Beyond What Works: Developing (SREL)-Interventions in Entrepreneurship Education with Design-Based Research

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1 Abstract

DBR has gained interest as a methodology with a dual focus on maturing interventions and generating theoretical understanding. The specific processes behind the development of entrepreneurship interventions and the context-specific adaption mechanisms are often unclear. Therefore, research is lacking knowledge of how to iteratively develop design-elements and adequately measure effectiveness. Additionally, educational contexts of entrepreneurship education are diverse. We tackle these challenges by developing an entrepreneurship intervention from a design-based research perspective that can be aligned with three different target groups: students, nascent entrepreneurs, and senior entrepreneurs.

2 Introduction

Entrepreneurship education experiences an increasing demand globally (see De Faoite et al., 2003; Fayolle et al., 2016; Finkle, 2007; West et al., 2009). Consequently, there is a significant boost in research concerning entrepreneurship education topics (Durán-Sánchez et al., 2019) and increasing efforts to become a distinct teaching domain, distinguished from mainstream management education (Mwasalwiba, 2010). However, there is no consensus what entrepreneurship education tries to achieve ontologically and theoretically (Blenker et al., 2008; Gibb, 2002; Katz, 2003; Kuratko, 2005; Pittaway & Cope, 2007)). Thus, scholars increasingly discuss what EE should encompass, how it may be taught, and why it has the potential to enable

entrepreneurship students to become more successful individuals (Fayolle, 2007; Greene & Rice, 2007; Lautenschläger & Haase, 2010).

To deal with the complexity of entrepreneurial challenges, entrepreneurship students need to acquire several practical and conceptual skills (Fayolle, 2010). Understanding entrepreneurship, increasing student employability, and stimulating venture founding seem to be the three core outcomes of EE (Fayolle & Gailly, 2008; Gilbert, 2012; Hindle, 2007; Huq & Gilbert, 2013; Pittaway & Cope, 2007; Rae, 2010; Seikkula-Leino et al., 2010). Nabi et al. (2017) assessed the impact of entrepreneurship education at the postsecondary level. Their systematic review of empirical articles supports that entrepreneurship education has an impact on learners' intentions to start a business (51%), the perceived feasibility of becoming an entrepreneur (26%), the acquisition of skills (21%), changes in attitude (20%), business startup activity (13%), venture performance (5%), and others (26%). Neck and Corbett (2018) conclude that entrepreneurship education may be defined as the development of "mindset, skill set, and practice necessary for starting new ventures" (p. 10). However, educational content also depends on the respective target audience (Bullough et al., 2015). Mwasalwiba (2010) identifies six different target groups in his semi-systematic review: 1) business students, 2) entrepreneurs and SMEs, 3) non-business students, 4) policymakers, bankers and public, 5) unemployed, and 6) minority groups. Certainly, these audiences cannot be addressed adequately by a "one size fits all" approach but require tailored approaches to EE regarding both content and pedagogies.

Nonetheless, only few scholars address the pedagogical obstacles in entrepreneurship education (Fayolle, 2010). Unfortunately, entrepreneurship is recurrently taught as it was a natural science, assuming linear problem solving processes (Neck & Greene, 2011). In contrast, Neck and Greene (2011) argue to portray entrepreneurship as a method based on different teaching and learning approaches focusing on doing then learning. Forms of educational practice can be distinguished in "about", "for", "through" and "embedded" or "in" (Gibb, 2002; Handscombe et al., 2008; Pittaway, 2009; Pittaway & Cope, 2007; Pittaway &

Edwards, 2012). These forms are argued to result in different but complementary educational outputs (Pittaway, 2009; Pittaway & Cope, 2007). Most educators still rely on the more traditional teaching "about" entrepreneurship without enabling learners to engage in practical activities (Nielsen & Stovang, 2015; Pittaway & Edwards, 2012). Linton and Klinton (2019) suggest that EE should focus more on education "through" entrepreneurship. Students need to experience the entrepreneurial process by acting and reflecting real-life challenges (Kassean et al., 2015). Huq and Gilbert (2017) outlined a pedagogical framework providing guidelines for modern entrepreneurship education. First, courses should have clear goals concerning participants and society. Second, the design should be customized to the profiles of learners. Third, assessment criteria need to be aligned with goals and characteristics of participants. Fourth, content should enable learners to know "what", "how", "who", "why", and "when". Fifth, pedagogies should be oriented to goals, contents, and target groups.

Hence, EE would need to enhance its learner-centricity, enable participants to take ownership of their learning process (Chory-Assad, 2002; Summers & Svinicki, 2007; Winkler et al., 2021), facilitate the observation of entrepreneur's real world environment from different perspectives und help to understand the different elements of entrepreneurial activities (Gibb, 2002; Jones & Iredale, 2010; S. Zahra & Welter, 2008). This means that educators need to identify and develop pedagogies that address these goals. Unfortunately, the gap between theory development by researchers and pedagogical development by educators hinders new approaches to be included into entrepreneurship eduction (Winkler, 2013; cf. Lagemann & Shulman, 1999). Therefore, entrepreneurship education would benefit from better calibrated and more flexible methods to design curricula und courses including the reciprocal relationship of environmental, cognitive, and behavioral factors (Winkler, 2013). Like startup entrepreneurs, educators should follow an iterative development approach (Bhave, 1994; Sull, 2004). This means integrating participants and the overall entrepreneurship ecosystems by cyclically identifying, implementing, and refining their pedagogies.

We introduce the concept of DBR into entrepreneurship education research as an approach to innovate pedagogical interventions. Easterday et al. (2018, p. 131) define DBR as "a meta-methodology conducted by education researchers to create practical interventions and theoretical design models through a design process of focusing, understanding, defining, conceiving, building, testing, and presenting, that recursively nests other research processes to iteratively search for empirical solutions to practical problems of human learning". Compared to other approaches to intervention research, such as randomized controlled trials (RCT), DBR stresses the importance of context, i.e., which pedagogical design elements are effective for whom in what educational context. By developing an entrepreneurship training fostering SREL, we illustrate how DBR can be applied and identify 1) design elements being stable across target groups and contexts, and 2) specifications of design elements being helpful to address different target groups and contexts.

3 Challenges of Intervention Designs in Entrepreneurship Education

Entrepreneurship education is becoming increasingly popular, targeting not only startup entrepreneurs, but also addressing secondary school, higher education, and established entrepreneurs. Therefore, the context in which entrepreneurship education interventions are developed is becoming more complex and diverse. To further gain legitimacy as a research field, entrepreneurship education needs rigorous experimental designs and evaluations to provide strong evidence for effects (B. Johnson & Christensen, 2014; Slavin, 2002). Growth in impact research on entrepreneurship education is driven by stakeholders trying to understand the effects on learners and society (Bae et al., 2014; Blenker et al., 2014; Martin et al., 2013; Nabi et al., 2017). However, the results of empirical research are mixed using different outcome measures (Bae et al., 2014; Lorz et al., 2013; Martin et al., 2013). Additionally, scholars are criticizing methodological robustness of empirical studies (Bae et al., 2014; Fayolle & Liñán, 2014; Martin et al., 2013). These researchers argue

that only true experiments or quasi-experiments with a longitudinal design and control groups provide strong evidence (Cook & Campbell, 1979; Shadish et al., 2003). Reasons for control groups, randomization, and longitudinal designs are the exclusion of confounding variables threatening internal validity (Johnson & Christensen, 2014; Mertens, 2010).

While it is certainly true that (field) experiments with RCTs provide the most rigorous evidence, such designs also have their limitations, particularly in the highly complex system of entrepreneurship education (Boylan & Demack, 2018; Gopalan et al., 2020; Norman, 2003, 2010; Regehr, 2010). Even if they want, educators will not be able to follow their curriculum and pedagogies in an identical way (Norman, 2003) working with different participants in varying educational contexts. In addition, the recommended iterative development approach of entrepreneurship education requires regular and systematic changes on several levels, which makes a RCT based evaluation nearly impossible, as all levels would need randomization (Styles & Torgerson, 2018). Hence, RCTs suffer from inconsistent demands of entrepreneurship education such as “uniformity versus diversity”, “adoption versus adaptation” and “fidelity versus variation” (Styles & Torgerson, 2018, p. 261). Based on Norman (2010), Sullivan (2011) argues that randomization can be considered when “(1) prior observational studies support the hypothesis, (2) the mechanism of learning is understood, (3) the outcome of the intervention is easily measured and accepted as related to the intervention, (4) the subgroups likely to benefit from the intervention are also easily identified, (5) the effect size of the intervention is small, and (6) the results from the trial may have a large impact, to justify the costs of an RCT” (p. 286). Therefore, all of these arguments support that in most educational real-life situations, randomization is not reasonable (Longva & Foss, 2018). Cook and Campbell (1979) recommend quasi-experimental designs with non-equivalent pretest-posttest control groups to address these issues. Despite their continuous increase in application, Gopalan et al. (2020) identified only a small percentage of studies using quasi-experiments being published in top education research journals. Quasi-experimental studies (and RCTs) prioritize internal validity over external validity (Gopalan et al.,

2020). Unfortunately, when interventions do not produce effects, reasons can be found both in a weak implementation and the quality of the intervention itself, leading to open questions (Styles & Torgerson, 2018, p. 261). Thus, methodologists have already been investing increasing efforts to improve generalizability of entrepreneurship education research (Tipton, 2014; Tipton & Olsen, 2018). In general, stakeholders are questioning, if these designs reduce the research focus to topics being less relevant. Additionally, ethical considerations should be considered, as participants from control groups are denied rigorously assessed education (Gopalan et al., 2020).

