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Authors **Saskia Raatz**
University of St.Gallen
Switzerland

Dieter Euler
University of St.Gallen
Switzerland

Text-Mentor **Monica Feixas**
UAB Barcelona
Spain
&
Zurich University of Teacher Education
Switzerland

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Abstract In recent years, the quality of management education in general, and particularly of MBA and Executive MBA programs, has been called into question. There are serious doubts about universities' ability to give students the competencies they need to deal with complex problems in modern society. One part of the discussion focuses on ethical issues and the process through which students develop values and attitudes. In line with the economic crisis, there has been increasing interest in the development of learners' attitudes to responsibility. We report the results of a study that starts with an ambitious and yet ill-structured learning goal in a demanding educational practice area: How can pedagogical interventions in management education be designed to promote learners' attitudes to responsible leadership? As a starting point, there are neither consensual definitions of responsible leadership nor substantial theories available to design promising interventions. Design-based research (DBR) provides a structured process to deal with research problems, starting with innovative but imprecisely defined objectives and unknown ways to reach them. We introduce the DBR design and describe the research process and results from a project conducted at St.Gallen University's Executive MBA program. In close collaboration with practitioners, interventions evolved through multiple cycles of development, testing and refinement with the pursuit of theory-building and practical innovation.

Keywords attitude change
design principles
management education
responsible leadership

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Responsible Leadership in Management Education: A Design-based Research Study

Saskia Raatz | Dieter Euler

1.0 Introduction

Scientific investigation starts with problems. This study's starting point is the intense and enduring debate about the different problems associated with management education generally, and particularly with traditional MBA and executive MBA programs. One strand of critique has emphasized business schools' apparent lacks of value orientation, ethical issues, and the process through which students can be sensitized to develop the 'appropriate' values and attitudes (Bennis and O'Toole, 2005; Gentile, 2010; Grey and French, 1996; Mitroff, 2004). Furthermore, in light of the economic, social, and environmental crisis, there is a growing interest in management education regarding developing learner attitudes to responsibility and sustainability. Over the past few years, influential initiatives have emerged; these include the Globally Responsible Leadership Initiative (GRLI, 2005), with its vision of developing a next generation of responsible leaders.

Starting from this context, we address the following key question: *How can pedagogical interventions be designed that nurture learners' attitudes to responsible leadership?*

2.0 Theoretical Framework

The key research question requires the identification of relevant theories on the nature of attitudes and attitude change and the review of theories and concepts on the responsible leadership construct.

2.1 Attitudes as a pedagogical construct

Research on attitudes and attitude change has an extensive history within social psychology. Despite the high relevance of the attitude concept, there are countless discussions about an appropriate definition and conceptualization of attitudes (Kreuz, 2002, 34). Eagly and Chaiken (1993, 1) define attitudes as "a psychological tendency that is expressed by evaluating a particular entity with some degree of favor or disfavor", Fazio (2007, 608) as "(...) associations between a given object and a given summary evaluation of the object (...)", and Ajzen (2001, 28) as a "(...) summary evaluation of a psychological object captured in such attribute dimensions as good-bad, harmful-beneficial, pleasant-unpleasant, and likeable-dislikable (...)".

One dimension in the discussion addresses the question whether attitudes are enduring and stable concepts stored in our long-term memory and are activated automatically by encountering a specific object (e.g. Bargh et al., 1992; Eagly and Chaiken, 1993).

Or are they temporary constructions individuals create on-the-spot based on the currently accessible information, which means that attitudes are subject to contextual influences (e.g. Schwarz, 2007; Tesser, 1978; Wilson and Hodges, 1992).

According to the multicomponent model (Eagly and Chaiken, 1993), attitudes have cognitive (referring to beliefs, thoughts, and attributes about an object), affective (emotions linked to an object), and behavioral (past experiences with an object) components (Maio and Haddock, 2010, 25). To address the question how attitudes can be shaped and promoted in a classroom, research on these components can be used to better understand processes of attitude formation and change.

2.2 Attitude formation and change

Regarding the research on cognitive variables, there are two dominant and influential models of attitude change, namely the heuristic-systematic model (Chaiken, 1987) and the elaboration likelihood model (Petty and Cacioppo, 1986). Both models distinguish between two different routes how information or content is processed. These two processing modes are called the peripheral route, which focuses the influence of superficial factors, respectively, simple persuasive cues or heuristics (e.g. individuals' attitudes to an object is influenced by knowing that the speaker is an expert, by the speaker's attractiveness, by a message's length, etc.), and the central route, in which the motivation and ability to process the message is high, resulting in effortful scrutiny of arguments and information (Bohner and Wänke, 2002, 132). Motivation, particularly facilitated by the factor of the message's personal relevance (Johnson and Eagly, 1989; Petty et al., 1981), as well as by ability, influenced by individuals' cognitive skills and prior knowledge needed to understand the message, the content's comprehensibility (Wood et al., 1985), or by an environment without disturbances (Petty et al., 1976) are substantial determinants regarding the effort a person generates to process information. Furthermore, individuals who are motivated and able to process the information tend to be heavily influenced by arguments' strengths. Strong arguments will cause positive cognitive responses, while weak arguments will elicit more negative cognitive responses, which subsequently influence attitudes in less powerful ways (Petty and Cacioppo, 1977). There are other approaches besides these dual-processing approaches. For instance, McGuire's inoculation theory (1964) describes a way to make attitudes more resistant to modification attempts. By presenting weak arguments in the *inoculation message*, the active generation of counter-arguments and issue-related thoughts can be initiated, which strengthens the pre-existing attitude. Furthermore, it was found that simply instructing persons to think about a topic in question (Petty and Cacioppo, 1977) or warning of the message's persuasive intent are effective ways to stimulate counter-arguments (McGuire and Papageorgis, 1962). There are several implications for designing learning processes with the purpose of promoting attitudes: social psychological findings regarding cognitive influen-

