



Living Knowledge
The International Science Shop Network



Embedding Responsible Research and Innovation in Higher Education Curricula: Practical approaches

Over the last 2.5 years, the Enhancing Responsible Research and Innovation through Curricula in Higher Education (EnRRICH) project has offered students and staff in HEIs across Europe a chance to pilot Responsible Research and Innovation in higher education curricula by participating in engaged research with Civil Society Organisation partners.

Bringing Responsible Research and Innovation (RRI) into academic curricula offers positive impacts to all three missions of the modern Higher Education Institution (HEI), integrating them in one activity. It puts the research needs of Civil Society Organisations (CSOs) on the agenda in HEIs, influencing their research mission. It offers students an insight into the issues affecting communities today and gives them an experience of

The aim of Responsible Research and Innovation (RRI) is 'to create a society in which research and innovation practices work towards sustainable, ethically acceptable and socially desirable outcomes'

RRI Tools Project Briefing Sheet

engaged research and an opportunity to bring their knowledge and skills to bear on societal challenges and sustainable development goals. It also gives HEIs an opportunity to impact local communities in a positive way by supporting students to carry out innovative research projects which directly address their needs. It has a positive effect on society, producing students who better understand citizenship and who have the potential to continue the transformation of the research and innovation system which RRI seeks to address.

This is the second of three EnRRICH project briefs. It highlights resources developed to support academic staff in higher education institutions (HEIs) to incorporate Responsible Research and Innovation (RRI) in their teaching. It also offers some initial conclusions and recommendations on how to embed RRI approaches in HEI teaching and learning, based on experiences in the EnRRICH project.

EnRRICH Resources

The EnRRICH project has produced a series of resources to help stimulate dialogue about embedding RRI in curricula in higher education institutions. These include resources to aid policy discussions, the EnRRICH tool which provides a framework for embedding RRI in higher education curricula, and a series of promising practices and pilot case studies across a range of disciplines and levels. See the EnRRICH website for further detail on the tools and case studies outlined below: www.enrrich.eu/enrrich-resources/

Tools for Stimulating Policy Dialogue and Discussion

One of the key aims of EnRRICH has been to stimulate discussion about RRI in higher education curricula at policy levels, globally, within Europe, nationally and at the level of the HEI itself. EnRRICH Deliverable 5.1 offers suggestions on how to encourage people working on higher education policy to implement RRI in their curricula. Deliverable 5.2 examines how RRI links with policy for higher education teaching and learning at a European level. These resources can be used to help anticipate the issues policymakers might raise when asked to consider developing policy to support the embedding of RRI in academic curricula.

Tool for embedding RRI in higher education curricula

The EnRRICH tool has been developed to help educators embed RRI in their own curricula. It offers concrete steps for setting learning outcomes which reflect RRI and for choosing assessment, teaching and learning methods. The tool is outlined in Deliverable 2.3 and its use is evaluated in EnRRICH Deliverable 6.2

EnRRICH Pilots

The EnRRICH project has piloted embedding RRI in higher education curricula across 11 partner organisations in 10 European countries. A few examples are briefly summarised below. Further details on the case studies can be found at www.enrich.eu/enrich-resources/

CASE STUDY 1:

University of Vechta - Über den Tellerrand: Partizipative Forschung mit Menschen aus der Region / Outside the Box: Participatory Research with People from the Region

Academic discipline: Open for all study programmes-General Studies Module/Key Competence Module, Bachelor and Master Programme (6 ECTS credit points)



Course description: The course engages students with essential approaches and concepts of transdisciplinarity, RRI, participatory research and related action fields (science shops, community-based research etc.). Topics such as participation and citizen science are worked into practical relevance. The practical application of the acquired theoretical knowledge in terms of research processes facilitating sustainable development takes place in research projects of interdisciplinary student groups in cooperation with regional partners (e.g. CSOs, social businesses).

CASE STUDY 2:

Wageningen University - Stewardship for Responsible Innovation course (S4RI).

Academic Discipline: Cross/Interdisciplinary Masters Module (1.5 ECTS credit points).

Course Description: The course engages students in the design and implementation of a real-life responsible innovation project that solves a self-chosen challenge in a team of 2 to 3 students. These self-chosen projects are limited in scope (one-day implementation), but the students are encouraged to come up with a challenge that they care about and that is contributing (even in a small way) to sustainable development. In the context of their self-chosen project students reflect on the relevance and on the applicability of the four RRI dimensions (anticipation, reflection, inclusiveness and responsiveness). One example project is promoting the consumption of forgotten fish species by running an event within Wageningen University.



CASE STUDY 3:

Vilnius College of Technologies and Design - Social Project Course

Academic Discipline: Interdisciplinary (3 ECTS credit points)

Course Description: This is an optional course, which gives first and second year students a chance to participate in a small scale RRI intervention. This course links knowledge, enquiry, and action to help students become an active society member and solve practical problems for their communities. Through their work with social actors (CSO, society group, public schools, etc.) students provide responses to local community issues in areas such as the environment, health, arts, and education. It is also possible to build RRI into smaller parts of academic courses via single lectures or workshops. Whilst these are usually not credit bearing they build an understanding of RRI and can provide a basis for deeper study.



