Responsible learning organizations
a framework to embed responsible innovation within organizations

Wesselink, Renate; Popa, Eugen

DOI
10.1108/TLO-11-2021-0136

Publication date
2024

Document Version
Final published version

Published in
Learning Organization

Citation (APA)
Wesselink, R., & Popa, E. (2024). Responsible learning organizations: a framework to embed responsible innovation within organizations. *Learning Organization*, *32*(7), 1-17. https://doi.org/10.1108/TLO-11-2021-0136

Responsible learning organizations: a framework to embed responsible innovation within organizations

Renate Wesselink
Department of Education and Learning Sciences, Wageningen Universiteit en Research, Wageningen, The Netherlands, and

Eugen Popa
Faculty of Technology, Policy and Management, Dept. of Ethics and Philosophy of Technology, Delft University of Technology, Delft, The Netherlands

Received 30 November 2021
Revised 9 September 2022
14 April 2023
26 September 2023
12 January 2024
Accepted 18 January 2024

Abstract

Purpose – The purpose of this paper is to explore the extent to which the concept of learning organization can support the embedding of responsible innovation (RI) in organizations.

Design/methodology/approach – Based on literature in the fields of corporate social responsibility, learning organizations and quadruple helix collaborations, the authors constructed the responsible learning organization (RLO) framework for RI. With the framework, the authors want to show that the RLO can enable RI within organizations.

Findings – Based on this framework, the distinction is made between, on the one hand, the learning processes inside the organization, which resemble reflexivity, and, on the other hand, the learning processes that take place with stakeholders outside the organization, which resemble the other three core processes of RI: anticipation, inclusion and responsiveness. Based on these insights, the authors argue that if an organization wants to do good on innovation, which is seen as the core of RI, organization's core values should guide that.

Practical implications – Organizational core values should be developed by means of learning inside the organization. Therefore, the process of reflexivity should be stressed more, and employees should be empowered to take part in developing these values, which in return can guide the organization as a compass through all the uncertainty it will encounter during the learning outside the organization when interacting with stakeholders.

Originality/value – The RLO framework for RI shows what learning processes organizations should facilitate first and what content should be at stake during these learning processes to embed RI. Furthermore, the framework puts emphasis on reflexivity as a condition for responsiveness, inclusion and anticipation.

Keywords Responsible learning organization, Learning organization, Responsible innovation, Sustainability, Corporate social responsibility, Quadruple helix collaboration

Paper type Conceptual paper

Funding: This empirical data of this article is based on research funded by the European Union's Horizon 2020 programme for research and innovation under grant agreement no. 788047.

Introduction

The world is changing quickly and so are the grand challenges that organizations face. Growth is no longer seen in terms of maximizing economic profits alone; organizations should work on their responsibility for sustainable development. Sustainable development is defined as improving quality of life without compromising for our future generations [World Business Council for Sustainable Development (WBCSD), 2002], encompasses both corporate social responsibility (CSR) and responsible innovation (RI). CSR is a business approach to sustainable development wherein companies voluntarily integrate environmental, social and economic concerns with their business strategies and into their interactions with stakeholders in a quest to contribute to society in a more sustainable way (Dahlsrud, 2008). Whereas CSR is mainly seen as the approach to make the existing organizational practices more sustainable (less greenhouse gas emissions, no child labor, less waste, etc.), RI is targeting transformations (organizational and system transformations) with the development of new products and processes (e.g. Stilgoe, Owen, & Macnagthen, 2013). Van de Poel et al. (2017) put RI under the umbrella of CSR and consider RI as more proactive; RI goes beyond reactive and predominantly defensive accommodative policies to deal with social, environmental and ethical issues. Voegtlin and Scherer (2017) make the following distinction: whereas CSR focusses on not doing any harm, RI focusses on doing good. Blok (2018) sees CSR as part of the governance processes or supporting processes of an organization, comparable with communication or human resource management (HRM) and innovation is part of the primary process of R&D-based companies. Although scholars differ in the way they connect CSR and RI, both concepts share the normative aspect for "doing good," and this allows us to tap into the domain of CSR and learn for the domain of RI.

For many organizations, it holds that they take up their responsibility in the framework of CSR (e.g. Aguinis & Glavas, 2012). Furthermore, organizations are motivated from different sides to take up their role in RI; (European) institutions and actors are called upon to navigate toward new forms of collective responsibility for addressing societal grand challenges (Owen, von Schomberg, & Macnaghten, 2021). Additionally, RI is increasingly studied within (profit) organizations (Scholten and Blok, 2015; Martinuzzi, Blok, Brem, Stahl, & Schönherr, 2018). However, within these profit organizations, RI is still revolving around the conflicting objectives of economic growth, competitive advantage and societal well-being (Auer & Jarmai, 2018). One cannot compel organizations to cooperate with society and other stakeholders, because that might influence the way the open and liberal competitive market works (Brand & Blok, 2019). RI boils down to organizations' goodwill. This intrinsic motivation to do good (Voegtlin & Scherer, 2017) has to find ground in organizations, and a strong starting point that would work for organizations are their *baseline values* (Van de Poel et al., 2017). To obtain a better understanding of these baseline values, Owen et al. (2021) assume that if organizations, especially after the Covid-19 pandemic, think of responsibility as care, humility and empathy, they probably will focus less on competition, carelessness and individualism. In any case, these values are normative, and for example, based on the sustainable development goals, which means that they define what is right or wrong concerning sustainable development and enable professionals to take the right decisions and show the right behavior (Blok, Gremmen, & Wesselink, 2016). Those baseline values are important drivers for both individuals as organizations but are also under constant scrutiny as sustainable and responsible developments are constantly changing, and norms and values should change accordingly (Blok et al., 2016). Based on the virtue ethics approach as identified by MacIntyre (1985) and presented by Blok et al. (2016), we assume that these baseline values are directed toward doing the right thing; each and every

individual has deep down inside a "good character," and based on this, he/she strives for a state of being-well and doing-well.

According to Hansen, Jensen & Nguyen (2020), the concept of learning organization (LO) could provide building blocks that can facilitate ethical processes to develop these organizational baseline values from which RI can emerge. They did a first attempt in bringing the concepts LO and RI together. In their exploration, they took the five disciplines of Senge (to learn more about these disciplines see the section on the LO) as a starting point, and in their conclusions, they contend that there are fruitful linkages between LO and RI; they find it credible that striving to become an LO will also make it easier to cultivate RI.