ces on attitude change clearly reveal that effortful, elaborate, and deeper thought and reflection processes about the learning content, respectively, the particular attitude object should be promoted. This concerns the central route of information processing. In addition, opportunities should be created in the classroom for active generation and verbalization of arguments and ideas, instead of only passive, receptive learning of content. Particular attention should go to encouraging students' motivation towards the particular attitude object by highlighting the personal relevance of the learning content as well as objectives. To achieve this, one should create links to their everyday world of experience and realistic problem situations. Trying to activate their prior knowledge remains an important aspect to ensure a strong ability to process information along the central route.

Regarding research on behavioral variables on attitude formation and change, there is one very important theory, cognitive dissonance theory (Festinger, 1957), from which interesting conclusions can be drawn. It suggests that behavior can lead to discrepant cognitions, for instance, when people have acted against their own attitudes without sufficient reasons (e.g. a person who buys a less trendy car and now has to justify his decision). The resulting feeling of dissonance and discomfort owing to having a set of two or more dissonant cognitions can lead to an attempt to reduce this unpleasant state of arousal by changing the attitude to the behavior via adding, subtracting, or substituting cognitions (Bohner and Wänke, 2002, 170). Regarding learning environments design with the aim of developing attitudes to a particular object, the following implications for pedagogical decisions can be derived: To foster students' effective learning and effortful thinking processes, it seems important to let them face authentic problems that induce cognitive conflicts; in line with principles of experience-based learning (Kolb, 1984) and problem-oriented learning, activities such as:

- creating possibilities for students to experience cognitive conflicts
- exploring ways to resolve conflicts
- making decisions by considering the consequences and then reflecting on the learning process, underlying attitudes, and possible decisions that have been inconsistent with own attitudes and reasons how behavior is often justified seem to be promising ways to foster attitude development in the classroom.

Research on affective variables shows a variety of ways in which affect and emotions shape attitudes. One important finding is that people develop more positive attitudes to attitude objects they have seen many times. This phenomenon can be explained by the mere exposure effect (Zajonc, 2001). Increasing familiarity or certainty with an attitude object positively influences the attitude without using any directive affective information. In contrast, attitudes can also be shaped by pairing the repeated presentation of an attitude object with an affective sensation or stimulus, or by providing an emotional reinforcement for a

specific behavior (Maio and Haddock, 2010, 120). We can learn from research on affective variables the relevance of confronting students with the particular topic not just once, but repeatedly, the use of affective stimuli (e.g. by selecting topics or cases that are controversial in public and that stir emotions), and the importance of rewarding behavior by implementing systematic feedback processes.

2.3 Attitudes and behavior

Despite apparently positive attitudes to responsible behavior that students show and verbalize in the classroom, in reality, they might behave differently. Early research about the relationships between attitudes and behavior had mixed results (see e.g. Fazio and Roskos-Ewoldsen, 2005; Wallace et al., 2005; Wicker, 1969). One of the most prominent models of the attitude-behavior relationships is the theory of reasoned action (Fishbein and Ajzen, 1975) and its extension, the theory of planned behavior (Ajzen, 1991; Ajzen and Sexton, 1999). These theories indicate that attitudes are one of three psychological factors that impact on the intention to perform an action and the likelihood of performing an action. Besides an individual's attitude to the behavior (thinking whether performing an action is good or bad), these are subjective norms (referring to the belief that significant others think one should perform an action) and perceived behavioral control (the perception that one possesses the necessary resources and skills to perform an action). The latter is the only one with a direct effect on behavior.

