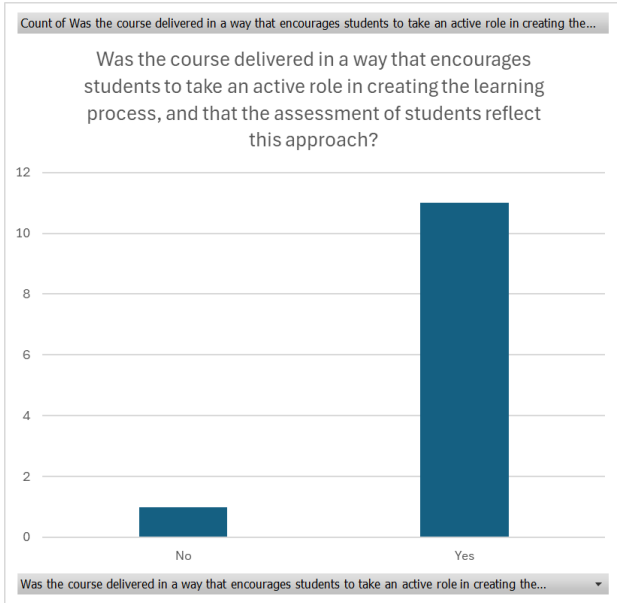
	<i>group in EMU organized in the NOBALIS project to share the challenges and brainstorm ideas for further improvements. .</i>	<i>updated before the next academic year.</i>
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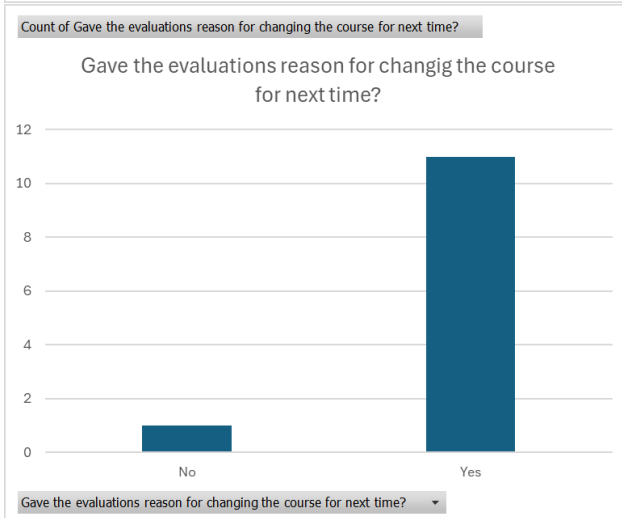
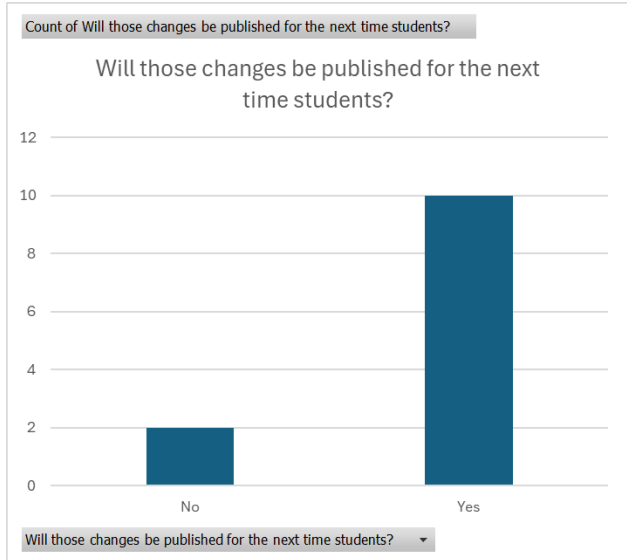
Each academic can see the results of their specific course and the comparison with the assessments of all of their courses and should review it at least at the end of semester. The head of study program and structural units can access detailed assessment for program, each course, each teacher with visualization and should review the feedback at the end of academic year and for the teacher’s annual assessment While the formal assessment of courses by students is required, it should not be the only form of feedback at the course level. The informal feedback is provided by students during the course and to the Doctoral School. As the course is for PhD students of various study programs, it does not have an assigned mentor system for specific study years that is applied at the BA and MA program where an academic is assigned for each year group.

4. Survey of course evaluation principles used during the project

Lecturers who were a part of the work package was surveyed and were asked 10 questions surrounding the evaluations. Please see “annex 2: Quality ensurance in teaching” for the full survey. In total 12 lecturers from LNU, SLU, EMU, LBTU answered the survey and gave similar answer.







The last question in the survey “Given the evaluations, how will you change the course next time it is given?” was a text based question with the answers shown in table

Table 6: Changes to courses

Given the evaluations, how will you change the course next time it is given ?
More active participation of the students - LAB interactions !
Align the two individual assignments to avoid repetitive tasks and also consider alternative examination form to secure this.