The outcomes of Hansen et al. (2020) are a good starting point to explore the relation between LO and RI; however, one should not forget that the concept of LO is also applied in contexts and companies with the aim to maximize profit, to gain more market share, or in other words, not solely for responsible outcomes. It is this responsibility or moral aspect that distinguishes RI from dynamic capabilities (Van de Poel et al., 2017) or absorptive capacity (Garst, Blok, Jansen, & Omta, 2017), and therefore, it should be emphasized more to really make a difference with regular LO theories, and therefore, the concept of responsible learning organization (RLO) for RI is created. The central question in this paper reads as follows: how does a framework for RLO look like in organizations that strive for RI, knowing that these organizations cannot be compelled toward responsibility. This is a conceptual paper, and we will address this question and build a conceptual framework for RLO for RI. As suggested by Jaakkola (2020), one can built a framework or model based on theory if new connections between constructs are explored. Based on the latest insights and theories in fields of LO and RI and accompanying fields of CSR and quadruple helix collaborations (QHCs), we see this as a promising road to build the RLO framework. Therefore, after we have analyzed the connection between RI and CSR (because we built on empirical CSR studies to learn from for RI), we dive deeper into RI and lessons learned from first empirical studies on how to design QHCs. Next, we explore the status of affairs of LO, followed by research in which CSR and LO are integrated. Based on these empirical outcomes, which meant a slight adjustment to the original LO model as provided by Marsick & Watkins (2003), we integrate RI research outcomes in the new LO model, to eventually end up with the RLO framework.

The paper builds on existing combinations of theories of LO and CSR complemented with recent insights in RI research. The scientific contribution is that we use these points of departure to construct a framework that can be used for empirical studies of organizational integration and continuous development for RI, referred to as RLOs. According to Justice & Yorks (2018), there is a need to get insights into how individuals interact with larger systems, such as their organization in which they continuously have to realign their affective and cognitive expertise within the context of that interaction. In addition, Nicolaides & Poell (2020) argue that there is a need to create so-called "safe to fail" environments in which employees can challenge taken-for-granted assumptions and engage in critical reflections to rethink standard approaches. They state that for complex adaptive changes, a change in performance is not enough; a deeper change should take place. We expect that the RLO framework might support this deeper learning or change. With the RLO framework and reflection on this framework, we contend that reflexivity in the operational side of the LO is regarded as superior to inclusion, anticipation and responsiveness as these are merely related to stakeholders outside the organization. This is a first hint in how these "safe to fail" spaces should be designed in organizations which work in RI.

This paper proceeds as follows. In the next section, insights about RI in (profit) organizations will be shared with a focus on why and how these organizations implement

RI. In addition to more generic theories about RI, QHCs will be introduced as QHCs are seen as a way to implement RI. Insights in that field are informative for the implementation of RI, especially with regard to challenges. Next, the concept of LO will be explained in more detail, and the latest insights and developments will be shared in the relation between CSR and LO. Finally, all these insights will be put together in the discussion part, and the RLO framework for RI will be discussed.

Responsible innovation in organizations

Over the past decade, RI has received attention in the realm of research and innovation, policy (European Commission, 2017) and academic research (Timmermans & Blok, 2021). In this article, the definition of RI as developed by Von Schomberg is used: RI is 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 to allow a proper embedding of scientific and technological advances in our society" (Von Schomberg, 2013, p. 19). RI is targeting transformations (organizational and even system transformations) with the development of new products and processes (e.g. Stilgoe et al., 2013) or even new organizations or systems.

The main aim of RI is to take into account stakeholders, including end-users and citizens in transparent design processes to ensure that the results of the process (a new product or a new process) are responsive to societal needs, meaning that they are ethically acceptable, societal desirable and sustainable (Von Schomberg, 2013). Despite the attention for and expectations of RI, it predominantly remains a theoretical and policy ideal rather than a mainstream practice. Not surprisingly, because even at the policy level, Novitzky et al. (2020) show that the integration of the (R)RI framework into *H2020* has fallen short in comparison to its ambitions. Nevertheless, some progress has been made with regard to research in the field of RI and profit organizations. Without being complete, we share some insights. The RRING Project (2018) indicated how RI can contribute to the competitive advantage of organizations:

- avoiding uncompetitive regulation;
- increasing social acceptance;
- incorporating stakeholder needs and tapping into new markets;
- increasing the efficiency of the innovation process; and
- reputational effects.

Stahl et al. (2017) developed a five-level maturity model for RI within organizations in which they were able to integrate RI processes as defined by Stilgoe et al. (2013) and the RRI keys as put forward by the European Commission (2013) and keep track of their progress. Van de Poel et al. (2017) showed how goals of RI in the context of businesses can be achieved. They developed a conceptual model for RI in industry, based on the dimensions of anticipation, inclusiveness, reflexivity and responsiveness as developed by Stilgoe et al. (2013). This model looks as follows:

- *Anticipation*: the process in which possible ways of using the process or product and possible impacts of these are anticipated by the organization.
- *Inclusiveness*: the process of first engaging in dialogues with relevant stakeholders, and second, integrating these insights from such dialogues into the research and innovation process.

- *Reflexivity*: the process of reflecting on the impacts on society and other stakeholders, in conjunction with the organization's purposes, motivations and values, and integrating these purposes and values into the research and innovation process.
- *Responsiveness*: this process is first about the extent to which the research and innovation process is responsive to the social needs, and second, whether the process is organized in such a way that that it can respond to new insights and developments.

Lubberink, Blok, Ophem, van & Omta (2017) also used these four dimensions to build a conceptual framework for RI in organizations, and based on the literature in the fields of social innovation, for example, they added deliberation and knowledge management as important activities to realize RI. In short, deliberation entails a commonly agreed two-way exchange of views and opinions between stakeholders. Knowledge management means creating or obtaining knowledge to solve knowledge gaps that come with the processes and outcomes of the innovation. In the remainder of this paper, we work with the four main processes of RI, and therefore, they are explained, and when applicable, deliberation or knowledge management will be addressed.

Whereas, anticipation, inclusiveness and responsiveness are mainly processes geared toward an organizational *outside* world (Who/what do we as an organization anticipate to be affected? And consequently, who should we invite as stakeholder? And finally, how to respond to them?). In the case of responsiveness, an organization is going to decide how to respond to inputs from outside and how to install a procedure to continuously take these external inputs into account in an innovation process. The other process, reflexivity, is more geared toward organizational *inside* processes. In the case of reflexivity, organizations critically reflect on their own values and norms and should be prepared to rethink their own blind spots.