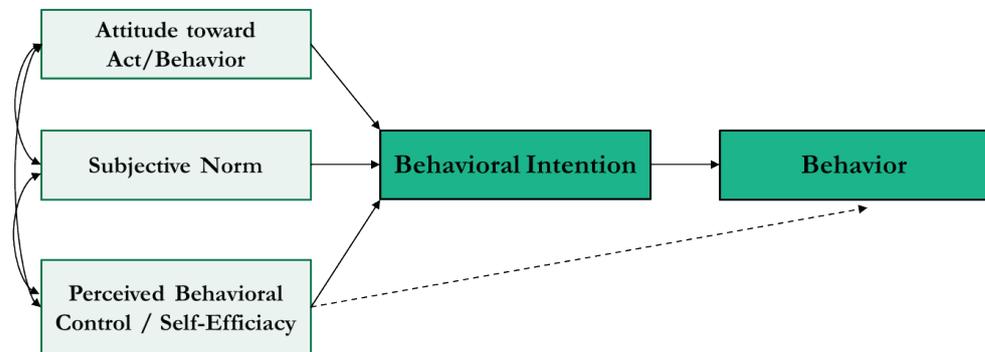


Figure 1: The Theory of Planned Action (Ajzen, 1991, 182)

What pedagogical implications can one draw from these theories? First, it seems important to promote not attitudes in general, but attitudes to a concrete action or to specific situation types students are confronted with in real life. Furthermore, it becomes clear that working on these challenges in the classroom means practicing and exercising possible courses of action within a protected environment, which can support stronger perceived behavioral control and awareness of subjective norms that influence behavioral intentions and resulting actions.

2.4 Responsible leadership

A review of the relevant literature on responsible leadership showed that despite the matter's importance, the body of social scientific research on responsible leadership remains small and focuses on normative approaches (Ferdig, 2007; Maak, 2007; Maak and Pless, 2006b; Schraa-Liu and Trompenaars, 2006) rather than empirical-descriptive approaches. Even social scientific approaches to the familiar concept of ethical or moral leadership (e.g. Ciulla, 1995; Gini, 1997) rarely consider responsibility aspects (see e.g. Eisenbeiss, 2012).

In the context of management education, we mention several programmatic statements that implicitly or explicitly address the development of responsible leaders:

- Increasing emphasis on the ethical dimension of business: These ideas are based on the assumption that, within the scope of management education, there has been too much emphasis on the profit first doctrine, while ethical standards and moral development processes have been underemphasized (cf. Ghoshal, 2005; Mitroff, 2004).
- Greater emphasis on the sustainability of business, i.e. the relativization of a short-term view of economic success (shareholder value) in the interest of other value references (public value, stakeholder value, corporate social responsibility).
- Along these lines, many institutions propose standards and principles for business ethics or social responsibility. One example is the UN Global Forum, which has proposed six principles for responsible management education that are supported by major professional institutions and more than 300 business schools (see www.unprme.org). The first two principles indicate the initiative's thrust: (1) "We will develop the capabilities of students to be future generators of sustainable value for business and society at large and to work for an inclusive and sustainable global economy." (2) "We will incorporate into our academic activities and curricula the values of global social responsibility as portrayed in international initiatives such as the United Nations Global Compact." Closely related to this approach but more detailed is the Globally Responsible Leadership Initiative (GRLI), which strives for management education that is "relevant and applied, holistic and integrative, responsible and sustainable, inter-disciplinary and multi-level, and... learning-oriented" (GRLI, 2005).

Concerning the key question above (How can we design pedagogical interventions that nurture learners' attitudes to responsible leadership?), educational research can be described as being in an early stage. Although there are generic theories on attitude development and some broad normative notions on potential characteristics of responsible leadership, there are no proven concepts or conceptual frameworks to guide specific approaches in management education. To sum up: the starting point of research in that area of management education is a broad objective (responsible leadership), which needs further

specification and a pedagogical concept that aims to develop attitudes to an objective that must still be specified. This leads to the following research questions, which put the key question in more concrete terms:

- How can attitudes to responsible leadership be fostered in the classroom?
- What challenges do academics face when applying pedagogical concepts meant to change students' attitudes?
- What are the principles of learning for responsible leadership?

Given this starting point, we decided to pursue these questions within the frame of a design-based research (DBR) study.

3.0 Research Design and Methods

The following diagram outlines the basic sequence of a DBR process and identifies the individual process phases' targeted results (in more detail, see Euler, 2014a):