Entrepreneurship education is context-based and should not be treated as a black box. Naturally, RCT requires research to be very strict about controlling features of the context and the people to which an intervention is applied. This, in turn means, that the evidence provided by such research is not valid for different contexts and populations. Researching intervention outcomes in isolation within experimental settings makes it difficult to generate insights for more naturalistic environments (Brown, 1992). This limitation is particularly relevant in entrepreneurship education, as contrary to other educational settings such as schools, audiences tend to be very diverse in the educational contexts in which entrepreneurship education is applied. Hence, scholarship already started to design und systematically adjust contexts to produce evidence-based claims. Anna Brown (1992) and Alan Collins (1992) introduced design experiments or DBR. The intent is to generate new theories, artifacts and pedagogies in naturalistic settings being validated through their iterative application (Messick, 1992).

4 Design-Based Research

DBR is implemented in a wide variety of educational contexts like medicine, biology, or psychology education to develop appropriate interventions and is becoming increasingly popular within the learning sciences (Anderson & Shattuck, 2012). In some cases, DBR is therefore also known as educational design research

(EDR; (McKenney & Reeves, 2012, p. 17), design-research (Oh & Reeves, 2010) and development research (Conceição et al., 2004; Oh & Reeves, 2010).

The overarching goal of DBR is the advancement of educational practice and the simultaneous acquisition of theoretical knowledge (The Design-Based Research Collective, 2003). By linking rigor and relevance, the classical separation between application research and fundamental research is bridged (Gitter, p. 118; Smith et al., 2013). Hence, DBR is 1) departing from an actual design problem, 2) situated in a naturalistic educational context, 3) focusing on the design and testing of an intervention, 4) using mixed methods, 5) applying multiple iterations, 6) involving partnerships between researchers and practitioners, 7) yielding design principles, and 9) providing an immediate impact on practice (Anderson & Shattuck, 2012; McKenney & Reeves, 2013).

McKenney and Reeves (2013) complement Anderson and Shattuck's characterization by arguing that the DBR process should always start with a problem that is relevant to both science and practice. To solve this problem, DBR applies already existing qualitative and quantitative research methods including established approaches to sampling, data collection, and data analysis. What differentiates DBR from other research approaches is its aim to develop interventions, which work in the contextual diversity of naturalistic settings. Results not only indicate what works under a given set on conditions but provides design principles how to address varying implementation contexts which are typical for real-life education (Bereiter, 2002).

To be able to effectively address a practical problem and increase the validity of research, DBR must be situated in a real educational context (Anderson & Shattuck, 2012). This requires a close collaboration with practitioners. Including educators and doing research directly on educational materials in real-life settings stimulates the acceptance and adoption of such innovations (The Design-Based Research Collective, 2003).

Effective interventions should be able to be spread after being developed successfully (Brown, 1992). Therefore, the design and testing of interventions should

be of high quality and time, commitment, and contingencies should be documented (Anderson & Shattuck, 2012). Mingfong, Yam San, and Ek Ming (2010) suggest four design characteristics that should be aligned to achieve effectiveness in interventions: 1) the design should be guided by learning frameworks, 2) DBR should enable the development of the learning context to transform current educational practices 3) DBR should aim to study learning processes in the designed context, 4) DBR should iteratively improve design elements and, at the same time, also refine current theories.

For data collection, it is common to use mixed methods (The Design-Based Research Collective, 2003). This is in line with Maxcy (2003), who argues that "it is perfectly logical for researchers to select and use differing methods, selecting them as they see the need, applying their findings to a reality that is both plural and unknown" (p. 59). McKenney and Reeves (2014) favor methods such as interviews, observations, questionnaires, checklists, or protocols for evaluation and reflection. To inspire, ensure, and document individual and discursive reflections, Anastasiadis and Bachmann (2011) recommend research diaries throughout the process to promote the researcher's self-reflective attitude.

Design-based interventions evolve through multiple iterations as there is always a potential for improving design and evaluation (Anderson & Shattuck, 2012). These iterations provide information about which elements of an intervention work and which not (The Design-Based Research Collective, 2003). Rather than producing one intervention, which is effective within the conditions of the controlled trial, iterative cycles of testing and re-designing elicit which design elements are robust across repeated implementation, and which need to be adjusted to respond to contextual diversity. To rigorously evaluate the design, the intervention is temporarily frozen. One of the key methodological challenges is to be sure when the development process is completed.

Researchers and practitioners work together in real-world settings to elaborate context-sensitive design principles and theories. Together, the partners develop the intervention starting with an initial problem identification, literature review, design

and construction, implementation, assessment, and publication (Anderson & Shattuck, 2012).

In the final phase of DBR design principles are identified to enhance solution implementation (Reeves, 2000) and guide educational outcomes for practitioners (Bell, 2002b). Design principles give context-related recommendations about how and when learning environments should be designed (Edelson, 2002; van den Akker, 1999). In contrast to measures such as effect sizes, design principles provide practitioners with guidance how to react to certain events and situations (Bakker, 2018; van den Akker, 1999).

Considering that EE takes place in diverse contexts and addresses different, often heterogeneous target groups, we consider DBR a worthwhile approach. DBR has the potential to provide insights on which characteristics of pedagogies are effective across contexts and how practitioners should react to contextual diversity (Bakker, 2018; Edelson, 2002; van den Akker, 1999)

In contrast to purely naturalistic research such as qualitative action research or ethnography, DBR bases its claims on rigorous evaluations of the effectiveness of the interventions. In the following, we illustrate how we developed an intervention which fosters entrepreneurs' SRL capabilities using DBR and combining quantitative controlled designs with uncontrolled evaluations and qualitative data.

5 Research Design

Our aim was to develop an intervention fostering SREL among different target audiences (Winkler et al., 2021). SREL consists of various cognitive, metacognitive, and motivational skills, which support effective learning in situations of high uncertainty and novelty. SREL-capable learners systematically plan their learning goals and activities (forethought phase), monitor the execution of these activities (performance phase), and finally evaluate and reflect the success of the learning process (reflection phase) (Zimmermann, 2002). In many domains, such as school,

higher education (Jansen., Van Leeuwen, Janssen, Jak., & Kester, 2019), and sports (Cleary & Zimmerman, 2001; Kitsantas & Zimmerman, 2002), SREL capabilities have been associated with greater achievement. The intervention should train learners to become competent in all three phases by working on an authentic problem of their own and being scaffolded through the process.

For entrepreneurship education, it is particularly relevant, to be sensitive of the characteristics and requirements of different groups of learners and different educational contexts. For example, nascent entrepreneurs differ in various aspects from more experienced entrepreneurs or university students with no concrete aim to become founders. Likewise, formalized courses in secondary or higher education differ dramatically from non-formal events taking place in accelerators or entrepreneurship networks. DBR can help to address the complexity of such a context. It does not replace randomized approaches but adds context and reduces complexity.

5.1 Design-Based Research Framework

To ensure an iterative development of our intervention while considering the diverse target groups within EE, we adopted McKenney and Reeves' (2012) generic model for educational design research. This model encompasses three stages: 1) analysis and exploration (A&E) 2) design and construction (D&C), and 3) evaluation and reflection (E&R). Notably, both the A&E and the E&R stages are empirical, involving data collection. The D&R phase however is based on the findings of the other two phases, literature reviews, and practitioner interactions, but is not generating any data itself.