RI embeds responsibility at very early stages of innovation by drawing attention to the question of how to do good. Nevertheless, that is of course not the only assignment of companies. Aside from doing good, or as Martinuzzi et al. (2018, p. 1) call it, "maintain the public trust," an organization should remain competitive. It is a balancing act, and as long as there are no legal consequences or governmental incentives, companies might differ in the level they take up their responsibility (Yaghmaei, 2016). The balancing act mainly boils down to either being responsive to society and stakeholders and accept a higher level of uncertainty (which means uncertainty with regard to time and probably increase of the costs) or having more certainty throughout the innovation process, but being less responsive in the end. To work with the divide of responsiveness and uncertainty, the inclusion of moral considerations that reflect people's values and beliefs (Grasso & Tàbara, 2019) is crucial in liberal market-driven contexts.

Quadruple helix collaborations

To implement the process of RI in the context of (profit) organizations, and given the key importance of stakeholder engagement and collaboration in innovation settings (Long, & Blok, 2018), there is a need to study collaboration and the consequences of collaboration. According to Owen et al. (2013), there are currently only few, if any, examples of a systematic and institutionally embedded RI framework in operation. One way to implement RI is by means of quadruple helix collaborations (QHCs), and they have received increased attention in the past decade due to their promising contribution to RI (Carayannis & Campbell, 2009). In QHCs, representatives of industry, government, knowledge institutes

and civil society collaborate toward mutually recognized innovation goals (Carayannis & Campbell, 2009). To see what happens in practice when RI is being implemented, there is a need to move beyond theory and policy when organizations and stakeholders from different sectors collaborate with each other to achieve common objectives. Although the relationship between the ideal of RI and QHCs remains fairly unexamined in research (Carayannis & Campbell, 2014), we decided to use QHCs because it provides a lens to learn more about the implementation of RI for organizations in practice.

Lessons learned from quadruple helix collaborations

Based on the first bits and pieces of literature in the field of QHCs, three observations should be mentioned. The first observation deals with the involvement of society; who are we talking about? How to involve them? And, what is in it for them? The second observation talks about continuous learning from the diversity of values brought at the table, and the third observation is about not incorporation all inputs uncritically. In the following paragraph, these observations will be explained. Next, these observations are analyzed based on the four RI processes in companies as described before: anticipation, inclusion, reflexivity and responsiveness (Lubberink et al., 2017; Van de Poel et al., 2017; Stilgoe et al., 2013).

Societal involvement is a challenge. One premise of RI is that with the involvement of society in the research and innovation process, responsibility is organized (Popa, Blok, & Wesselink, 2020a), and consequently, sustainability would be guaranteed as well (Van de Poel et al., 2017). Societal involvement is also the major difference between to triple helix innovation (government, industry and research) and QHCs (Popa, Blok, & Wesselink, 2020b) and the difference between innovation and RI. However, the society helix is the most difficult to involve (Popa et al., 2020a). The biggest challenge for extensively including actors from civil society is a lack of knowledge on how to best achieve this societal involvement throughout the innovation process. Involving them in the beginning is not the issue; keeping them involved during the whole process is more complex, and organizations are less willing to do that (Blok, Hoffmans, & Wubben, 2015).

This observation mainly connects with the RI process of *inclusion*. Who to involve and how to get them involved, but also reflecting over and over again if still the right stakeholders are involved. Furthermore, an organization cannot expect that all stakeholders have the same level of knowledge (i.e. knowledge management), also due to the fact that they are oftentimes involved in a later stage. So, it will take time for them to catch up, and that means organizations should provide opportunities to make that happen. And, organizations have to realize that stakeholders change over time, and that parts of the process have to be explained again and again. To prevent that stakeholders in general and society in particular really do have influence and organizations do not solely act to tick the box of responsibility, society's involvement has to be taken seriously. Inclusion does not solely mean getting the right stakeholders at the research and innovation table, which is already a challenge with regard to societal involvement, but also granting stakeholders time to catch up and always reflecting whether the right stakeholders are at the table (Popa et al., 2020a). Taking this serious as an organization might involve many changes and uncertainty, which is considered undesirable within companies.

Appreciate the agonism. Inviting a diversity of stakeholders into an innovation process, means inviting a diversity of opinions, values and stakes into the process. In most of the literature on stakeholder engagement (also in RI practices), the tendency is to strive for harmony, consensus and alignment among stakeholders. However, in some cases, take AI or nuclear energy for example, stakeholders have fundamentally different judgments, value

frames and viewpoints, which do not lead to a typically win–win situation (Blok, 2019). Aside from the expected acceptance and sustainability gains, it makes the process itself more difficult. It is the art to combine different perspectives without losing everybody's identity (Popa et al., 2020b). RI should be a process in which there is constantly input from diverse (and divergent) perspectives to ensure that the innovation process is appropriately accommodating alternatives of the product or process in question. And, this process should not be settled too early or too easily. Popa et al. (2020b) reflect on this process by making use of the concept of "agonism." With agonism, they mean the state of dealing with competing values (which means that the preference of the one comes at the expense of the other) of helixes and stakeholders. The challenge is not to bring together or merge all the different values, interests and stakes, but to embrace the fruitful "clash" of values. This requires that the organization has strong values and is also willing to review their values based on the clashes. Whereas one might have the impression that organizations' values and interest are rather stable, Popa et al. (2020b) indicate that when agonism is embraced, organizations' reflection processes should be ongoing as well. This observation connects predominantly with the process of *reflexivity* in which an ongoing reflection takes place on the organization's values and interests (based on the values of its own employees) in relation to the values and interests of other stakeholders in the framework of a product or process that is under construction.

Remain open but not uncritically. A plurality of stakes and interests, inherent to RI, is much needed and promotes the right settings for new innovations that are socio-ethically accountable and robust. Of course, other stakes and interests will lead to alternative designs or alternative technologies. However, it does not mean that those alternative designs get to be expressed in the end result. And, it also does not mean that all alternative innovation paths are of equal value or – even less so – that every alternative design should be incorporated in the end result (Popa, 2021). RI should not lead to unpractical and ultimately unfeasible compromises. As organizations try to allow various degrees of openness to stakes and interests and judges these with respect and open mindedness, they should not do it uncritically.