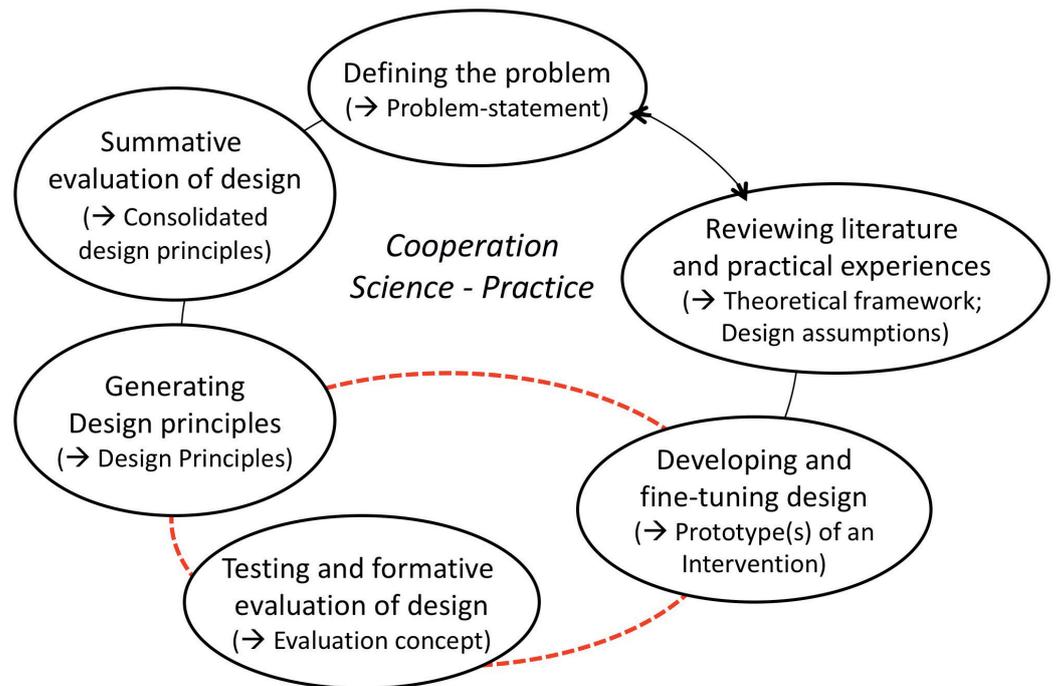


Figure 2: Research and Development Cycles in the DBR Process

DBR starts with the search for and identification of significant problems in concrete practical contexts and solutions that demand innovative approaches. Concerning interventions, these solution approaches still need to be developed. The aim is to find innovative practical solutions for unsolved problems, i.e. to examine existing realities and explore future possibilities. "Design experiments differ from most educational research, because they do not study what exists; they study what could be" (Schwartz et al., 2005, 2). A prove that attitude is not helpful for this research; one of exploring and testing what is. This research premise is not whether an existing intervention or theory

is effective, but the manner in which the desirable objective can best be attained in a given context via a yet-to-be-developed intervention. The research examines “how to improve education and learning in authentic educational settings [...] Further, that explicit goal becomes a day-to-day reference point for collecting and analyzing data, for making modifications to the intervention [...], and at the end of the investigation for determining the extent to which progress has been made” (Reinking and Bradley, 2008, 19).

The development of innovative solutions is theory-based, i.e. underpinned by available scientific evidence, as well as by experienced practitioners’ everyday theories. Experienced practitioners are included in the various research and developmental process phases. The expectations are that solutions’ quality will increase and the transfer of collectively developed (and thus practicable) theories will be improved in practice (Euler, 2000, 573ff.). For instance, experienced practitioners tend to have extensive know-how of and strong intuitions regarding what the critical events are in a developed teaching concept’s application. Including experienced practitioners can make this frequently implicit knowledge useful in the development phase and can shorten the route to a high-quality intervention.

From a scientific perspective, the central contribution comprises identifying the relevant theories and feeding them into the research process. Besides a literature review, in this research stage, theory-building is based on field investigation. This results in a theoretical frame of reference emerging with a (further specified) problem definition, design requirements, and preliminary descriptions of possible measures (design hypotheses) with which to attain the desired objectives (Euler 2014a, 25f.).

Despite being firmly rooted in theoretical concepts, first designs are seldom an optimal intervention with which to achieve an objective. Thus, and contrary to practice regarding the development of empirical intervention studies, DBR emphasizes developing a targeted and robust intervention before testing it in a wider context. Such interventions are prototypes or potential measures with which to achieve the desired objectives. They can also be regarded as the result of the theory-building focus in the DBR process.

The DBR process is realized in iterate cycles of design, testing, analysis, and redesign. An incremental optimization of the design is effected within these cycles; simultaneously, the development processes and principles are documented. The formulation of hypotheses, which are examined in the course of the development process, is a supporting element here. If proven wrong, they are not rejected, but lead to the formulation of modified hypotheses. “One of the distinctive characteristics of the design experiment methodology is that the research team deepens its understanding of the phenomenon under investigation while the experiment is in progress” (Cobb et al., 2003, 12).

More effort is initially spent on theory-development to increase an intervention’s practical relevance and/or robustness before (if required, comprehensive) theory-testing. “Therefore, we usual-

ly ‘bet low’ by conducting small studies, and then pursue the most promising results” (Schwartz et al., 2005, 20). The evaluation should be methodical and systematic, while a corresponding evaluation concept considers these aspects (McKenney and Reeves, 2012, 133): the definition of the evaluation focus, the formulation of the core questions, the selection of the evaluation strategies, the definition of specific evaluation methods and instruments, the data acquisition and assessment, and the documentation of the results. Within the evaluation framework, DBR employs a diversity of data acquisition and assessment methods, which are also applied in other research approaches (e.g. interviews, observations, document analysis, focus groups, and tests).

While DBR’s theory-building character remains largely undisputed, its potential to rigorously test theories has been questioned. DBR views generalizability as an essential characteristic of the results to be achieved. Generalization is pursued in the form of design principles; “they recommend how to address a specific class of issues in a range of settings” (McKenney and Reeves, 2012, 19).

Our project focuses the design of two exemplary pedagogical interventions in executive MBA courses on accounting and strategic management. The research and development process incorporated six analysis, design and development, evaluation, and revision cycles (in detail, see Raatz, 2015).