Empirical methods are needed at different points in a DBR process, for example when analyzing a baseline situation, when developing the first prototype and to continuously evaluate the interventions (McKenney & Reeves, 2014). Evaluation primarily serves to mature the intervention, with corresponding reflection processes serving to gain knowledge (McKenney & Reeves, 2017). DBR relies on the epistemic principle of "recognizing through modifying" (Reinmann, 2022, p. 1). Rather than

controlling context variables, DBR aims to add contextual diversity as a determining factor for effective design. Therefore, the separation between our different target groups of students, nascent entrepreneurs, and senior entrepreneurs only emerged during the study (see figure 1)

To illustrate how we designed, tested, and advanced our intervention, we used conjecture mapping. According to Sandoval (2014, p. 27) “conjecture maps are intended to organize design research by focusing researchers’ attention on the aspects of a designed learning environment considered theoretically salient.” Conjecture maps help to link theoretical assumptions as well as empirical findings to decisions about designing and re-designing and intervention throughout DBR design cycles.

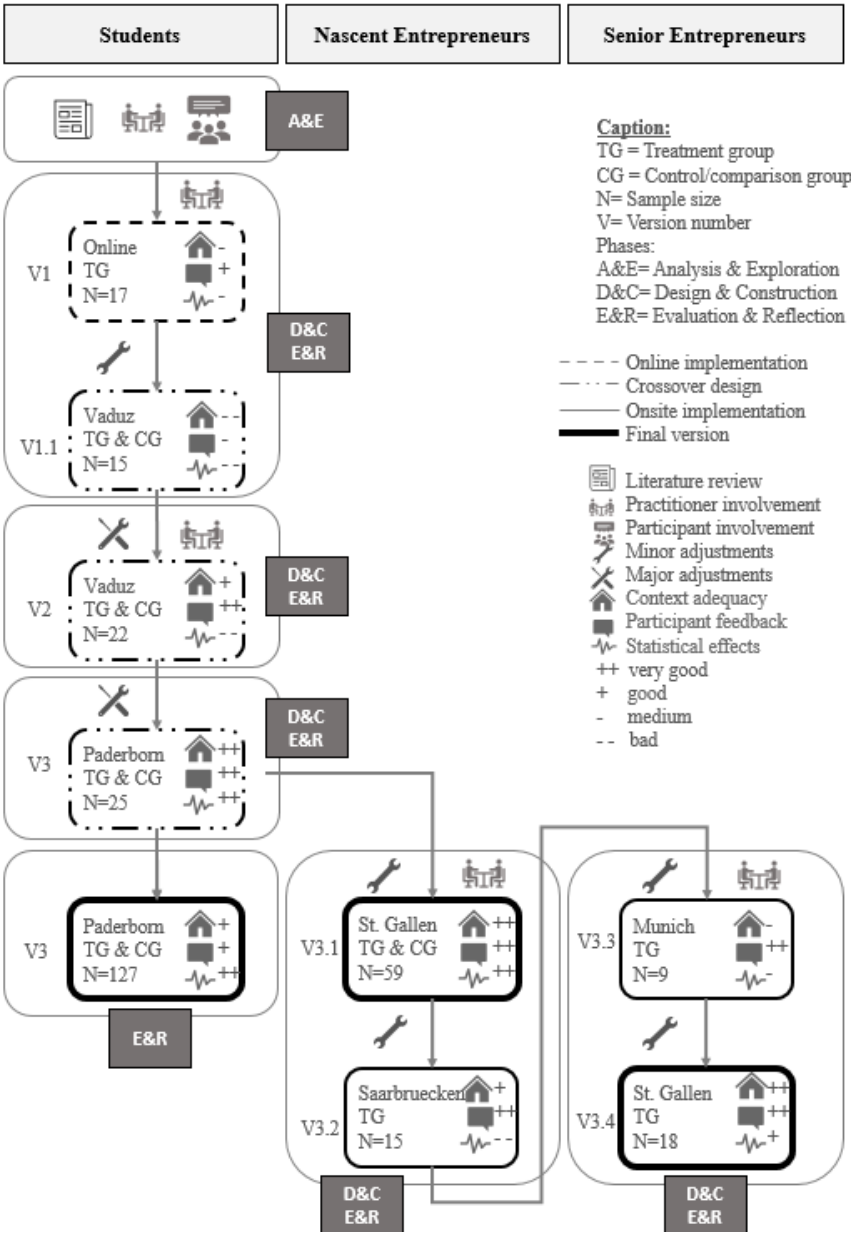

Figure 1. Conjecture Map

5.2 Scientific Objective and Research Questions

The objective of our study was to investigate design principles for an intervention which fosters entrepreneurs' SRL capabilities. In particular, we aimed to uncover, which design elements have stable effects across different target groups (such as students, nascent entrepreneurs, and senior entrepreneurs) and intervention contexts, and which elements need to be adjusted in order to cater for these target groups and contexts. The research questions developed throughout the research process. While at the beginning, the idea was to develop one single intervention covering all contexts, the focus shifted increasingly to covering the specifics of different target groups and intervention contexts (Büker, Jenert, Fust., Fahrbach, Bellwald, & Winkler, 2023). This iterative development of research questions is typical for DBR projects, putting the focus on effectiveness in naturalistic rather than controlled environments (Bakker, 2018, p.74). Thus, the research addresses the following two questions:

Hypothesis 1: Which design elements of educational interventions that support entrepreneurs' development of SREL capabilities are stable across target groups and contexts?

Hypothesis 2: Which specifications of design elements of educational interventions that support entrepreneurs' development of SREL capabilities help educators to address different target groups and contexts?

5.3 Evaluation

During our A&E phase we conducted an in-depth analysis of our theoretical and practical problem, reviewed the current state of research, and involved practitioners and potential participants to define partial design requirements. Subsequently, a prototype was developed, and the intervention was continuously aligned to contextual environments. We applied six design cycles, addressing three different target groups in entrepreneurship education. 206 students, 74 nascent entrepreneurs, and 27 senior entrepreneurs participated in our trainings that were provided in Germany, Switzerland, and Liechtenstein.

To evaluate the different intervention implementations during E&R, we built on data triangulation (Maula & Stam, 2020; Yin, 2009). The concept of data triangulation originates from Norman Kent Denzin (1970). He describes data triangulation as a process that combines different data from different sources (Denzin, 1970; Flick, 2011). This prevents subjective evaluations and enables to extract more objective design elements (Baxter & Jack, 2015; Martina & Göksen, 2022).

The tensions between methodical rigor and fitting the intervention to the respective contexts is most challenging. Design decisions, i.e., modifying elements of the intervention between design cycles, need to be based on empirical evidence. In contrast to controlled intervention studies, however, there are different design requirements and, consequently, different sources of evidence. The conjecture map (figure 1) shows how we used different criteria to make sense of each design cycle by determining which design elements to keep stable and which to adapt.

Statistical effectiveness is the first criterion. As with controlled intervention studies, we aimed to achieve statistically and practically significant changes in participants' SREL capabilities. These were measured using SREL pre- and posttests (Bellwald et al., 2023). As such entrepreneurship trainings are implemented often with small sample sizes, we not only integrated the significance of effects but also the effect sizes into our evaluation. According to Conelly et al. (2010) average effect sizes in empirical entrepreneurship research are .26 for small effects, .67 for medium effects, and .86 for large effects. These effect sizes were integrated into our statistical evaluation in relation to the respective sample size and comparable implementations. Participant feedback is the second criterion. We used questionnaires to ask learners for short qualitative feedbacks and implemented a rating based on a Likert scale ranging from 1=best to 5=worst to gain these insights. Context adequacy is the third criterion. It refers to the spatial and temporal circumstance under which the intervention is applied. For example, with student participants it is crucial if and how the intervention is linked to the curriculum and, in particular, the assessment. With startup entrepreneurs the perceived value of the training can be key. Perceiving the training as an exclusive offering, which may give them an edge over other startups

can add to their motivation and, consequently, to the intervention's effectiveness. With experienced entrepreneurs, time and accessibility of the training venue may be crucial as they are often focused to the extreme on their core business and are very time limited. Data on context adequacy was obtained from learner feedback as well as trainer protocols. To generate insight we applied thematic analysis, introduced by Braun and Clarke (2012).

We used all three criteria in combination to make sense of our findings during the design cycles. Figure 1 provides information on the different criteria and illustrates how we developed and differentiated the training responding to insights obtained through repeated interventions. Table 1 provides information of how we approached the evaluations.