This finding has to deal with *responsiveness*. An organization should remain open for the interests and stakes of others; however, it is up to the organization to actually integrate or implement it in the innovation, or in other words, how to respond to it. In all cases, the organization should have transparent responses why (not) or to what extent interests or stakes are incorporated in the innovation; otherwise, an organization will lose the commitment and involvement of its stakeholders. And, the basis for this responsiveness and transparency are the organizations own values.

Learning organization

After having discussed RI and its accompanying concepts, in this paragraph, we will talk about the concept of LO. The concept of LO increased in popularity after Peter Senge published his book entitled "The Fifth Discipline," in which he described LOs as organizations with both adaptive capabilities and the ability to create alternative futures. In his book, Senge (1994) outlines how organizations could become LOs by means of five disciplines:

(1) systems thinking;
(2) personal mastery;
(3) shared vision;
(4) mental models; and
(5) team learning.

Despite its popularity, the concept of LO was initially criticized for failing to provide practitioners with practical knowledge and for a lack of agreement regarding the definition of LO, making it difficult to value the findings of LO research (Carley & Harrald, 1997; Huysman, 2000). Later on, fresh insights delivered a more compelling vision of LO, offering practitioners concrete recommendations and practical tools for assessing organization's learning (e.g. Garvin, Edmonson, & Gino, 2008). The concept of LO became an increasingly important area of empirical research (Örtenblad, 2002) and has been related to several business outcomes, including the organization's dynamic capabilities (Hung, Yang, Lien, McLean, & Kuo, 2010), the organization's financial performance (Ellinger, Ellinger, Yang, & Howton, 2002) and the organizations' sustainable development (Osagie, Wesselink, Blok, & Mulder, 2022).

Örtenblad (2002) positioned different strands of LO research (e.g. workplace learning, learning climate) to realize some conceptual clarity for the concept of LO. Marsick and Watkins (2003) are one of the few researchers who were able to incorporate these different strands into one concept and research tool, and therefore, this framework is chosen to represent LO. The combination of conceptual clarity and having a research tool makes it possible to theorize about possible relationships with other concepts. Marsick and Watkins (2003) developed a framework consisting of two clusters of in total seven dimensions (see Figure 1). The operational cluster includes four dimensions:

(1) continuous learning, referring to the extent to which an organization creates continuous learning opportunities for its employees;

(2) dialogue and inquiry, referring to the extent to which an organization promotes inquiry-based behavior and dialogue among its employees;

(3) group learning, referring to the extent to which an organization encourages collaboration and learning from and with one another; and

(4) empowerment toward a shared vision, referring to the extent to which an organization involves its employees in developing and owning a collective vision.

The organizational cluster contains three dimensions; the first four dimensions are in a list with numbering. The second set of dimensions are integrated in the text. Make that the same? Preferably another list of bullets for embedded information systems, leadership for learning and system connection information systems, referring to the extent to which an organization creates and maintains systems designed to capture and share knowledge; leadership for learning, referring to the extent to which an organization provides leadership to encourage learning and to link these efforts to strategic objectives; and system connection, referring to the extent to which an organization is connected to the communities in which it operates. Figure 1 shows the two clusters and their seven dimensions. This

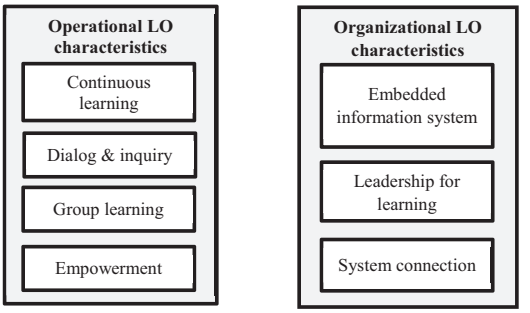

Figure 1.
Clusters and dimensions of an LO (Marsick & Watkins, 2003)

framework is used as the starting point for the development of our RLO framework, because the connection with CSR has been made in the past. The next section will share the results of these studies.

Learning organization and corporate social responsibility

At the start of our paper, the relation between CSR and RI is described. To our knowledge, there is no empirical evidence of the relationship between LO and RI as to yet, and although the concepts of CSR and RI are different, they share the normative and responsible character, and therefore, we refer to research in the field of CSR and LO to build the RLO framework. Again, without the claim of being complete. First of all, we share the results of Osagie et al. (2022) who studied the relationship between LO dimensions and CSR implementation. They discovered that organizational LO dimensions mediate the influence of the operational LO dimensions on CSR implementation. That means that continuous learning, dialogue and inquiry, group learning and empowerment to a shared vision do have an indirect influence on CSR implementation. This influence goes via embedded information system, leadership for learning and system connection. Aside, group learning had a direct effect on CSR implementation (see Figure 2).

Battistella, Cicero & Preghenella (2021) studied, based on three case studies, the connection between LO and CSR by using Marsick & Watkins (2003), as well and they concluded that embedded information systems also contributed to CSR implementation. They emphasized that learning from each other within the organization and learning with stakeholders outside the organization are important ingredients that contribute to CSR implementation. This is also supported by the process of knowledge management, as identified by Lubberink et al. (2017). Whereas Osagie et al. (2022) did not find evidence for the relationship between embedded information systems and CSR implementation, in this article, we choose to keep all LO dimensions and clusters in the model, due to the exploratory state of this field of study. Figure 2 shows the model with all LO dimensions in relation to CSR implementation based on the study of Osagie et al. (2022) and Battistella et al. (2021). The cluster of operational dimensions (e.g. empowerment and dialogue and inquiry) does have an indirect effect. Except for group learning, this operational dimension affects CSR implementation both directly and indirectly, and therefore, Osagie et al. (2022) suggested to put this dimension in the organizational cluster. In Figure 2, the original framework is showed to show all the relevant relationships. In Figure 3, group learning is part of the organizational LO characteristics.