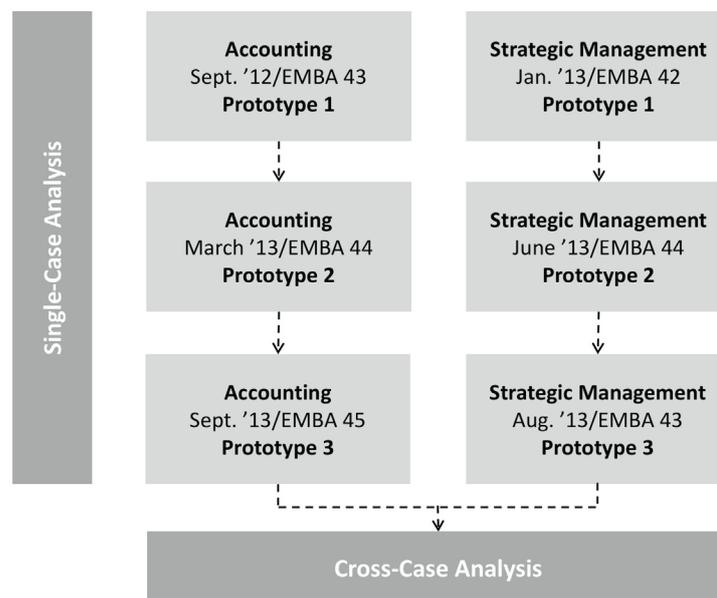


Figure 3: Succession of Courses Used for Testing the Intervention

In a first step, based on the literature review results, we developed a preliminary theoretical notion of responsible leadership, which we differentiated and concretized further by conducting 13 in-depth interviews with participants (experienced managers in different industrial sectors) of St.Gallen University’s Executive MBA program. Data analysis followed the principles and phases of a structured qualitative content analysis following

Kuckartz (2012), using first a deductive and then an inductive approach. The interviews focused on questions such as What does responsibility look like in managers' leadership practices? and Which main challenges and problems do managers face in their daily practice?

Based on the literature review and the interviews with the course participants and the teachers, a theoretical frame of reference with theoretically based propositions about potential methods, teacher and learner activities emerged.

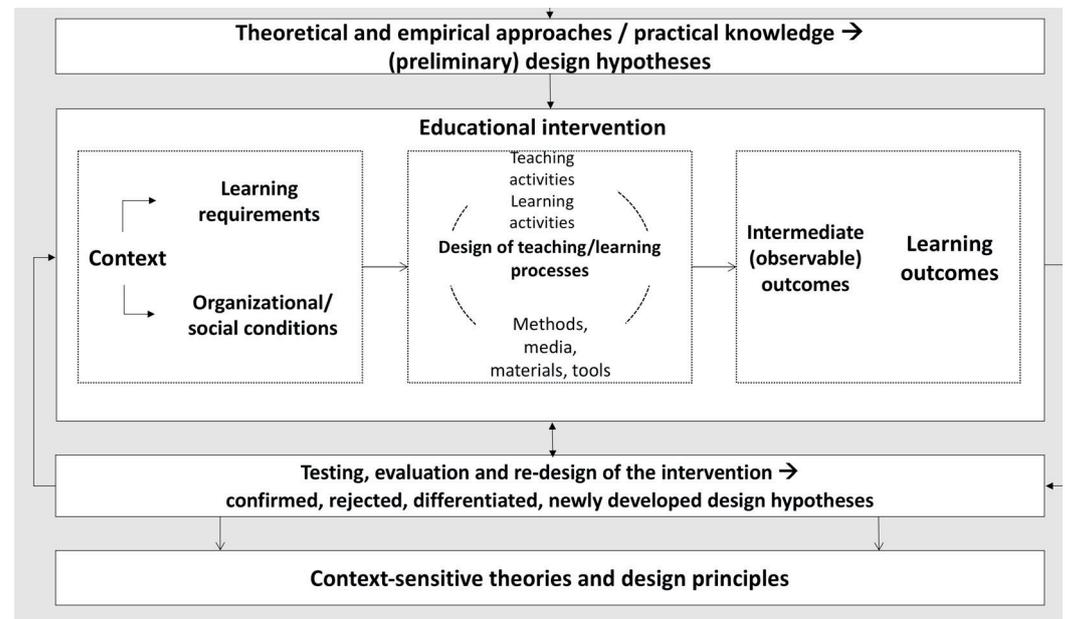


Figure 4: Reference Frame for Developing Context-sensitive Theories and Design Principles (Raatz, 2015, 31)

This frame of reference became the starting point for designing the first intervention. The notion of responsible leadership served to generate a coherent set of educational objectives. These guided the design of the interventions and provided key assumptions about the target group's learning conditions. In this process of conducting field-based investigations, the relevant stakeholders (e.g. the program managers and the course teachers) were involved in the DBR model's first two phases. The aim was to specify the problem definition based on their needs, expectations, and practical experience, as well as to gain insights into the intervention's organizational and social contexts (Raatz, 2015, 41ff.).