Table 1. Data Triangulation Basis

Data Source	Evaluation
Statistical Effects	
Group Size	Small < 30 Medium < 127 Large ≥ 127
Significance	Number of significant effects No = 0 Little = 1-3 Some = 4-6 Many = 7-9
Effect Size	Small > .26 Medium > .67 Large > .86 Evaluation in relation to group sizes and comparable implementations. Categories: bad, medium, good, very good
Participant Feedback	
Quantitative	Likert scale ranging from 1 to 5 (1=best; 5=worst)
Qualitative	Thematic analysis
Context Adequacy	
Qualitative	Thematic analysis of participant feedback and trainer perception

6 Intervention Development

We structure the illustration of the intervention development process according to the introduced conjecture map. Insights are presented along the three evaluation elements. To provide a comprehensible overview of the iteration history we use a tabular display for the combined D&C and E&R meso-cycles.

6.1 A&E Phase

The A&E phase consists of problem diagnosis and the identification of partial design requirements (McKenney & Reeves, 2012). With the development of a SREL intervention for entrepreneurship education we intended to address a theoretical and a practical educational problem.

To shape our understanding of the theoretical problem and identify a scientifically relevant positioning we followed a literature review to better understand the challenges of intervention development in entrepreneurship education. We want to contribute to entrepreneurship education research by deriving design principles to support intervention development.

To address our practical educational problem, we benchmarked how SRL has been fostered successfully in other areas like sports (Cleary & Zimmerman, 2001; Kitsantas & Zimmerman, 2002), music (McPherson, Miksza, & Evans, 2017) or schools (Zimmermann, 1990) and reviewed literature to understand how entrepreneurship trainings should be designed. Bullough et al. (2015) propose the entrepreneurship education and training (EET) effectiveness framework. To achieve intervention goals, human factors like characteristics of participants and the contextual environment of the program location and audience must be clarified before defining the required program elements. Moreover, we have been interviewing students and entrepreneurs to define partial design requirements and challenged our first design ideas with a small focus group of potential participants.

An example of an identified partial design requirement is to align the delivery to Zimmermann's (2001) four-level hierarchy of SRL, which is developing from observation, through emulation, and self-control towards self-regulation (Zimmermann & Campillo, 2003).

6.2 D&C and E&R Phases

The D&C phase builds on the defined partial design requirements from A&E phase and develops potential solutions to the identified problems. The E&R phase is about the testing of the potential solution and the identification of insights for the next D&C cycle. We integrated these two micro-cycles into one meso-cycle to drive our interventions. Table 2 offers a detailed overview of our evaluations and modifications. In the following, we summarize the development process and describe our design decisions exemplarily for the first cycle containing major modification.

In our first cycle we developed and tested an early intervention prototype in two similar versions online and onsite to be able to generate first insights fast. We started with the target group of students. Based on the participant feedback and the onsite specifications, we reduced time by two hours for the second implementation. Although, we already had little significant effects in our first implementation and several small to medium effect sizes in both, the statistical effects considering the design cycle overall were not satisfactory. Particularly for the second implementation, the feedback contained several negative responses. These were in line with the trainer perceptions. We combined these insights to better interpret context adequacy. Our participants were struggling to link the SREL theory to the practical activity. They enjoyed the business simulation in general but did not execute the introduced SREL strategies as intended. Hence, we concluded to better support learners in their application. The utilization of SREL strategies needs active trainer support, which is difficult to ensure online. We concluded that the practical activities being followed during the business simulation are not facilitating SREL application well enough. Thus, first, we decided to stick with onsite trainings. Second, we embedded a little

case study as first exercise to facilitate practical relevance. Third, we substituted the simulation with a self-defined startup challenge being addressed in teams to promote identification and motivation. Fourth, we enhanced the SREL canvas as a support tool from guiding questions into a SREL scaffold including a stepwise instruction to simplify application. Finally, we included a role model presenting each canvas step with the help of an own example and supporting learners during work phases.

However, our E&R of the first cycle in preparation for our second cycle indicated that the intervention as whole seemed to be overwhelming for the students. It was difficult for the trainers to keep the students motivated for eight hours. Our modifications seemed to be perceived very positively both by the participants and trainers. This indicated that we were on the right track. Again, we decided to adapt the intervention to a large extent. The third cycle then resulted in very good statistical effects and feedback. Therefore, we decided to not modify this intervention anymore but to verify it for our student target group with a large sample containing a control group in a final E&R cycle. Again, we achieved very good statistical results. The participant feedback slightly deteriorated, which can be explained with the poor student-trainer ratio.

Starting from the third cycle with students, we parallelly moved into the development process for our nascent entrepreneurs. We directly managed to generate very good statistical effects and feedback. However, to generate even more theoretical insights, we continued to slightly modify the intervention by shifting the self-reflection exercise to the beginning of the intervention and replacing the simple startup example with a complex one. Surprisingly, our adaptions did not work very well in this context. There were no significant effects and effect sizes were bad. As our sample was quite small and the participant feedback was excellent, we considered that to be an outlier. According to the trainer perceptions the participants were missing some experience, as they had problems identifying with the self-reflection exercise in the beginning and following the complex startup example cognitively. Hence, we assumed these modifications could be appropriate for senior entrepreneurs.

Therefore, we built upon these insights during cycle six, designing the intervention for senior entrepreneurs. As entrepreneurs are always busy and short on time, we focused on reducing the required time to generate the final version with excellent feedback and good effects.

To conclude, we managed to build a stable intervention design for students, that has been tested successfully with a control group. Additionally, the version for nascent entrepreneurs was tested against two comparison groups. The latest version for senior entrepreneurs strongly improved to its previous one concerning contextual adequacy and statistical effects. Nonetheless, further DBR cycles focusing on the improvement of the statistical effectiveness are needed.

Table 2. Design Cycles

	Design & Construction		Evaluation & Reflection		
Cycle	**Modifications**	**Intervention Characteristics**	**Statistical effects**	**Participant Feedback**	**Context Adequacy**
1		**V1: Online** 10 hours online implementation without control group: 1) Theoretical instruction of the SREL elements 2) Group work to repeat and apply theory 3) Business simulation to apply theory 4) SREL canvas with open questions to support the application of the theory	(-) - Small sample size - Little significant effects - Good effect sizes	(+) Qualitative: - Duration was too long to stay focused. - Theory should be complemented with examples. - SREL Canvas was helpful - Business simulation was fun.	(-) - Theory needs to be better linked to practical activities
	1) Reducing time by 2 hours 2) Switching to onsite implementation	**V1.1: Vaduz** 8 hours onsite implementation with control group: 1) Theoretical instruction of the SREL elements 2) Group work to repeat and apply theory 3) Business simulation to apply theory 4) SREL canvas with open questions to support the application of the theory	(--) - Small sample size - No significant effects - Bad effect sizes	(-) Qualitative: - Several negative responses - Business simulation was fun but difficult to connect to SREL theory	(--) - SREL theory and the business simulation as practical activity are not a perfect match - SREL canvas should provide more guidance in applying SREL theory - Participants need role models and examples to better connect SREL theory and application
2	1) Replacing the business simulation as practical activity through a startup team challenge 2) Including case study to promote SREL application 3) Revising and expanding the SREL canvas from guiding questions towards a scaffolding tool	**V2: Vaduz** 8 hours onsite implementation with control group: 1) Theoretical instruction of the SREL elements 2) Case study 3) Startup challenge addressed in teams to apply theory	(--) - Small sample size - No significant effects - Bad effect sizes	(++) Quantitative: 1.7 (1=best 5=worst) Qualitative: - Overall positive feedback - Stronger focus on the essential parts - Case study was not clear enough	(+) - Positive course atmosphere - Group dynamics during the work phases may have influenced potential statistical effects - Case study is overloading the intervention - Motivation of participants is important for learning

	4) Including a role model presenting a simple startup example to support SREL canvas application	4) SREL canvas as scaffolding tool to support the application of the theory. 5) Role model presenting simple startup examples to support the application of the SREL canvas		- 8 hours are perceived as very long	
3	1) Reducing time by 2 hours 2) Removing the case study 3) Switching from startup challenge to a more general entrepreneurial or personal challenge to promote identification and motivation 4) Challenge can be addressed individually or in teams. 5) Adding motivational strategies at the end of the intervention	**V3: Paderborn** 6 hours onsite implementation with control group: 1) Theoretical instruction of the SREL elements 2) Entrepreneurial or personal challenge addressed individually or in teams to apply theory 3) SREL canvas as scaffolding tool to support the application of the theory. 4) Role model presenting simple startup examples to support the application of the SREL canvas 5) Motivational strategies	(++) - Small sample size - Some significant effects - Very good effect sizes	(++) Quantitative: 1.64 (1=best 5=worst) Qualitative: -Entrepreneurial perspective was very helpful - To work on an individual challenge was also enjoyed by participants, who do not want to pursue an own startup	(++) - V3 seems to be an appropriate version for students
4	**Verification** for the target group of **students:** No adaptations as the evaluation was already very good	**V3: Paderborn** 6 hour onsite implementation with control group for **students:** 1) Theoretical instruction of the SREL elements 2) Entrepreneurial or personal challenge addressed individually or in teams to apply theory 3) SREL canvas as scaffolding tool to support the application of the theory. 4) Role model presenting simple startup examples to support the application of the SREL canvas 5) Motivational strategies	(++) - Large sample size - Many significant effects - Good effect sizes	(+) Quantitative: 2.03 (1=best 5=worst) Qualitative: - Participants enjoyed the interaction and individual problem focus	(+) - Student-trainer ratio was not optimal