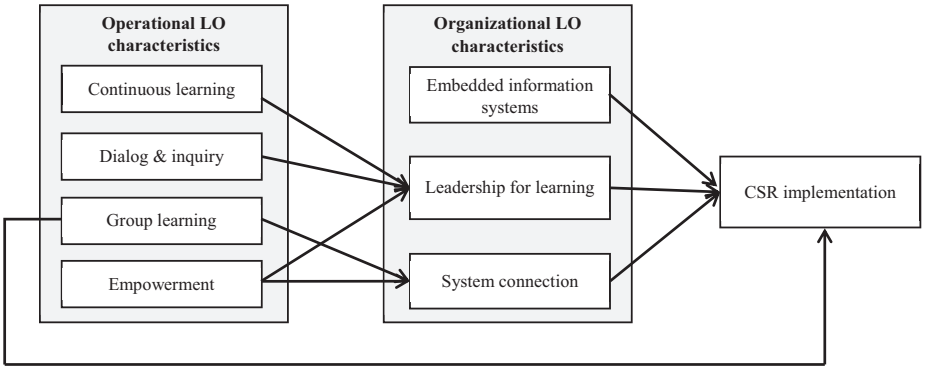

Figure 2. Correlations between LO clusters and dimensions and CSR implementation (Osagie et al., 2022; Battistella et al., 2021)

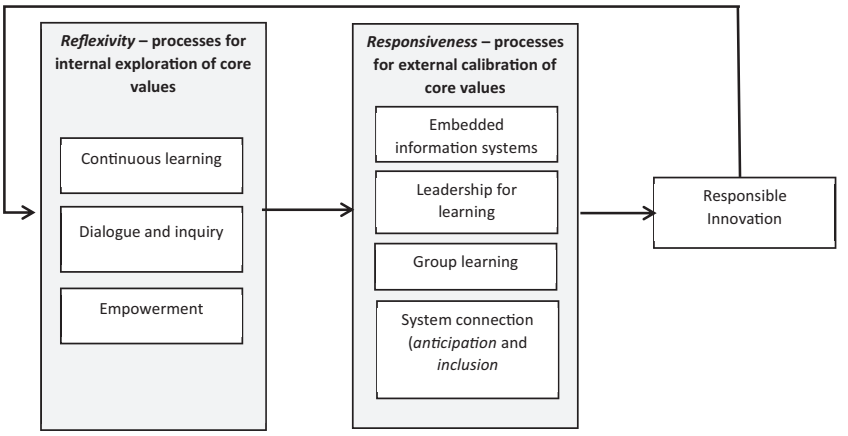

Figure 3.
The RLO framework for RI (combination of Osagie et al., 2020; Stilgoe et al., 2013)

Bringing responsible innovation and learning organization together

The central question in this paper is: how does RLO look like in organizations that strive for RI, knowing that they cannot be compelled toward responsibility? We expect that all LO dimensions are supportive for RI as they are also supportive for CSR, but what is needed to make an RLO out of it? Battistella et al. (2021) emphasized that for CSR implementation, both learning *within* and *outside* (i.e. with stakeholders) the organization is important. The learning within the organization resembles the operational dimension. Dialogue and inquiry and empowerment for a shared vision are typically internally oriented activities. This internal learning resembles the RI process of *reflexivity*. In the case of reflexivity, an organization has to explore its values and define (including the bandwidth) these values. And, we have learned, based on the QHC literature, that these values should be robust (in case of stakeholders' clashing values) and flexible (being responsive) at the same time. This reflexivity is considered as a typical internal learning process, which is very important in the context of RI as it is in this process that the organizational values are explored and determined what the organization stands for. In the case of RI, these values are of course loaded with the normative direction of "how to do good?" To make this internal learning process happen and explore the values within the organization, employees should feel empowered to do so and have the possibility to interact. This empowerment dimension needs more attention according to Mak & Hong (2020); employees should feel that their opinion, even if it is a critical one, is appreciated and responded to. Exploring the values and the bandwidth of these values is not just an activity of the R&D department; what is based on the process of RI might be expected. The whole organization has to share and support the choices made in the RI process, and therefore, the whole organization (or a representative group across the organization) should be invited to think along about these values.

Aside from internal learning, learning processes with the outside of the organization are considered important to support CSR implementation (Battistella et al., 2021) as well. These processes directly influence CSR implementation. The main clause is to keep track of developments, what stakeholders want, which stakeholders should be involved and how to respond to stakeholders, and this is all at the interface of organizations and the outside world. This interface is resembled by the LO dimension system connection. This dimension is considered even more important for RI because it enables the processes of *anticipation* (which stakeholders are affected by our innovations?) and *inclusion* (which stakeholders

should we invite to join RI?). Furthermore, organizations should have infrastructures that enable making sense of all this information. Therefore, the other organizational dimensions of group learning, leadership for learning and embedded information system reflect the process of *responsiveness*. The way an organization gathers and collects relevant information via anticipation and inclusion, processes and responds to this information belongs to the organizational cluster. Recent research of Mak et al. (2020) shows that more emphasis should be put on the LO dimension systems connection as current conceptions of LO focus too much on the inside of the organizations. These dimensions should be stretched to equip organizations for a better learning capacity. Figure 3 represents the new developed model that represents RLO. Because of the exploratory character of this framework, we reduced the number of arrows and only showed arrows between the clusters. Figure 3 represents the RLO framework. This framework is based on the LO framework and on research outcomes in the field of CSR and QHCs; the processes of reflexivity and responsiveness each are covered by one of the clusters. Anticipation and inclusion have to be taken in consideration in the organizational (right) cluster and to be more specific at the interface between organization and the outside world, so in relation to the dimension system connection.

Discussion

In Figure 3, we integrated the RI processes into the LO model and created the framework for RLO for RI. Doing this, a hierarchical relation tends to appear between the four RI processes. Whereas Van de Poel et al. (2017) and Stilgoe et al. (2013) present RI as four processes of equal importance or at least they do not put in any hierarchy or chronological order, our exercise hints at the dominant role of reflexivity. This internal learning process, which resembles reflexivity, should be seen as the basis for all other RI processes. In this case, reflexivity is seen as the:

> Means holding a mirror up to one's own activities, commitments and assumptions, being aware of the limits of knowledge and being mindful that a particular framing of an issue may not be universally held (Stilgoe et al., 2013, p. 1571).

Reflexivity is considered the fundament of values that is built inside the organization, which guides the responsiveness, inclusion and anticipation; the processes dealing with the outside world of the organization. Whereas Bolz and de Bruin (2019) consider responsiveness as an intrinsic part of reflexivity, we suggest it the other way around. Building this framework of RLO revealed that reflexivity is represented by the internal learning processes and builds core values, and these core values guide the processes of anticipation, inclusion and responsiveness. So, organizations really have to look at their own values and be open to review and revise them, before they can start opening up to external input in a serious way. Although we contend that reflexivity is the starting point, we are also aware that responsiveness does play a role in this reflexivity. The connection of individuals with the larger system (e.g. their organization or the QHC they are in) is about relationships (Nicolaides & Poell, 2020). In the framework of RI, employees do have relationships within the organization and across the organizational boundaries, and these relationships do feed the critical reflection, not just based on internal relationships, also with all the relationships with other peers from the QHC. Our findings about QHCs are based on QHCs in which a profit organization takes the initiative for the innovation in a QHC. That is why, in some of our observations, the organization and the QHC might seem one and the same unit, but that is of course not the case. However, for some observations, it is rather difficult to pinpoint it to

either one of the concept, but one should realize these are two different entities, but of course, they are interrelated.