CASE STUDY 4:

University College Cork: RRI and your discipline

This workshop was given to three different groups of Business Information Systems students, including Masters and Bachelors student groups all of whom were working on a research project. It was delivered by an EnRRICH staff member but



the course lecturer was present for each workshop. Using a problem-based learning approach, students were introduced to RRI, then provided with worksheets to understand, for example, the key stakeholders affected by/interested in their research topic. This prompted students to understand how to meaningfully involve and work with diverse stakeholders throughout the research cycle. Through engaging with community partners on real-world research issues, students are made aware of the role of research beyond the university and gain an increased sense of civic responsibility. For the community partner, dedicated time with student researchers provides a supportive environment to explore key topics, helping to build capacity and to exchange expertise across individuals.

CASE STUDY 5:

Università degli Studi di Sassari: PhD Workshop - Engaging with and for society. Responsible Research and Innovation (RRI) and Sustainable Development Goals.

Responsible Research and Innovation approaches were outlined to cross-faculty PhD students. More than 50 PhD Students from different disciplines participated in a half day seminar and were offered an opportunity to reflect on and discuss their own research in light of RRI approaches. Students expressed interest in actively participating and through evaluation questionnaires. They mostly appreciated the possibility to work on societal issues through interdisciplinary work. Practical examples of research experiences applied to real world cases were also particularly appreciated.



CASE STUDY 6:

Living Lab for Health at IrsiCaixa – Training on RRI for different stakeholders



The Living Lab for Health offers training courses on RRI that are implemented in different universities and research performing organisations to make R&I processes more open and inclusive and more in line with RRI. These courses vary in length depending on the needs of each institution. Some of these courses are offered in parallel with the creation of *networks or ecosystems* for collective reflection, learning and co-creation around R&I in health where different stakeholders participate. These networks co-develop *Participatory R&I Agendas* and also open R&I projects with different methodologies such as *Community Based Participatory Research* where projects are carried out with and for communities. To attain such a transformative change of the way projects are implemented within these networks, the Lab facilitates training courses and workshops.

Conclusions and Recommendations

This paper has offered some examples of how RRI has been embedded in academic curricula. Many more examples are available on the EnRRICH website. Based on the experiences of EnRRICH partners, we draw some general conclusions and make the following recommendations for those who want to embed RRI in curricula.

Conclusions:

- It is important to follow RRI principles in embedding RRI in HEIs, engaging with all stakeholders from the outset including social partners, policy-makers, academics and students.
- Policymakers are interested in RRI in higher education curricula. They value better understanding the connections between RRI and their own priorities. Examples and case studies are important in stimulating their interest.

"RRI can be embedded in different ways and at different levels according to the goals of the HEI and their capacity to act."

- There is an appetite amongst students and academic staff for RRI in higher education curricula
- RRI in higher education curricula involves a change in role for academic staff, from expert to facilitator. This change in role is resource intensive and the impact of this on academics should not be underestimated.
- Students need support both in carrying out RRI projects and in understanding what they have learned from such projects. Often, particularly with longer term and credit bearing activity, they experience doubts whilst it is underway and see benefits after the experience is over.
- CSOs value participation in RRI through curricula, both to support their own work and to enhance understanding of their values and objectives. Roles and responsibilities should be carefully scoped out and regularly reviewed to ensure continued mutual benefit.
- Science Shops (see www.livingknowledge.org) and similar brokerage organisations can be very valuable in embedding RRI in higher education curricula, acting as a centre of excellence in engagement through teaching and learning; offering support to academic staff and students; and building sustained and ongoing relationships with CSO partners.
- RRI can be embedded in different ways and at different levels according to the goals of the HEI and their capacity to act.
- Evaluation is critical to the sustainability of embedding RRI in higher education curricula.

Recommendations

To embed RRI at HEI level

- Have wide and broad conversations about RRI across the HEI and wider stakeholder groups
- Stimulate an appetite for RRI amongst all stakeholders by linking it to their own existing policy priorities
- Write RRI (or related concepts) into the mission statement and key strategies of the HEI
- Build RRI in across teaching at departmental, programme and module levels
- Support academic staff who are facilitating RRI in their teaching and learning, through training and communities of practice
- Build an evidence base through ongoing evaluation and feedback at all levels and from all stakeholders

"Support academic staff who are facilitating RRI in their teaching and learning, through training and communities of practice."

To embed RRI at programme level

- Have wide and broad conversations about RRI and related concepts with all key staff who teach on the programme and potential stakeholders from wider society
- Build RRI in across all years of the degree programme, beginning with small scale interventions and scaling up to bigger scale interventions

To embed RRI at module level

- Review and where necessary redevelop course descriptors
- Review and where necessary redevelop learning outcomes and course assessment methods

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