5	Adaptations for the target group of **nascent entrepreneurs**: 1) Including more time for group discussions and reflections	**<u>V3.1: St. Gallen</u>** 6 hour onsite implementation with two comparison groups for **nascent entrepreneurs:** 1) Theoretical instruction of the SREL elements 2) Entrepreneurial or personal challenge addressed individually or in teams to apply theory 3) SREL canvas as scaffolding tool to support the application of the theory. 4) Role model presenting simple startup example to support the application of the SREL canvas 5) Motivational strategies	(++) - Medium sample size - many significant effects - Very good effect sizes	(++) <u>Quantitative:</u> 1,47 (1=best 5=worst) <u>Qualitative:</u> - SREL and especially the canvas are very helpful to approach startup challenges	(++) - Successful implementation with constructive atmosphere and motivated participants - Self-reflection is important for all SREL activities and may have more impact in the beginning
	1) Shifting self-reflection exercise to the beginning of the intervention 2) Replacing the simple startup example to a complex startup example	**<u>V3.2: Saarbruecken</u>** 6 hours onsite implementation without control group for **nascent entrepreneurs:** 1) Theoretical instruction of the SREL elements including a self-reflection exercise 2) Entrepreneurial or personal challenge addressed individually or in teams to apply theory 3) SREL canvas as scaffolding tool to support the application of the theory. 4) Role model presenting complex startup example to support the application of the SREL canvas 5) Motivational strategies	(--) - Small sample size - No significant effects - Bad effect sizes	(++) <u>Quantitative:</u> 1.60 (1=best 5=worst) <u>Qualitative:</u> - Overall positive feedback - Training was very demanding	(+) - Self-reflection exercise in the beginning was overwhelming and difficult to relate to for nascent entrepreneurs missing experience - Self-reflection exercise in the beginning may be more appropriate for senior entrepreneurs with more experience - Startup example may have been too complex as the identification seemed to be difficult for participants - Complex startup example may be more suitable for senior entrepreneurs - V3.1 is the final version for nascent entrepreneurs - V3.2 is more appropriate for senior entrepreneurs

6	Adaptions for the target group of **senior entrepreneurs**: 1) Expanding theoretical input to underline relevance for senior entrepreneurs 2) Expanding time by 1 hour	**<u>V3.3: Munich</u>** 7 hours onsite implementations without control group for **senior entrepreneurs:** 1) Expanded theoretical instruction of the SREL elements including a self-reflection exercise 2) Entrepreneurial or personal challenge addressed individually or in teams to apply theory 3) SREL canvas as scaffolding tool to support the application of the theory. 4) Role model presenting complex startup example to support the application of the SREL canvas 5) Motivational strategies	(-) - Small sample size - No significant effects - Good effect sizes	(++) <u>Quantitative:</u> 1.22 (1=best 5=worst) <u>Qualitative:</u> - Participants liked the balance between theory and practice - Intervention took too much time as startup entrepreneurs are always very busy	(-) - Participants were often distracted by business incidents
	1) Reducing time by 2 hours	**<u>V3.4: St. Gallen</u>** 5 hours onsite implementations without control group for **senior entrepreneurs:** 1) Expanded theoretical instruction of the SREL elements with less excurses including a self-reflection exercise 2) Entrepreneurial or personal challenge addressed individually or in teams to apply theory 3) SREL canvas as scaffolding tool to support the application of the theory. 4) Role model presenting complex startup example to support the application of the SREL canvas 5) Motivational strategies	(+) - Small sample size - Some significant effects - Good effect sizes	(++) <u>Quantitative:</u> 1.6 (1=best 5=worst) <u>Qualitative:</u> - Participants enjoyed the SREL theory and its relevance for their problem solving activities	(++) - Participants were focused during the whole intervention with almost no distraction - Participants benefitted from the SREL application

7 Findings

Our DBR approach to intervention development enabled us to address both our practical and theoretical research question. In the following, we provide 1) design elements being stable across target groups and contexts, and 2) specifications of the design elements helping educators to address different target groups and contexts.

7.1 Context-Independent Design Elements

We successfully developed an intervention fostering SREL among different target groups. Our context-independent design elements are trainer backgrounds and their role as coaches, the SREL cycle oriented curriculum, and the delivery based on scaffolded SREL processing. The background of trainers should combine academic knowledge with hands-on entrepreneurial experience to balance theory and action for participants, which is in line with Carey & Matlay (2010), Edwards & Muir (2012), and Pittaway & Cope (2007a). The curriculum should consist of 1) a theoretical SREL instruction, 2) an entrepreneurial challenge to apply SREL theory, 3) a specifically developed SREL canvas to support SREL theory application, 4) a role model presenting a startup example to guide the SREL canvas application, and 5) motivational strategies. The delivery should be oriented to Zimmermann's (2001) four-level hierarchy of SRL and contain scaffolded self-reflection exercises to increase participants' abilities to apply SREL gradually independently (cf. Yildiz & Celik, 2020, Ratten, 2022; Zimmermann, 2001). These design elements can be aligned to the respective target group.

7.2 Design Elements to Address Different Target Groups

When designing an entrepreneurship training, educators should be aware of their target audience (Balan, 2018). In our case, we were facing three different groups: students, nascent entrepreneurs, and senior entrepreneurs. The differentiation between students and nascent entrepreneurs is not always obvious. Particularly students can differ strongly in entrepreneurial aspiration, experience, and motivation (Fayolle &

Gailly, 2008). Moreover, there are students who already actively pursue founding or even already successfully founded a startup and therefore more likely should be classified as nascent entrepreneurs (Hemmasi & Hoelscher, 2005). To approach that, we designed three similar, but different training versions based on context-independent design elements that can be aligned with the respective target group.

Table 3 provides an overview of the design elements, their specification, and target group oriented alignment. For students, education "in" entrepreneurship is more appropriate. For nascent and senior entrepreneurs, education "through entrepreneurship is more relevant (cf. Pittaway & Edwards, 2012). Hence, students can approach their mainly personal challenges through entrepreneurial lenses and (nascent) entrepreneurs can actively engage in their entrepreneurial challenges and learn by doing.

Based on our findings, trainers can be specified in their background, the extent to which they support exchange of experience, the extent of entrepreneurial support, the extent of SREL support, and the content-time ratio they apply. To cater for students, an academic background is more important, than a practical. For senior entrepreneurs, the background should be balanced, and for nascent entrepreneurs, practice orientation is preferred to academic orientation. Nascent entrepreneurs face highly demanding entrepreneurial challenges like product-market fit. Therefore, they need more entrepreneurial support in organizing their thoughts than senior entrepreneurs with more experience and more mature business models. Accordingly, the entrepreneurial support should be higher. Consequently, the support with SREL strategies is happening more implicitly, to manage their cognitive capacities preventing overload. Following the same logic, students can be supported more explicitly, and senior entrepreneurs would need a balance. Obviously, senior entrepreneurs offer the most experience to exchange with. Thus, exchange of experiences should be facilitated most. The content-time ratio is dependent on the resilience of the target groups. Senior entrepreneurs were more receptive and trained in cognitively challenging situations. Moreover, they are shortest on time. Hence, time-content ratio should be highest. In line with SREL support and trainer

background, the theoretical instruction should contain many examples and use cases for students, as they have less experience to build on. Consequently, depth can be highest for entrepreneurs. As already mentioned, the challenge to approach during the training should be personal for students and entrepreneurial for nascent and senior entrepreneurs. Its relevance is key for all groups. The SREL canvas is aligned with the respective challenge. Each target group should be able to relate to the role model, presenting an authentic example. The complexity can be highest for senior entrepreneurs. To promote motivation, again, senior entrepreneurs can rely on a broad wealth of experience. Therefore, they benefit most, when being able to exchange and learn from each other. Students should be supported with more theory.

