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RESPONSIBLE RESEARCH AND INNOVATION (RRI) IN HIGHER EDUCATION (HE) PRACTICE:

RRI AS A TOOL FOR RESEARCH, REFLECTION, AND CURRICULA INNOVATION

Our special issue provides insights into how the principles of Responsible Research and Innovation (RRI) can fertilise our educational practices in business and management higher education. The articles in the issue analyse teaching practices from various fields of business and management through the lenses of RRI and take us to Bachelor's, Master's and MBA levels of HE. As an introduction to this set of conceptual and research articles, we are providing a brief overview of RRI and a conceptual framework of pedagogical approaches as well as a comparative outline of the articles.

RRI principles

RRI receives significant attention in the fields of science policy and academia – research and education – alike. Its elements are rich and have a long history, though its framework is still relatively new and changing. With regard to its diverse definitions, two sources are most often cited. Von Schomberg (2013) proposed RRI as 'a transparent, interactive process by which societal actors and innovators become mutually responsive to each other with a view to the (ethical) acceptability, sustainability and societal desirability of the innovation process and its marketable products (in order to allow a proper embedding of scientific and technological advances in our society)' (p. 63). Stilgoe et al. (2013) suggested a broader approach to RRI by introducing it as 'taking care of the future through collective stewardship of science and innovation in the present' (p. 1570). The current EU approach highlights that RRI 'is an approach that anticipates and assesses potential implications and societal expectations with regard to research and innovation, with the aim to foster the design of inclusive and sustainable research and innovation' (EU Horizon 2020 Portal, n.d.).

From our special issue point of view, for the interpretation of RRI, the requirements and principles with regard to the research and innovation process and output are more essential than the overall definitions. There are two sets of principles that have been introduced to capture the responsible nature of research, development and innovation (R + D + I). The first set applies to the research process and was entitled competencies by one of the first H2020 RRI projects (RRI Tools, 2016), although the elements were introduced earlier. Participants in the R + D + I processes as well as the R + D + I process itself shall be characterised by anticipation, reflexivity, inclusion and responsiveness, 'a framework for raising, discussing and responding' to questions 'the public typically asks scientist' out of societal concern (Stilgoe et al., 2013, p. 1570). These dimensions were later extended to include diverse and inclusive, open and transparent, anticipative and reflective, and responsive and adaptive to change.

To achieve the beneficial – sustainable, ecologically and socially desirable – outcomes of research and science, considerations have been primarily suggested to policymakers. Over time, the number of these key considerations reached eight: inclusion, gender equality, science education, ethical considerations, open access, governance, sustainability and social justice. They have now been reduced to the first five on this list (EU H2020 Portal, n.d.).

These two sets of principles formed the basis of the process we carried out at Corvinus University of Budapest in the framework of the EnRRICH project. 'Enhancing Responsible Research and Innovation in Curricula of Higher Education' (EnRRICH) was a European Commission (EC)-funded project that 'approaches the task of enhancing RRI through HE, at both Bachelor and Master levels within a European context, not solely as a scientific and technical endeavour. Rather, it recognises that this is a complex task that can be related to diverse educational, political, and practical contexts that requires ethical considerations and that can challenge routines in Higher Education practices' (Tassone et al., 2017, p. 286). Therefore, we did not look at the teaching of responsibility to researchers but at how the principles of responsibility are present in our various teaching practices. Our experience suggests that the application of RRI principles in curriculum development sheds light on new, hidden or implicit contents of our courses and directs our attention to the assumptions underlying the role of educators and the practice of education. Consequently, we are providing a brief introduction to various pedagogical approaches in relation to the roles of key stakeholders – students and educators – of HE. These pedagogical stances can later be detected in the articles in the issue as well as in the process and output RRI principles and the ways in which the authors introduced them to curriculum development and their teaching practices.