<p>Better explanation and integration of the different lectures. Clearer instructions for the course project & better support in getting started early.</p>
<p>After the evaluation, changes to the course may be made by agreement and discussion at an Institute meeting. Minor changes - updating of literature, clarification of course topics, changes in teaching methods - may be made without approval after receipt of the evaluation. More substantial Course changes are discussed at the Methods Committee meetings and changes are made in consultation with the Programme Director. Increase focus on time</p>
<p>Include in study course more practical examples explaining theoretical topics.</p>
<p>Few modifications but no major changes.</p>
<p>Changes were made to the structure of the examinations, renewed content, number of examinations, no. of credits to each examination.</p>
<p>The flow between different parts and assignments of the course will be adjusted to make the learning experience more even. Lectures may be broken up to create more opportunities for students to participate in learning engagements supporting the assignments of the course, such as workshops.</p>
<p>The examination structure of the course has been changed. The distribution of credits between different course modules has been changed. New literature has been added.</p>
<p>The timeframes for assessment tasks will be reviewed as in some cases those were somewhat rushed. The content of the module will be updated to become more interactive.</p>
<p>I plan to include sequential response exercises in part of the lecture because students want to solve problems during the lecture, which is otherwise passive. This helps deepen understanding and skills, as each step builds on the previous one and encourages active participation.</p>

5. Conclusions and discussions

The analysis of quality assurance system across each HEI shows that we deploy similar methods to evaluate courses. The methods are web based and invites students to evaluate the course using predetermined criteria. Since evaluation criteria are generic, as course leaders can create course evaluation criteria specified to innovation and entrepreneurship education. The analysis also shows that we share similar challenges with these type of methods with these type of evaluations with lack of respondents, or respondents only responding when they have negative feedback. This gives opportunity for improvement but does not indicate which parts of the course they are appreciating. Moreover the results of the course evaluation is reviewed by program council and is made available on request by students and staff at the HEI. These measures make the evaluation methods a good practice that informs continuous improvement both in generic terms, but also innovation and entrepreneurship. For future development we see a need to investigate how quality of I&E education is assessed in relation to program development and based on discussion with external advisory board.

Appendix 1: Overview of courses that include I&E curricula

Course code/ Name	Nr of students	Period Q1-4 plus year	University (HEI)
FÖ0477	23	Q3-2023	SLU
FÖ0444	8	Q2-2023	SLU
FÖ0043	9	Q2-2023	SLU
VadZ4078 Innovation in Business	6	Q1-2022	LLU/LBTU
Ekon3096 Sustainable Development	1	Q1-2022	LLU/LBTU
Ekon2100 Bioeconomics	20	Q1-2022	LLU/LBTU
VadZ5079 Knowledge Management and Innovations	17	Q1-2022	LLU/LBTU
Citi1018 Introduction in Studies- design	22	Q1-2022	LLU/LBTU
Citi2035 Basics of Crafts	7	Q1-2022	LLU/LBTU
LauZ5110 Engineering Research	7	Q1-2022	LLU/LBTU
Ekon6001 Food and Entrepreneurship	5	Q2-2023	LLU/LBTU
VadZ3029 Analysis of Economic Activities	31	Q2-2023	LLU/LBTU
VadZ3057 Entrepreneurship in the Food Manufacturing	12	Q2-2023	LLU/LBTU

Ekon5139 Economic Resources	17	Q3-2023	LLU/LBTU
Ekon5139 Economic Resources	10	Q3-2023	LLU/LBTU
MVI385	32	Q3-2023	NMBU
BIO235	30	Q3-2023	NMBU
1IK051 Creative problems solving	19	Q2-2023	LNU
1IK052 Reflection on Entrepreneurial identity	21	Q2-2023	LNU
4ILO67 Business model canvas	27	Q3-2023	LNU
4FE450 Internationalizing the entrepreneurial firm	13	Q3-2023	LNU
DK.0021 Management and Entrepreneurship	11	Q2- 2023	EMU
MS.0804 Rural Entrepreneurship I	17	Q2- 2023	EMU
MS.0837 Rural Entrepreneurship II	17	Q2- 2023	EMU
MS.1930 Basics of Bioeconomy	34	Q3- 2023	EMU

Appendix 2: Quality ensurance in teaching

Quality ensurance in teaching

Dear teacher!

You have been in charge of a course which has been a part of the NOBALIS course package. Please contribute to the further developemnt of new courses by filling in this short questionnaire

This questionneire is a part of the evaluation of the whole KIC-HEI program. Hope you will share your opinions with us!

Before giving the course were you aware of the quality policy of your institution?

Yes

No

Does your institution have processes for the design and approval of courses?

Yes

No

Was the course delivered in a way that encourages students to take an active role in creating the learning process, and that the assessment of students reflects this approach?

Yes

No

Were the information about the course clear, accurate, objective, up-to date and readily accessible?

Yes

No

Was the course a part of a program, where the course was a part of the progression in the program?

Yes

No

How many evaluations was conducted on the course?

How did you evaluate the course?

On paper

Web based

Smartphone

None

Gave the evaluations reason for changing the course for next time?

Yes

No

Will those changes be published for the next time students?

Yes

No

Given the evaluations, how will you change the course next time it is given?