A set of preliminary design hypotheses emerged, based on a deep understanding of the practical problem; on a review of the prevalent theory and of scientific evidence regarding attitude change, formation, and responsible leadership; and on an intensive needs and context analysis. These design hypotheses relate to relevant categories, which model teaching and learning environments: The preliminary assumptions about the context-specific characteristics (learning requirements and organizational/social context) and the methods used to design teaching and learning processes that trigger attitude development and

learning outcomes concerning responsible leadership (Raatz, 2015, 23ff.). The design hypotheses guided the design of the pro-prototype interventions throughout the research and development cycle, and we continuously refined, modified, rejected, replaced and/or complemented the hypotheses on the basis of testing experiences and empirical data. If they were valid across each design case, they resulted in context-sensitive theories and design principles.

The evaluation strategy (Raatz, 2015, 180f.) followed three phases, which yielded different evaluation questions, depending on the stage of the intervention's development. The evaluation activities during phase 1 emphasized questions about the intervention prototypes' soundness and feasibility, and took place at the beginning of every design cycle. This phase comprised a critical analysis of the learning objectives' coherence, the course content, the methods, and the teachers' and learners' intended activities in terms of participants' organizational conditions and learning requirements. We also checked the embedding of the theoretically based design hypotheses on attitude development and their links to specific design features (learning or teaching activities, methods, and course material). The latter turned out to be key for the continuous improvement and refinement of design hypotheses on their way to becoming design principles. Phase 2 focused mainly on three questions:

1. Which specific contextual conditions were in place during the intervention?
2. Does the implemented intervention engender intended learning processes and learning outcomes, as revealed by specific incidents or design features? If so, how? If not, what are the reasons?
3. How do teachers and learners perceive the design from their perspectives?

We conducted video-supported classroom observations and individual as well as focus group interviews with the participants and teachers as an empirical investigation. This phase had two aims: Not only did experience with testing lead to the identification of aspects for optimizing the design (practical focus), but the systematic and retrospective reflection on the underlying design hypotheses also enabled the modification, differentiation, or even distortion of the design propositions (scientific focus). Furthermore, it is important for theory-building that evaluation also captures the unplanned and surprising ways in which an intervention interacts in the context (Raatz, 2015, 35). Only recognizing and developing new perspectives allows for a discursive analysis of and reflection on teaching and learning processes and thus the continuous advancement of the design and design hypotheses (Reinmann and Sesink, 2011, 17). We mainly applied this focus throughout the cycle (macro cycle), phase 3, which focuses on the intervention's effectiveness and impact, during the last cycles, when the intervention is already considered more stable and robust. In particular, this addresses the achievement of intended learning outcomes. Evidence for indicating the achievement of learning outcomes can be deri-

ved from observed learning activities, the analysis of learners' artifacts (in class or in examinations) and participants' interview statements. However, in this phase, evaluation is still formative and confined to small samples.

Any DBR study pursues two primary objectives: From a practical perspective, it strives for improved interventions that serve to achieve the defined learning goals better than before. From a scientific perspective, it aims at generating context-sensitive design principles and theories. Especially concerning the latter, a systematic and comprehensible analysis process is essential to demonstrate how data material can be traced back to theoretical design hypotheses about contextual factors, learning processes, and learning outcomes, which underlie every design (Raatz, 2015, 189). In the DBR study, we had to manage the three main challenges of the development of design principles (Raatz, 2015, 190ff): First, we had to reduce the rich qualitative data material of each design case to core messages, which had a significant influence on the design's improvement. Second, we had to find a balance between reducing complexity and creating transparency about the development and research process by providing rich descriptions that bring design principles to life and place them in a specific context. Third, we had to establish a systematic link had between the empirical data and the testing experiences on one hand, and the theoretically based design hypotheses on the other hand.

Finally, the comparative analysis of the individual design cases led to the generation of design principles, which can be seen as valid in the specific discipline (e.g. the accounting or strategic management courses), or as valid across disciplines (see Figure 3). These design principles are called *context-sensitive*, which means that they must be interpreted within the context that they arose – in this study, in the context of two specific executive MBA program courses. The resulting principles emerged over time, extend beyond the individual case, and have been replicated across different classrooms, disciplines, teachers, and learners within one program (Raatz, 2015, 189ff.; Euler, 2014b).

4.0 Findings

Concerning the reference frame, the research and development process results are (in more detail, see Raatz, 2015):

- Specification of the objectives to be achieved. In the project, a clear notion of responsible leadership as the aspired learning outcome was defined.
- Understanding of the context in terms of learning requirements and conditions for the pursuit of the educational intervention.
- Practical learning designs in terms of providing robust, realizable, and effective interventions for this context.
- Deeper theoretical understanding of how to promote attitudes to responsible leadership, resulting in well-founded design principles.