Pedagogical approaches

The assumptions underlying the practice of education may be uncovered by looking into the various pedagogical approaches (Tassone & Eppink, 2016). The educator might be aware of the practiced approach and take conscious and consequent decisions along the learning process, or s/he might be only partially aware of how the practice fits the desired educational approach. Tassone & Eppink (2016) organised the approaches along an axis defined by the role of the educator and the student in the learning process.
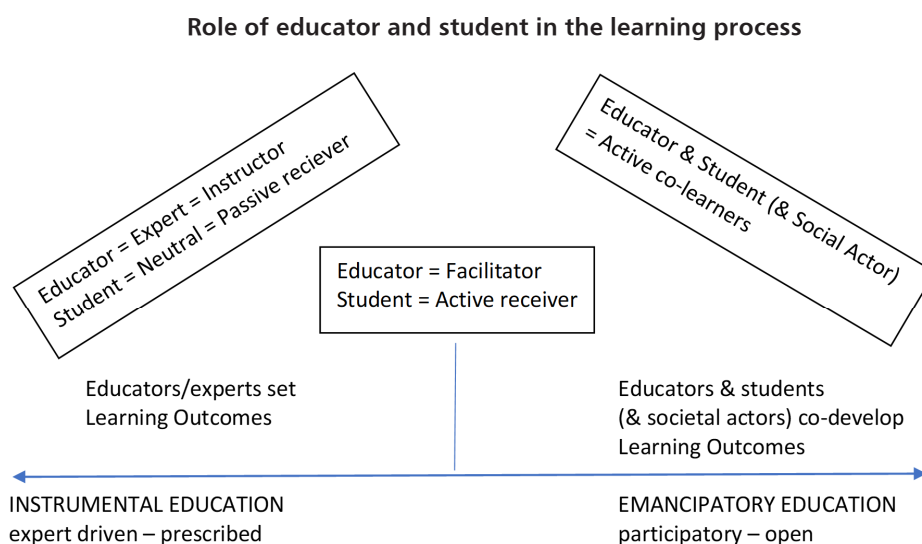
Our aim of uncovering the assumptions underlying the different pedagogical approaches complements their discussion; they focused on fitting methodologies and outcomes: on what is done during the learning process rather than on why it is done. We agree with Newton (2003, p. 330) who stated that "behind the differing applications and methods is a deeper debate; the …. (styles) reflect different beliefs about people, society, relationships, communication, and the purpose of education'. These can be translated into the dilemma of whether it is what the educator does or how s/he does it that teaches the student. We argue that these two cannot be separated; thus, in addition to the focus on 'what', the 'how' should be brought into awareness.

The starting point for this is the axis (Figure 1) offered by Tassone & Eppink (2016). The authors describe the two endpoints as instrumental and emancipatory education. Instrumental education defines educators as experts, the learning process is driven by the experts, the outcomes are prescribed and the students are neutral or even passive receivers of information (Tassone & Eppink, 2016). This description suggests a rather transmissive and pre-determined educational process in which the educators are taking an authority position (Jickling & Wals, 2008). According to the emancipatory approach, the educator and student are equal partners in a co-learning situation. They assume mutual participation and continuous change from all parties involved (Tassone & Eppink, 2016). At the middle of the axis, the educator is described as a facilitator of the learning process and the student as an active recipient.

Tassone and Eppink (2016) depicted these three approaches as defining points on the educational axis and suggested that further approaches possibly exist along the axis. The writings of Newton (2003, 2014) and Barrow (2009) may further our understanding of the educational axis. They agree with the idea that the different pedagogical approaches can be organised as a continuum, and they fill the axis with further educational approaches which provide a more detailed understanding of the continuum; they also suggest the possibility of combining the pedagogical approaches in practice. Newton (2014) described six different pedagogical approaches – dogmatic, liberal, technological, progressive, humanistic and radical – highlighting that the difference lying at the core is related to the purpose of education. The first three approaches focus on the outcome of the educational process; however, the learning process is different in its nature. Liberal education emphasises thought and reason and educates the intellect, aiming for a critical thinker, while technological education is organised around standards and defines competences to be reached. The progressive and humanistic focus is on the educated as a whole person, and his/her development towards their own best 'wholeness' is the aim. Progressive education does this through problem solving and skill development, but its aim is to facilitate individuals to take personal responsibility for their decisions and actions. Humanistic education does this through personal development and aims at personal growth and wholeness. In both cases, the educator is facilitating and mentoring the process rather than controlling it, and he/she is an equal partner with the educated person. The radical school has at its heart the change itself wherein the educator and educated can act and change by reflecting on their own experience. All participants are equal partners, and their change is embedded in their relationship. The

Figure 1.

Role of educator and student in the learning process

Educator = Expert = Instructor
Student = Neutral = Passive reciever

Educator & Student (& Social Actor) = Active co-learners

Educator = Facilitator
Student = Active receiver

Educators/experts set
Learning Outcomes

Educators & students
(& societal actors) co-develop
Learning Outcomes

INSTRUMENTAL EDUCATION
expert driven – prescribed

EMANCIPATORY EDUCATION
participatory – open

Source: Tassone & Eppink (2016, p. 20)

instrumental approach may be linked with the first three approaches as long as the emancipatory resembles the radical approach, thus the six schools can offer us a deeper and continuous understanding of the educational axis.