In current LO research, the aspects of moving beyond the own organizational borders with systems thinking (Mak & Hong, 2021) and putting more emphasis on empowering employees for a collective vision (Hong, 2020) are important to consider. With regard to empowering, this is not just about making it as organization possible that employees contribute to the collective vision. According to Senge (in Reese, 2020), the individual employee must be open to explore its own values as well and explore whether or not these values align with the organization's core values. Empowerment means an assignment for both the organization as the individual employee. According to Nicolaides & Poell (2020), workplaces that want to be "save places to fail" should embrace, encourage and reward critical reflection and collective vision building. With regard to systems thinking, it can be stated that the current conceptualization of LO is mainly focused on the inner processes within an organization. However, with respect to RI (and also with CSR and many other developments), companies should consider themselves as a radar in a larger system. The consequences of being a part of a larger system should be stressed more in LO research and should be emphasized in future research in which the framework of RLO is applied. This was notified by Hansen et al. (2020) as well; an organization must involve external stakeholders in the innovation process and that should be emphasized more. Nevertheless, we stressed the importance of developing strong core values first. This is a first step in being responsible.

Although Hansen et al. (2020) see merit in supporting RI via LO, they are not sure whether that is the best way to go. They put forward that it is unknown whether for profit organizations, LO is profitable or efficient, or whether LO is the best way to embed RI. According to HRD researchers Nicolaides & Poell (2020), organizations are not always comfortable in hosting and encouraging critical thinking that might disrupt the status quo, because the focus of organization and especially companies is too much on driving performance and too less on continuous learning and whether or not that will switch is the question. In this paper, we do not have empirical answers for these queries as to yet. However, with integrating LO with the help of Marsick & Watkins (2003) and RI based on QHCs into the RLO framework for RI, the relevance of the inside (reflexivity) process is stressed. This was supported by Grasso & Tàbara (2019). They contend that the inclusion of moral considerations reflecting employees' values and beliefs is crucial for RI in (profit) organizations. Together, the employees form the moral compass. In the case this moral compass is not going in the right direction, we should not underestimate the power of relationships. As stated before, the learning of the individual in the bigger system of an organization or QHC is based on relationships. Relationships form the deeper-level connectedness between the individual development and organizational development (Faller & Marsick, 2023). Due to the diversity of relationships within the organization and within the QHC, there is less room to not go for the right direction. The assumption of going the right direction is fueled by these insights. To investigate the development and role of this moral compass in RI, we provided the RLO framework. Hopefully, researchers see this as an invitation to study the intricate relationship between LO and RI empirically and the relationships that fuel the critical reflection.

The RLO framework has a great potential for empirical research. With the help of the questionnaire as designed by Marsick & Watkins (2003) a new version of this questionnaire can be developed and issued to employees in organizations and in networks or QHCs. In this way, evidence can be collected and inform research to what extent RLO contributes to the

developments like CSR and RI. Currently, conceptual discussions are going on, both in the field of CSR and RI as in the field of LO; however, these conceptual discussion should be brought to the next level, and evidence should be collected to see to what extent the expectations as claimed in theory do work out in practice. The first step would be to identify clear indicators for each concept. The next step would be the validation in practice, and the third step would be the actual roll out of the questionnaire. The next step in the research agenda would be to identify to what extent this mainly incremental learning and change model does support the changes such as RI requires, or that a more disruptive approach, which is deemed necessary to deal with the current complex issues at stake (Watkins, Marsick, & Faller, 2012), is considered necessary. Based on the transformative learning theory, disruptive moments or events or other disturbing situations are reasons to start the critical reflection, and that the actions followed are more incremental instead of disruptive. So, not the process in itself is disruptive, but the events or situations based on which the reflection and learning takes place are disruptive.

Practical applications of this RLO framework are raising awareness for employees, managers and HRD professionals to create room for critical reflection or reflexivity, and that not all critical reflections have to contribute to performance immediately. Complex changes require far more than just changes in performance (Nicolaides & Poell, 2020). Next, managers and HRD professionals should be aware of the organizational dimensions of RLO, which means organizing group learning, leadership for learning and so forth. This is something on the plate of the managers and policy makers.

The most important limitation of this article is of course its conceptual status, and that we base ourselves on research outcomes and theoretical notions from different (i.e. CSR and RI), though adjacent fields. Although we highlighted the differences and similarities between CSR and RI, we used outcomes based on CSR to create input for a RI framework. Both share the challenging normative character; however, RI might restrict itself to the R&D department (Blok, 2019), and not the whole organization as CSR might do. Nevertheless, we have the conviction that developing a value base or moral compass should be an activity that takes place throughout the whole organization. In case additional financial resources are necessary for a project, it is good to have the financial department on board of the RI development as well. Therefore, we think it is justifiable to use the outcomes of CSR literature to further the RI theory and practice.

Further, we do not know as to yet to what extent this model will serve the bigger disruptive changes, or that it will serve the smaller incremental changes at stake (or it even serves going step by step into the wrong direction). According to Watkins et al. (2012), critical reflection can support the exploration of the disorienting or disruptive reality, and following this line of reasoning critical reflection or reflexivity might help to deal with disruptive challenge. Of course this is not about the initiating disruptive or incremental changes. Next, we do not know as to yet to what extent a company or QHC moral can be developed. Development of a shared and continuous evolving moral would be something to investigate as well.