Table 3. Design Elements and Specifications for Alignment

Design element	**Specification**	**Alignment**		
		Students	**Nascent entrepreneurs**	**Senior entrepreneurs**
Trainer	Background	Academic orientation more important than practice orientation	Practice orientation more important than academic orientation	Balance between academic and practice orientation
	Entrepreneurial support	Low	High	Medium
	SREL support	More explicit than implicit	More implicit than explicit	Balance between explicit and implicit
	Fostering exchange of experience	Low	Medium	High
	Content-time ratio	Low	Medium	High
Theoretical instruction	Extent	High	Low	Medium
	Depth	Low	Medium	High
Challenge	Focus	Personal	Entrepreneurial	Entrepreneurial
	Relevance	High	High	High
SREL canvas		Aligned with challenge		
Role model presenting startup example	Role model background	Related to students	Related to nascent entrepreneurs	Related to senior entrepreneurs
	Example complexity	Low	Medium	High
Motivational strategies	Extent of motivation theory	High	Medium	Low

8 Conclusion

We developed a SREL intervention for students, nascent entrepreneurs, and senior entrepreneurs using DBR. Hence, we contribute to entrepreneurship education research in several ways.

First, many modern educational approaches like problem-based learning or discovery suggest to also foster skills in planning, monitoring, and regulating one's learning process next to content matters (Brownell & Jameson, 2004; Schmidt, Van der Molen, Te Winkel, & Wijnen, 2009; Thomas, 2009). Hence, we iteratively developed an intervention successfully fostering SREL. SREL is a cyclical process, wherein learners plan and adjust their self-generated thoughts, feelings, and actions towards the attainment of their entrepreneurial goals (Winkler et al.; 2021). Consequently, SREL puts entrepreneurs in the position to take agency of their learning process and therefore systematically develop towards entrepreneurial expertise.

Second, scholars call for more learner-centricity in entrepreneurship education (Chory-Assad, 2002; Summers & Svinicki, 2007). Entrepreneurship is still often taught implying linear problem solving processes similar to natural sciences. Building on Neck and Greene (2011) we suggest considering entrepreneurship being a method, helping entrepreneurs to be successful. This would require educational approaches to focus more on doing then learning (Linton & Klinton, 2019). Students should experience entrepreneurship by acting on and reflecting real-life challenges (Kassean et al., 2015). Our training includes education "in" and education "for" entrepreneurship and therefore offers a good example of how to address these current pedagogical challenges in entrepreneurship education.

Third, entrepreneurship education faces many different, often heterogeneous target groups and educational contexts (Mwasalwiba, 2010). Educators must understand their audience and the specific profile of their participants to decide for effective pedagogies and design successful interventions (Balan, 2018). We iteratively developed a training that can be aligned with students, nascent entrepreneurs, and senior entrepreneurs. Our context-independent design elements can be oriented to

each of these target audiences. Moreover, we provide guidance on how to exactly calibrate the specific design elements depending on participant characteristics.

Fourth, to address the identified pedagogical challenges, entrepreneurship education is in need of more iterative, flexible, and calibrated development approaches (Bhave, 1994; Sull, 2004). In most educational real-life situations, the application of RCTs is challenging (Longva & Foss, 2018). For RCTs to be implemented correctly, contextual features and participants need to be strictly controlled. Unfortunately, it is impossible for educators to replicate their curriculum and pedagogies in varying contextual environments with differing participants as it is usual in entrepreneurship education (Norman, 2003). Therefore, we suggest following DBR. DBR aims for generating new theories, artifacts, and pedagogies in naturalistic settings, that are validated through iterative application (Messick, 1992). To evaluate the respective intervention implementations, we propose data triangulation to build on data from different sources (Denzin, 1970; Flick, 2011).

Fifth, to illustrate entrepreneurship educators how DBR can be applied, we iteratively designed a context-specific entrepreneurship training. The development process was oriented to McKenney & Reeves (2012) three phases: A&E, D&C, and E&R. Six design cycles containing nine training implementations resulted in three version of an intervention successfully fostering SREL among different target groups.

9 Limitations and Future Research

This paper represents only a work in progress status with preliminary findings. We will therefore continue with further design cycles and evaluations to identity additional insights. Particularly the versions for nascent and senior entrepreneurs are suggested to be verified with a larger sample including control groups. Also the student sample can be further tested for participant satisfaction and context adequacy. In the following, we present the identified limitations.

First, we were able to implement most of the interventions by ourselves as the research team covers appropriate practical and academic experience. We are aware of the underlying subjectivity in the evaluation process. Therefore, we included uninvolved team members into our regular reflection cycles.

Second, the boundaries between students and nascent entrepreneurs are fluent. Two of our student trainings were implemented within an entrepreneurship master's. Therefore, some of the participants were already pursuing startup ideas, whereas others were only interested in entrepreneurship in general. However, this is in line with our findings that our student version also worked for nascent entrepreneurs with only minor modifications.

Third, implementations, where participants were attending the training voluntarily showed greater commitment, which may have influenced the positivity of statistical effects. To counteract, we also relied on participant feedback and trainer protocols within data triangulation to evaluate the implementations and derive with design decisions.

Fourth, trainers are an important design element influencing participant feedback and statistical results. Due to time constraints and geographic restrictions, we have not been able to provide the same trainers for each implementation. For each intervention, we deployed an academic and a practical trainer.

Fifth, we were dealing with varying sample sizes from nine to 127 participants in our implementations. Obviously, this has an influence on the trainer-participant ratio and therefore, the participant feedback, and potentially the effects. However, we managed to generate significant effects with a sample size of 127 and 18. To account for the small samples, we also evaluated the effect sizes. Particularly, in the beginning of the intervention development it is not reasonable to work with large samples.

Sixth, to measure the statistical effects we implemented a specifically developed SREL scale for the entrepreneurship context combining forethought, performance, and self-reflection phase (Bellwald et al., 2023). Therefore, we adapted the item context to the perspective of the students.

10 Appendix

Table 4. Overview of Effects

	Skala		*n*	T1		T2		t	df	p	Cohens *d*
				M	SD	M	SD				
Online	FP_Cog_AA		17	3.75	.74	4.31	.53	2.852	16	.012*	.692**
	FP_Mot_EE		17	4.04	.75	4.31	.61	1.496	16	.154	.363*
	FP_MC_SW		17	3.56	.90	3.85	.79	1.461	16	.163	.354*
	PP_Cog_HS		17	4.12	.55	4.35	.52	1.704	16	.108	.413*
	PP_Mot_VolSt		17	3.92	.64	4.08	.53	0.901	16	.381	.218
	PP_MC_SWa		17	3.31	.63	3.57	.69	1.540	16	.143	.374*
	RP_Cog_SB		17	3.98	.82	4.24	.63	1.700	16	.109	.412*
	RP_Mot_SR		17	4.00	.56	3.88	.67	0.637	16	.533	.155
	RP_MC_KA		17	4.10	.39	4.24	.52	0.789	16	.442	.191
Vaduz 1	FP_Cog_AA	TG	7	4.07	.89	4.25	.46	0.633	6	.550	.239
TG & CG		CG	8	4.25	.40	4.22	.41	0.261	7	.802	.092
	FP_Mot_EE	TG	7	3.86	.47	3.90	.37	0.420	6	.689	.159
		CG	8	4.21	.43	4.13	.35	0.552	7	.598	.195
	FP_MC_SW	TG	7	3.86	.85	3.93	.89	0.203	6	.846	.077
		CG	8	3.56	.73	3.81	.59	1.871	7	.104	.661
	PP_Cog_HS	TG	7	4.00	.65	4.32	.53	1.890	6	.108	.714**
		CG	8	4.06	.46	4.34	.48	2.049	7	.080	.725
	PP_Mot_VolSt	TG	7	4.05	.65	4.24	.60	1.333	6	.231	.504*
		CG	8	4.00	.53	4.13	.43	0.814	7	.442	.288
	PP_MC_SWa	TG	7	3.24	.98	3.33	.98	0.420	6	.689	.159
		CG	8	3.63	.42	3.50	.71	0.753	7	.476	.266
	RP_Cog_SB	TG	7	3.86	.66	3.86	.57	0.000	6	1.000	.000
		CG	8	3.79	.67	3.92	.61	0.532	7	.612	.188
	RP_Mot_SR	TG	7	3.93	.67	4.14	.63	0.660	6	.534	.249
		CG	8	3.81	.88	4.19	.80	2.049	7	.080	.725
	RP_MC_KA	TG	7	4.10	.60	4.00	.69	0.330	6	.752	.125
		CG	8	3.96	.45	4.13	.47	0.882	7	.407	.312
Vaduz 2	FP_Cog_AA	TG	12	3.81	.60	3.88	.39	0.464	11	.651	.134