Introduction to the articles

All authors of the special issue are in a double role: they are educators as well as researchers reflecting on their educational practice. In most articles, RRI principles also serve a double purpose. A selected set of RRI process and output principles is not only employed in the teaching and/or the development of the course and analysed here but also applied in the research designs. The educators' reflections through the lenses of RRI are a conscious step towards a deeper understanding of the potential impacts of RRI on the life of students and local communities or even on the wider environment, that is, society as a whole. The reflections also allow for an understanding of their roles and the – often mixed – pedagogical approaches they follow.

Educational practices at Corvinus University of Budapest, University of Szeged and – via an elective block-seminar – University of Passau are covered here. In the course of editing the special issue, authors participated in workshops to reinforce shared knowledge of their individual initiatives. Thus, not only individual summaries of articles are presented here, but also a comparative table of aims, methodologies and outcomes. (Table 1.)

Judit Juhász, György Málovics and Zoltán Bajmócy introduce their service learning course and give evidence of how a single university project can bring long-lasting changes in the life of local communities. By creating spaces for interventions of co-creation, transformation and reflection, student awareness of societal issues is raised and student actions are achieved. The case study reveals the high and caring level of involvement of educators both on the professional and personal sides.

Gabriella Kiss, Tamás Veress and Alexandra Köves emphasise the importance of experiential and transformative learning in the HE context and the need for collaborative work, dialogue and discussions in a reflection process. The

Table 1.

Comparative introduction to the articles of this issue

	Juhász, Málovics & Bajmócy	Kiss, Veress & Köves	Neulinger	Zsóka & Ásványi	Fazekas & Beck-Bíró	Kozma
Courses	Local environmental and social problems, civic solutions	Decision techniques (BA), Degrowth (MA)	Theory of Consumption and Consumer Behaviour (MA)	Corporate sustainability and CSR (block seminar)	Organisational Development (MA)	Business Economics (BA, MBA)
Research focus	to explore social impacts of service learning	to teach sustainability in business school	to develop curriculum and reflection through RRI	to measure effectiveness of course on responsibility	to make course and practices as educators and researchers more responsible	to make students understand the role they can play in addressing major societal challenges
Research methodology	case study	conceptual paper with illustrative cases	survey	mixed methods research	case study	action research
RRI focus	co-creation, reflexivity, transformation	sustainability, reflexivity	reflexivity, inclusiveness	sustainability, reflexivity	inclusivity, reflexivity, responsible, responsive, transparent	RRI principles
Pedagogical foundations	civic responsibility of students, active citizenship	transformative education	inclusive education	education for society, educating whole person	humanistic psychology and pedagogy	critical pedagogy
Learning concept in focus	service learning, community engagement	experiential learning	critical discourses for reflexivity, autonomy	reflective learning	student-centred learning	in-class discussions of RRI principles
Key messages	professional, moral development, institutional change, community building	critical approach to business school's mainstream educational practices	by putting inclusiveness as focus, improvement in students' reflexive thinking can be achieved	personal commitment and credibility of the teaching faculty is crucial	a critical mirror for all actors to make higher education collaborative	improvements in student engagement, creativity, critical thinking, and conscious self-awareness provide the foundation for HE of lasting value

Source: own compilation

authors use a critical voice to describe the difficulties of implementing the teaching of sustainability in a business school and conclude with a strong dedication to teaching sustainability despite the less supportive environment.

Ágnes Neulinger employs two RRI process principles – reflexivity and inclusion – to assess the educational process of a marketing course. She presents quantitative research in which students evaluate their own competency development through an online survey. Her RRI-driven research suggests that inclusive methodologies reinforce reflective thinking even in a classroom setting.

Ágnes Zsóka and Katalin Ásványi discuss the effectiveness and impacts of utilising RRI tools as teaching methods in a one-week long, elective block-seminar on corporate responsibility. Their mixed method research includes Q-method to assess changes in responsibility-related preferences of students and semi-structured interviews to explore the perceived impacts of the course on student skills and competencies.

Nóra Fazekas and Kata Beck-Bíró focus on the student-educator relationship in their self-reflective research and share their understanding of how lecturers lose touch with students and become less responsive, despite innovative, benevolent, student-centred and value-driven educational and pedagogical principles. The authors discuss how RRI principles can contribute to meaningful course improvement at both curricular and social levels by fostering dialogue, genuine cooperation and shared responsibility.

Miklós Kozma, in his loosely structured action research, offers a learning space for students as a series of discussions to find their role in addressing major societal challenges as future business leaders. In these RRI principles-driven discussions, he highlights the relevant and inspirational moves to boost critical thinking and self-reflection which may lead to more inclusive and responsive practices. He concludes his paper with a few recommendations and implications for university management to foster the responsive co-creation of knowledge.

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