Conclusion

With this paper, the relationships between LO and RI and their accompanying concepts are explored and developed into the RLO framework for RI, and the following research question is answered: how does a framework for RLO look like in organizations that strive for RI knowing that organizations cannot be compelled for their responsibility. Based on our theoretical explorations, we contend that the internal learning processes in an LO (i.e. operational dimensions) resemble reflexivity. These learning processes are important to

explore and calibrate the organizational core values. The RLO framework shows which processes should be in place to be prepared for or respond to smaller changes (in the framework of CSR) or larger and probably more disruptive changes as in the context of sustainability. Whereas the operational LO processes, such as dialogue and continuous learning, should have the aim to encourage the RI process of reflexivity (i.e. critical reflection), the more organizational LO processes such as team learning and leadership for learning should embed the responsiveness of the organization toward outside stakeholders and assure that there is a proper response on the outcomes of the reflexive processes. It is also in this more organizational facet of LO that the RI processes of anticipation and inclusion should be embraced. By thoroughly looking at this framework, the reflexivity is a process that takes place in the operations, and employees and their managers should create a culture or "the save to fail places" (Nicolaides & Poell, 2020) for that in which this is a continuous process. On the organizational side, the aspects such as leadership for learning and group learning can be implemented and stimulated with organizational policy measures.

To conclude this paper: learning in general shows an openness and vulnerability, which are deemed necessary to go beyond the business case and to do good. The RLO framework for RI shows how this learning can be facilitated and what the topics are that should be central in these learning processes.

References

Aguinis, H., & Glavas, A. (2012). What we know and don't know about corporate social responsibility: A review and research agenda. *Journal of Management*, *38*(4), 932–968.

Auer, A., & Jarmai, K. (2018). Implementing responsible research and innovation practices in SMEs: Insights into drivers and barriers from the Austrian medical device sector. *Sustainability*, *10*(17), 1–18, doi: https://doi.org/10.3390/su10010017.

Battistella, C., Cicero, L., & Preghenella, N. (2021). Sustainable organisational learning in sustainable companies. *The Learning Organization*, *28*(1), 15–31.

Blok, V. (2018). Innovation as ethos: Moving Beyond CSR and practical wisdom in innovation ethics. In C. Neesham, S. Segal, (Eds.). *Handbook of philosophy of management*, pp. 1–14. Cham: Springer International Publishing.

Blok, V. (2019). From participation to interruption: Toward an ethic of stakeholder engagement, participation and partnerships in corporate social responsibility and responsible innovation. In: R. Schomberg, J. Von Hankins, (Eds), *International handbook on responsible innovation*, pp. 243–258. Eheltenham: A Global Resource: Edward Elgar.

Blok, V., Gremmen, B., & Wesselink, R. (2016). Dealing with the wicked problem of sustainability: The role of individual virtuous competence. *Business & Professional Ethics Journal*, *34*(3), 297–327.

Blok, V., Hoffmans, L., & Wubben, E. (2015). Stakeholder engagement for responsible innovation in the private sector: critical issues and management practices. *Journal on Chain and Network Science*, *15*(2), 147–164.

Bolz, K., & de Bruin, A. (2019). Responsible innovation and social innovation: Toward an integrative research framework. *International Journal of Social Economics*, *46*(6), 742–755, doi: https://doi.org/10.1108/IJSE-10-2018-0517.

Brand, T., & Blok, V. (2019). Responsible innovation in business: A critical reflection on deliberative engagement as a Central governance mechanism. *Journal of Responsible Innovation*, *6*(1), 4–24.

Carayannis, E. G., & Campbell, D. G. F. (2009). 'Mode 3' and 'quadruple helix': Toward a 21st century fractal innovation ecosystem. *International Journal of Technology Management*, *46*(3/4), 201–234, doi: https://doi.org/10.1504/IJTM.2009.023374.

Carayannis, E. G., & Campbell, D. G. F. (2014). Developed democracies versus emerging autocracies: Arts, democracy, and innovation in quadruple helix innovation 'systems. *Journal of Innovation and Entrepreneurship*, *3*(1), 1–23.

Carley, K., & Harrald, J. (1997). Organisational learning under fire: Theory and practice. *American Behavioral Scientist*, *40*(3), 310–332, doi: https://doi.org/10.1177/0002764297040003007.

Dahlsrud, A. (2008). How corporate social responsibility is defined: An analysis of 37 definitions. *Corporate Social Responsibility and Environmental Management*, *15*(1), 1–13.

Ellinger, A. D., Ellinger, A. E., Yang, B., & Howton, S. W. (2002). The relationship between the learning organization concept and firms' financial performance: An empirical assessment. *Human Resource Development Quarterly*, *13*(1), 5–21, doi: https://doi.org/10.1002/hrdq.1010.

European Commission. (2013). Options for Strengthening Responsible Research and Innovation; Publications Office of the European Union: Luxembourg.

European Commission. (2017). Horizon 2020. Work Programme 2018–2020. 16. Science with and for Society." HORIZON 2020 – Work Programme 2016–2017. Brussels: European Commission.

Faller, P., & Marsick, V. J. (2023). Rethinking transformative learning practices to respond to workplace complexities: Toward an integrative framework. *New Directions for Adult and Continuing Education*, *2023*(177), 91- 103, doi: https://doi.org/10.1002/ace.20481.

Garst, J., Blok, V., Jansen, L., & Omta, O. S. W. F. (2017). Responsibility versus profit: The motives of food firms for healthy product innovation. *Sustainability*, *9*(12), 1–28.

Garvin, D. A., Edmonson, A. C., & Gino, F. (2008). Is yours a learning organization? *Harvard Business Review March*, *1*, 1–10.

Grasso, M., & Tàbara, J. D. (2019). Towards a moral compass to guide sustainability transformations in a High-End climate change world. *Sustainability*, *11*(10), 2971, doi: https://doi.org/10.3390/su11102971.

Hansen, J. Ø., Jensen, A., & Nguyen, N. (2020). The responsible learning organization: Can Senge (1990) teach organizations how to become responsible innovators? *The Learning Organization*, *27*(1), 65–74.

Hong, J. (2020). Viewing learning organizations through an ethical lens: Interview with robin Snell. *The Learning Organization*, *27*(5), 441–453.

Hung, R. Y. Y., Yang, B., Lien, B. Y., McLean, G. N., & Kuo, Y. (2010). Dynamic capability: Impact of process alignment and organizational learning culture on performance. *Journal of World Business*, *45*(3), 285–294, doi: https://doi.org/10.1016/j.jwb.2009.09.003.

Huysman, M. (2000). An organizational learning approach to the learning organization. *European Journal of Work and Organizational Psychology*, *9*(2), 132–145, doi: https://doi.org/10.1080/135943200397905.

Jaakkola, E. (2020). Designing conceptual articles: Four approaches. *AMS Review*, *10*(1-2), 18–26.