TG & CG		CG	10	4.43	.35	4.23	.43	1.714	9	.121	.542
	FP_Mot_EE	TG	12	4.28	.42	4.11	.59	1.149	11	.275	.332*
		CG	10	4.27	.58	4.20	.48	0.391	9	.705	.124
	FP_MC_SW	TG	12	4.21	.62	4.29	.62	0.304	11	.767	.088
		CG	10	3.85	.82	4.30	.35	1.784	9	.108	.564
	PP_Cog_HS	TG	12	3.85	.79	4.06	.61	1.000	11	.339	.289*
		CG	10	4.35	.38	4.35	.39	0.000	9	1.000	.000
	PP_Mot_VolSt	TG	12	3.94	.65	4.06	.34	0.573	11	.578	.165
		CG	10	4.27	.72	4.43	.52	0.785	9	.453	.248
	PP_MC_SWa	TG	12	3.33	.65	3.28	.74	0.283	11	.782	.082
		CG	10	3.73	.70	3.80	.53	0.557	9	.591	.176
	RP_Cog_SB	TG	12	4.17	.50	4.11	.52	0.378	11	.713	.109
		CG	10	4.10	.52	4.30	.58	0.943	9	.370	.298
	RP_Mot_SR	TG	12	4.13	.61	4.25	.40	0.761	11	.463	.220
		CG	10	4.20	.54	4.20	.54	0.000	9	1.000	.000
	RP_MC_KA	TG	12	4.03	.58	3.89	.76	0.890	11	.392	.257
		CG	10	4.10	.50	4.03	.48	0.688	9	.509	.218
Paderborn 1	FP_Cog_AA	TG	11	3.86	.58	4.48	.41	3.545	10	.005**	1.069***
TG & CG		CG	14	4.21	.58	4.14	.44	0.520	13	.612	.139
	FP_Mot_EE	TG	11	3.91	.56	4.06	.81	1.456	10	.176	.439*
		CG	14	3.90	.82	4.12	.48	1.014	13	.329	.271
	FP_MC_SW	TG	11	3.23	.90	3.95	.57	2.390	10	.038*	.721**
		CG	14	3.46	.80	3.54	.75	0.434	13	.671	.116
	PP_Cog_HS	TG	11	4.07	.53	4.18	.59	0.959	10	.360	.289*
		CG	13	4.27	.60	4.33	.56	0.443	12	.666	.123
	PP_Mot_VolSt	TG	11	3.64	.66	4.21	.48	3.540	10	.005**	1.067***
		CG	13	4.36	.40	4.15	.68	1.298	12	.219	.360
	PP_MC_SWa	TG	11	3.21	.56	3.30	.53	0.971	10	.355	.293*
		CG	13	3.54	.60	3.46	.37	0.466	12	.650	.129
	RP_Cog_SB	TG	11	3.67	1.00	3.97	.71	1.087	10	.302	.328*
		CG	13	4.05	.64	4.00	.68	0.313	12	.760	.087
	RP_Mot_SR	TG	11	3.59	.83	4.14	.67	2.292	10	.045*	.691**
		CG	13	4.12	.42	4.00	.41	1.389	12	.190	.385
	RP_MC_KA	TG	11	3.82	.38	4.09	.65	1.218	10	.251	.367*

		CG	13	4.13	.67	4.13	.78	0.000	12	1.000	.000
Paderborn 2 TG & CG	FP_Cog_AA	TG	67	4.16	.59	4.36	.55	3.428	66	.001**	.419*
		CG	60	4.13	.54	4.10	.56	0.405	59	.687	.052
	FP_Mot_EE	TG	67	4.05	.63	4.07	.66	0.329	66	.743	.040
		CG	60	4.09	.51	4.00	.62	0.951	59	.345	.123
	FP_MC_SW	TG	67	3.19	.80	3.64	.76	4.781	66	.000***	.584*
		CG	60	3.20	.72	3.24	.80	0.447	59	.656	.058
	PP_Cog_HS	TG	67	3.79	.75	4.04	.55	2.719	66	.008**	.332*
		CG	60	3.80	.63	3.86	.72	0.692	59	.492	.089
	PP_Mot_VolSt	TG	67	3.72	.78	3.89	.69	2.440	66	.017*	.298*
		CG	60	3.78	.69	3.74	.65	0.580	59	.564	.075
	PP_MC_SWa	TG	67	3.20	.82	3.43	.70	2.766	66	.007**	.334*
		CG	60	3.09	.75	3.09	.77	0.000	59	1.000	.000
	RP_Cog_SB	TG	67	3.59	.69	4.11	.64	5.916	66	.000***	.723**
		CG	60	3.66	.74	3.61	.82	0.497	59	.621	.064
	RP_Mot_SR	TG	67	3.78	.62	4.01	.63	2.969	66	.004**	.363*
		CG	60	3.82	.52	3.93	.56	1.604	59	.114	.207
	RP_MC_KA	TG	67	3.93	.64	4.00	.85	0.645	66	.521	.079
		CG	60	3.83	.81	3.82	.79	0.072	59	.943	.009
St. Gallen 1 TG & 2 CGs	FP_Cog_AA	TG	32	4.22	0.50	4.48	0.48	-2.796	31	.009**	0.494*
		CG1	12	4.23	0.33	3.96	0.45	1.438	11	.178	0.415
		CG2	16	3.83	0.84	3.77	0.80	0.259	15	.799	0.065
	FP_Mot_EE	TG	32	3.99	0.70	4.30	0.60	-2.653	31	.012*	0.469*
		CG1	12	4.03	0.54	3.86	0.39	1.198	11	.256	0.346
		CG2	16	3.96	0.57	3.79	0.53	1.936	15	.072	0.484
	FP_MC_SW	TG	32	3.48	0.84	3.75	0.89	-2.000	31	.054	0.354*
		CG1	12	3.67	0.65	3.46	0.75	1.449	11	.175	0.418
		CG2	16	3.84	1.01	3.75	1.05	0.401	15	.694	0.100
	PP_Cog_HS	TG	32	3.65	0.90	4.38	0.75	-5.125	31	.000***	0.906***
		CG1	12	3.90	0.42	3.96	0.37	-0.638	11	.536	-0.184
		CG2	16	3.91	0.58	3.97	0.69	-0.447	15	.661	-0.112
	PP_Mot_VolSt	TG	32	3.77	0.67	4.32	0.49	-4.486	31	.000***	0.793**
		CG1	12	3.75	0.57	3.86	0.44	-0.632	11	.540	-0.183
		CG2	16	3.94	0.67	3.92	0.52	0.187	15	.855	0.047

	PP_MC_SWa	TG	32	3.04	0.75	3.61	0.86	-4.932	31	.000***	0.872***
		CG1	11	3.21	0.82	3.24	0.58	-0.166	10	.871	-0.050
		CG2	16	3.33	0.72	3.31	0.84	0.212	15	.835	0.053
	RP_Cog_SB	TG	32	3.93	0.76	4.43	0.70	-3.115	31	.004**	0.551*
		CG1	11	3.85	0.85	3.97	0.43	-0.559	10	.588	-0.169
		CG2	16	3.52	0.82	3.65	0.89	-0.555	15	.587	0.139
	RP_Mot_SR	TG	32	4.22	0.76	4.58	0.51	-3.125	31	.004**	0.552*
		CG1	11	3.91	0.66	3.59	0.44	1.550	10	.152	0.467
		CG2	16	3.84	0.70	3.72	0.75	0.591	15	.564	0.148
	RP_MC_KA	TG	32	3.89	0.82	4.43	0.47	-3.240	31	.003**	0.573*
		CG1	11	3.76	0.47	3.85	0.56	-0.463	10	.653	-0.140
		CG2	16	3.67	0.83	3.40	0.55	1.421	15	.176	0.355
Saaarbrücken	FP_Cog_AA		15	4.12	.51	4.32	.55	1.233	14	.238	.318*
	FP_Mot_EE		15	4.04	.43	4.04	.43	0.000	14	1.000	.000
	FP_MC_SW		15	4.03	.79	3.97	.72	0.307	14	.764	.079
	PP_Cog_HS		15	3.87	.83	3.97	.83	0.695	14	.499	.179
	PP_Mot_VolSt		15	3.98	.43	3.96	.55	0.180	14	.860	.046
	PP_MC_SWa		15	2.96	.43	3.27	.42	2.114	14	.053	.546*
	RP_Cog_SB		15	3.38	.68	3.69	.72	1.503	14	.155	.388*
	RP_Mot_SR		13	4.27	.56	4.00	.58	1.620	12	.131	.449*
	RP_MC_KA		14	4.05	.52	3.98	.56	0.416	13	.684	.111
Munich	FP_Cog_AA		9	3.61	.53	3.64	.82	0.084	8	.935	.028
	FP_Mot_EE		9	4.19	.38	3.85	1.07	0.926	8	.382	.309*
	FP_MC_SW*		9	4.26	.60	4.15	.77	0.436	8	.674	.145
	PP_Cog_HS		9	4.06	.81	4.47	.51	1.925	8	.090	.642*
	PP_Mot_VolSt		9	4.00	.69	4.19	.50	0.806	8	.444	.269*
	PP_MC_SWa*		9	3.00	.82	3.22	.90	0.970	8	.360	.323*
	RP_Cog_SB*		9	3.59	.72	3.96	.79	1.208	8	.261	.403*
	RP_Mot_SR		9	4.17	.56	4.11	.60	0.286	8	.782	.095
	RP_MC_KA*		9	3.56	.88	4.17	.66	2.137	8	.065	.712**
St. Gallen 2	FP_Cog_AA		18	3.68	.95	4.15	.76	2.923	17	.009**	.689**
	FP_Mot_EE		18	4.13	.65	4.20	.83	0.846	17	.409	.199
	FP_MC_SW		18	3.72	.97	3.75	.58	0.104	17	.918	.025
	PP_Cog_HS		18	3.99	.81	4.26	.60	2.149	17	.046*	.507*