4.1 Responsible leadership as an intended learning outcome

As a result of the literature review and subsequent qualitative interviews, four main concepts emerged as key components of responsible leadership:

- Value orientation: being conscious about own values and principles, and behaving accordingly (see e.g. Gentile, 2010; Maak and Pless, 2006b; Schraa-Liu and Trompenaars, 2006)
- Stakeholder orientation: the consideration of different stakeholders' expectations and claims, expanding from an internal leadership perspective to a broader worldview, from a shareholder mindset to a stakeholder orientation (see e.g. Eisenbeiss, 2012; Freeman, 1984; Maak and Pless, 2006a)
- Sustainability orientation: consideration of economic, social, and ecological consequences of business activities (triple bottom line outcomes) (see e.g. Ferdig, 2007; Werhane, 2008)
- System orientation: responsible leaders lead with rather than against others in ways that account for the long-term viability of complex, interconnected living systems (see e.g. Ferdig, 2007).

Analysis further showed that these components cannot be seen in isolation. Also, most interviewees associate responsible leadership with neglecting individual interests: on the one hand by contrasting it clearly with opportunistic behavior; on the other hand, they evaluate it by talking about experiences in which propagating responsibility or advocating for responsibility has led to negative consequences for themselves (being too idealistic, being naive, being the martyr in the organization).

For all interviewees, value orientation incorporates integrity. Integrity is understood as truthfulness or accuracy of one's actions; as one interviewee noted: "My principle is being as authentic, predictable, and constant as possible – not like a 'flag in the wind.'" The challenge to be a person of integrity mainly results from the willingness to act according to one's principles (value orientation) and the consideration of expectations, values, and claims of persons involved in a situation (stakeholder orientations). It also became clear that being authentic (i.e. clear about one's principles) seems to increase in importance the higher the position in the organization. Being a person of integrity becomes particularly challenging when a manager encounters value conflicts. In a value conflict, managers must recognize and clarify their values and must make a decision on what is the right thing to do or what position one will take (see also Gentile, 2010; Kidder, 1995).

Even more challenging than value-based decision-making is value-based actions: How does a manager effectively raise these issues? What does he or she need to do and say in order to be heard? How does one correct an existing course of action when necessary (category value-based action) (see also Gentile, 2010; Kidder, 1995). In many cases, speaking and acting based on one's values is associated with negative consequences (e.g. negative career consequences, social disapproval). Organizational

and personal barriers support the intention to develop so-called reasons and rationalizations for not acting on one's values (e.g. In fact, it's not my responsibility; I'm in the minority; I'm too junior in the organization to raise uncomfortable questions; or There's no harm, and it is good for business) (see also Gentile, 2010, 179).

Concerning learning outcomes, the broad objective needs to be put into more concrete terms. For instance:

- Becoming aware of the major characteristics of moral value conflicts.
- Identifying and describing conflicting values in moral value conflicts (value clarification).
- Balancing different courses of action in moral value conflicts in terms of the consequences for the involved stakeholders and for oneself (anticipating implications of actions in value conflicts).

4.2 Context

The learning context in an executive MBA course can be summarized as follows:

- Class sizes range from 40 to 50 participants. This implies addressing the educational challenge of developing learning environments that stimulate the participation and activation of the whole class.
- To test the intervention, in each class, 90 minutes were available. This seems challenging concerning inducing sustainable attitudes to responsible behavior in situations that involve a moral dilemma.
- The learners in executive MBA programs are generally not used to dealing with moral value conflicts or with social issues, especially in the context of accounting. Many are skeptical of such 'soft' issues. They are particularly unfamiliar with the challenge of having to clarify and describe values.
- The learners' backgrounds, careers, positions, sectors, and leadership experiences are heterogeneous. This heterogeneity implies that they face an educational challenge regarding working with personally and thematically relevant problem situations. Personal relevance can be seen as an important factor regarding learner motivations to consciously and reflectively deal with ethical issues. This can be regarded as a primary requirement for attitude development.

4.3 Design principles

The following examples illustrate how original design hypotheses result in context-sensitive design principles (Raatz, 2015, 357ff.):

To make the accounting course participants reflect on moral issues and affect learners' attitudes to responsible leadership behaviors, it turned out to be key for moral dimensions to form part

of an accounting problem. A design principle resulting from the comparative analysis is the recommendation that learners must realize that challenges can arise in subject-specific situations in accounting, which require reflection beyond subject-specific knowledge. We also found that subject-specific as well as moral questions must be discussed in the course simultaneously and with the same emphasis. Concerning the (confirmed) assumption that learners mostly associate value-based behavior with idealistic or unrealizable leadership practices, it turned out to be important to avoid notions such as ethics or values, which often have negative connotations, and to replace them with everyday terms such as decision conflicts, conflicts of interest, or responsible action (Raatz, 2015, 364f.). Another design hypothesis relating to learning requirements and learning outcomes was that learners are unfamiliar with the challenge of having to identify, clarify, and describe values in moral value conflicts. Throughout the testing cycle, this assumption was confirmed and further differentiated, resulting in our following the context-sensitive design principle: While learners have much personal and professional experience of dilemma situations, they are not used to systematically analyze these conflicts and their underlying reasons. Especially naming conflicting values, identifying moral questions, and distinguishing between moral and non-moral aspects created difficulties. To have learners overcome these problems requires additional teaching activities over considerable time (Raatz, 2015, 371).