Justice, S., & Yorks, L. (2018). Incidental learning as an enacted encounter with materiality. *New Directions for Adult & Continuing Education*, *159*, 91–102.

Long, T. B., & Blok, V. (2018). Integrating the management of socio-ethical factors into industry innovation: Towards a concept of open innovation 2.0. *International Food and Agribusiness Management Review*, *21*(4), 463–486.

Lubberink, R., Blok, V., Ophem, J., & Omta, O. (2017). Lessons for responsible innovation in the business context: A systematic literature review of responsible, social and sustainable innovation practices. *Sustainability*, *9*(5), 721.

MacIntyre, A. (1985). *After virtue*, London: Duckworth.

Mak, C., & Hong, J. (2020). Creating learning organization 2.0: A contextualized and multi-stakeholder approach. *The Learning Organization*, *27*(3), 235–248.

Marsick, V. J., & Watkins, K. E. (2003). Demonstrating the value of an organization's learning culture: The dimensions of the learning organization questionnaire. *Advances in Developing Human Resources*, *5*(2), 132–151.

Martinuzzi, A., Blok, V., Brem, A., Stahl, B., & Schönherr, N. (2018). Responsible research and innovation in industry—challenges, insights and perspectives. *Sustainability*, *10*(3), 702. Retrieve from www.mdpi.com/2071-1050/10/3/702

Nicolaides, A., & Poell, R. F. (2020). "'The only option Is failure': Growing safe to fail workplaces for critical reflection". *Advances in Developing Human Resources*, *22*(3), 264–277, doi: https://doi.org/10.1177/1523422320927296.

Novitzky, P., Bernstein, M. J., Blok, V., Braun, R., Chan, T. T., Lamers, W., & Griessler, E. (2020). Improve alignment of research policy and societal values. *Science*, *369*(6499), 39–41.

Örtenblad, A. (2002). A typology of the idea of learning organization. *Management Learning*, *33*(2), 213–230.

Osagie, E., Wesselink, R., Blok, V., & Mulder, M. (2022). Learning organization for corporate social responsibility implementation: Unravelling the intricate relationship Between organizational and operational learning organization characteristics. *Organization & Environment*, *35*(1), 130–153, doi: https://doi.org/10.1177/1086026620933915.

Owen, R., Stilgoe, J., Macnaghten, P., Gorman, M., Fisher, E., & Guston, D. (2013). A framework for responsible innovation. In: R. Owen, & M. Bessant, (Eds). *Responsible innovation*, pp. 27–50. New York, NY: Wiley.

Owen, R., von Schomberg, R., & Macnaghten, P. (2021). An unfinished journey? Reflections on a decade of responsible research and innovation. *Journal of Responsible Innovation*, *8*(2), 217–233, doi: https://doi.org/10.1080/23299460.2021.1948789.

Popa, E. O. (2021). Quadruple helix collaboration in the hydrogen economy. in: F. Schroth, S. Kaiser, M. Schraudner, (Eds.). *Quadruple helix collaborations in action. Insights from the EU project RiConfigure*, Fraunhofer IAO, Center for Responsible Research and Innovation. http://riconfigure.eu/wp-content/uploads/2021/06/RiConfigure-booklet.pdf

Popa, E. O., Blok, V., & Wesselink, R. (2020b). An agonistic approach to technological conflict. *Philosophy & Technology*, doi: https://doi.org/10.1007/s13347-020-00430-7.

Popa, E. O., Blok, V., & Wesselink, R. (2020a). A processual approach to friction in quadruple helix collaborations. *Science and Public Policy*, *47*(6), 876–889, doi: https://doi.org/10.1093/scipol/scaa054.

Reese, S. (2020). Taking the learning organization mainstream and beyond the organizational level: An interview with peter Senge. *The Learning Organization*, *27*(1), 6–16.

RRING Project. (2018). Responsible research and innovation networking globally (RRING) project summary. Retrieved from www.rring.eu/summary/

Scholten, V., & Blok, V. (2015). Foreword: Responsible innovation in the private sector. *Journal on Chain and Network Science*, *15*(2), 101–105.

Senge, P. M. (1994). *The Fifth Discipline: The Art and Practice of the Learning Organization*, New York, NY: Doubleday.

Stahl, B. C., Obach, M., Yaghmaei, E., Ikonen, V., Chatfield, K., & Brem, A. (2017). The responsible research and innovation (RRI) maturity model: Linking theory and practice. *Sustainability*, *9*(6), 1036, doi: https://doi.org/10.3390/su9061036.

Stilgoe, J., Owen, R., & Macnagthen, P. (2013). Developing a framework for responsible innovation. *Research Policy*, *42*(9), 1568–1580.

Timmermans, J., & Blok, V. (2021). A critical hermeneutic reflection on the Paradigm-Level assumptions underlying responsible innovation. *Synthese*, *198*(S19), 4635–4666, doi: https://doi.org/10.1007/s11229-018-1839-z.

Van de Poel, I., Asveld, L., Flipse, S., Klaassen, P., Scholten, V., & Yaghmaei, E. (2017). Company strategies for responsible research and innovation (RRI): A conceptual model. *Sustainability*, *9*(11), 2045. Retrieved from www.mdpi.com/2071-1050/9/11/2045

Voegtlin, C., & Scherer, A. G. (2017). Responsible innovation and the innovation of responsibility: Governing sustainable development in a globalized world. *Journal of Business Ethics*, *143*(2), 227–243, doi: https://doi.org/10.1007/s10551-015-2769-z.

Von Schomberg, R. (2013). A vision of responsible research and innovation, in: R. Owen, M. Bessant, (Eds), *Responsible innovation*. New York, NY: Wiley, pp. 51–74.

Watkins, K. E., Marsick, V. J., & Faller, P. G. (2012). Transformative learning in the workplace: Leading learning for self and organizational change. in: E. W. Taylor, P. Cranton, & Associates (Eds), *The handbook of transformative learning: Theory, research, and practice*. Josey-Bass, pp. 373-387.

World Business Council for Sustainable Development (WBCSD). (2002). Our common future. Retrieved from www.wbcsd.org/pages/edocument/edocumentdetails.aspx?id=145&nosearchcontextkey=true (accessed 7 September 2020).

Yaghmaei, E. (2016). Addressing responsible research and innovation to industry: Introduction of a conceptual framework. *ACM SIGCAS Computers and Society*, *45*(3), 294–300.

Corresponding author
Renate Wesselink can be contacted at: renate.wesselink@wur.nl