One of the design hypotheses concerning teaching and learning processes relates to the importance of learners' perceived personal and thematic relevance regarding the moral dilemma situations discussed in the classroom. This theory-based design hypothesis follows the assumption that perceived relevance (a major motivation aspect) increases the probability of conscious and reflective processing of information and thus the probability of developing sustainable attitudes. Throughout the testing cycle, the data material generated many concepts and approaches on how personal and thematic relevance among this heterogeneous target group can be increased. For instance, the motivation to actively participate in instruction and to consciously reflect on arguments and information can be fostered by designing real-life cases of dilemma situations in leadership practice that are linked to learner experiences (e.g. a familiar value dilemma situation with colleagues or employees, or specific challenges concerning a desired function or position) (Raatz, 2015, 361).

Another design hypothesis relates to the relevance of designing two-way communication, or classroom debates on controversies. The original theory-based design hypotheses contained the assumption that two-way communication is key in activating learner reflection on information and attitudes to the topic and thus fosters attitude development, provided that, in two-way communication processes, counter-opinions are introduced and can be disproved. Furthermore, the active verbalization of arguments in such debates contributes to attitude development. In the end, we developed several context-sensitive principles for the design of teaching and learning processes for two-way com-

munication and active verbalization. They include recommendations on:

- how to promote controversial discussions (e.g. by presenting a dilemma, which opens up a continuum of two – preferably extreme – options for taking decisions, or taking action; these should open a broad interpretation scope);
- how two-way communication processes influence the direction of attitude development (e.g. the potential of two-way communication to holistically examine a problem situation);
- how heterogeneous group composition can be managed concerning two-way communication and how it can support the active verbalization of arguments (e.g. negative reactions to contrary opinions stimulate a learner’s tendency to verbalize his or her opinion).

5.0 Closing

DBR is characterized by the requirement that the development of innovative solutions for practical educational problems should dovetail with the acquisition of scientific knowledge. “The challenge for design-based research is in flexibly developing research trajectories that meet our dual goals of refining locally valuable innovations and developing more globally usable knowledge for the field” (Design-Based Research Collective, 2003, 7). This research’s premise is not whether an existing intervention or method is effective, but the manner in which the desirable objective can best be attained in a given context via a yet-to-be-developed intervention.

We reported results of a study that starts with an ambitious yet ill-structured learning goal in a demanding educational practice field: How can pedagogical interventions in management education be designed to promote learners’ attitudes to responsible leadership? At the outset, there were neither consensual definitions on responsible leadership nor available substantial theories to design promising interventions on how to address learner attitudes.

DBR provides a structured process to deal with research problems, starting with innovative but not precisely defined objectives and unknown ways to reach them. This provides a systematic way to pursue practical and theoretical goals throughout the research and development cycle.

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Author Profiles

Saskia Raatz studied Linguistics, Business Administration and Business Education at the University of Stuttgart (2003-2009) and graduated in 2009. After an internship with Daimler (China) in 2010 she worked as a research assistant at the Institute of Business Education and Educational Management at the University of St.Gallen (2010-2015). She gained her PhD degree in 2015. Recently she took a position in the Human Resources area at the Mobiliar Insurance Company at Berne, Switzerland.

Dieter Euler holds the Chair for Educational Management at the University of St. Gallen / Switzerland since 2000. Before that, he was Professor for Business Education at the University of Potsdam (1994-1995) and Nuremberg (1995-2000). He studied Management, Business Education and Social Philosophy at Cologne University and the London School of Economics and Political Science (LSE).

Prof. Euler holds several mandates in international scientific bodies and is involved in various innovation projects in the area of Quality Development, Higher Education Development and Vocational Education and Training.

His research interests focus on innovative ways of teaching and learning, strategic aspects of educational management (including quality development at Higher Education), vocational education and training and corporate learning.

Author Details

Dr. Saskia Raatz

Institute of Business Education and Educational Management
University of St.Gallen
Dufourstrasse 40a
CH-9000 St.Gallen
Switzerland
+41 71 224 2630
saskia.raatz@unisg.ch
iwip.unisg.ch

Prof. Dr. Dieter Euler

Institute of Business Education and Educational Management
University of St.Gallen
Dufourstrasse 40a
CH-9000 St.Gallen
Switzerland
+41 71 224 2630
dieter.euler@unisg.ch
iwip.unisg.ch

Text-Mentor Details

Prof. Dr. Mònica Feixas

Visiting Scholar
Hochschuldidaktik / Erwachsenenbildung
Pädagogische Hochschule Zürich
Lagerstr. 2
8090 Zürich
Switzerland
+41 43 305 63 56
monica.feixas@phzh.ch
phzh.ch/personen/monica.feixas

Editor Details**Dr. Sebastian H.D. Fiedler**

EDeR Editor in Chief
Hamburg Center for University Teaching and Learning (HUL)
University of Hamburg
Schlüterstraße 51
20146 Hamburg
Germany
+49 40 42838 9631
sebastian.fiedler@uni-hamburg.de
hul.uni-hamburg.de

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hup.sub.uni-hamburg.de