PP_Mot_VolSt	18	3.78	.73	4.06	.51	2.482	17	.024*	.585*
PP_MC_SWa	18	2.87	.43	3.04	.41	2.034	17	.058	.479*
RP_Cog_SB	18	3.46	.69	3.87	.47	2.170	17	.045*	.511*
RP_Mot_SR	18	3.56	.62	4.03	.50	2.582	17	.019*	.609*
RP_MC_KA	18	3.74	.65	3.98	.72	1.584	17	.132	.373*

Significance: * $p < 0.05$; ** $p < 0.01$; $p < 0.001$
Effect Size: * = small effect; ** = medium effect; *** = large effect

FP_Cog_AA = task analysis
FP_Mot_EE = outcome expectancy
FP_MC_SW = self-efficacy
PP_Cog_HS = help seeking
PP_Mot_VolSt = volitional strategies
PP_MC_SWa = self-awareness
RP_Cog_SB = self-evaluation
RP_Mot_SR = self-reaction
RP_MC_KA = causal attribution

Table 5. Examplary Participant Feedback

Wie gefiel Ihnen der Workshop insgesamt?	Welches Feedback geben Sie uns zum gesamten Workshop?	Was könnten wir am Workshop verbessern?	Was lief in Ihren Augen beim Workshop gut?
gut	Wurde interessant gestaltet. Nette Vortragende die ihr Wissen gut übermitteln konnten. Die interaktive Gestaltung war super.	Vielleicht etwas weniger Surveys, da oftmals immer wieder die selben Fragen gestellt wurden.	
mittel	Simulation war interessant, nur leider fehlt das AHA-Erlebnis am Ende. Man weiß am Ende nicht wirklich was passiert ist, wenn man eine bestimmte Strategie verfolgt hat. Das ist macht das ganze eher zu einem einfachen Computerspiel bei dem es nur Erfolg oder Misserfolg gibt. Eine wirkliche kurze, prägnante Strategie um auch Zukünftig besser mit Unsicherheiten umzugehen ist bei mir jetzt nicht hängen geblieben. Dazu müsste ich mich in der jeweiligen Situation nochmals genauer damit beschäftigen.	Den Theorieteil auf das Wesentliche reduzieren. Komprimierte Toolbox an die man sich einfach im Alltag erinnern kann. So etwas kann man bestimmt auch gut mit interaktiven Spielen während des Workshops vermitteln. Wenn man im Geschäftsalltag vor Unsicherheiten steht, braucht man etwas an das man sich erinnern kann und was schnell anwendbar ist.	Der spielerische Aspekt mit der Simulation war gut und interessant.
gut	Der Teil der Simulation war sehr interessant und hat zum Austausch angeregt, der andere Teil war sehr theoretisch und aus meiner Sicht nicht sehr lehrreich.	Der theoretische Teil sollte auf einen halben Tag bzw. 2,5h verkürzt werden.	Die Simulation ist schon sehr ausgreift, es hat Spaß gemacht diese zu durchlaufen.
mittel	Die Simulation ist zu wenig komplex/unsicher, um dabei vorgestellte Tools anzuwenden.	konkrete reale komplexe/unsichere Praxisbeispiele vorstellen - z.B. Unternehmen X stand vor der Aufgabe/Entscheidung irgendetwas zu ändern und sah sich mit verschiedenen Umweltfaktoren konfrontiert. Was ist zu tun, um die Unsicherheit und die Komplexität der Situation zu überwinden? -> Tools aufzeigen, um diese zu bewältigen	
gut	Das Format von dem Workshop war sehr gut, dadurch dass es eine Mischung aus Theorie und Praxis war.	Etwas mehr Input wie wir mit komplexen oder unsicheren Situationen tatsächlich umgehen können. Vielleicht auch noch mehr Beispiele aus der Praxis.	Die Organisation und der Zeitplan lief sehr gut.

schlecht	Retrospektiv betrachtet konnte ich wenig bis nichts handfestes aus dem Workshop mitnehmen. Die Szenarienspiele waren lustig und unterhaltsam, jedoch für eine praktische Umsetzung nicht geeignet. Hierzu müsste man konkret analysieren was richtig und falsch gemacht wurde. Zudem wäre es interessant zu wissen, inwiefern man sich in den verschiedenen Szenarien verhalten muss um profitabler zu sein gegenüber den anderen. Dies wurde leider nicht behandelt bzw. nur als kleine Diskussion. Primär nehme ich die die Szenariospiele mit und nicht ein wissenserweiterndes Know-How. Die Surveys zwischendurch sind natürlich gut und recht, jedoch wird dem Studierenden hier auch kein Mehrwert geschaffen. Verstehe auch, dass es ein wissenschaftliches Projekt ist, aber eventuell bin ich selbst für so etwas nicht ideal.	Siehe oben.	Die Vortragenden waren fachlich kompetent und man hatte auch Spaß während des Workshops.
mittel	.	.	
mittel	Die Input Session fand ich nicht besonders passend und hatten für mich absolut keinen Mehrwert.	Nur an den eigenen Start-ups arbeiten und die Venturesoftware. Evtl einen Blockinput aber nicht länger als 90 min	
gut	Sehr sympathische Vortragende Gut, externes Feedback zu unseren Ideen zu bekommen und neue Gedankenanstöße zu bekommen	-	
gut	Der gesamte Workshop war grundsätzlich gut und das Highlight war natürlich die Simulation.	Ich hätte mir grade am ersten Tag mehr Gruppenarbeit und Vertiefung zu den einzelnen Strategien in der Simulation gewünscht. Der Foliensatz hat mir ehrlicherweise nicht geholfen weder bei der Simulation, noch für das Gesamtverständnis. Ich fände eine Intensivierung der Simulation interessanter und zielführender als Frontalunterricht mit Folien.	Der zweite Tag mit den Gruppenarbeiten war weniger von Zeitdruck geprägt als der erste Tag.
gut	generell war der Workshop gut aufgebaut, bin mir jedoch nicht ganz sicher, was dieser mit Selfmanagement am Hut hat.	mehr zum Thema Selfmanagement lehren	Simulationsspiel war gut und hat Abwechslung reingebracht. Die Inhalte im Startup-Lab waren besser anwendbar für den Simulator und generell für die versch. Ideen.
gut	Das Spielen der Simulation hat Spaß gemacht, der Zusammenhang mit der Simulation wird erst spät ersichtlich wird.	Theoretische Inhalte getrennt vom Durchlaufen der Simulation. Noch mehr auf die konkreten Startup Lab Ideen eingehen, daher auch die startup-Lab-Gruppen nicht trennen.	- dass zum Schluss noch konkret auf die Startup-Lab-Ideen eingegangen wurde. - gute Atmosphäre

Table 6. Example: Evaluation of Context Adequacy

Evaluation of Context Adequacy

Trainer Protocoll

- Gruppenarbeit 1 zu kurz, statt 10 Min eher 15 Min und danach eine erste kurze Pause
- Ggf. künftig stärker darauf eingehen, dass die TN reflektieren sollen und nicht nur den Fokus auf die Simulation legen
- Die Zeit beim Warten ist sehr anstrengend wenn alle spielen, hier ggf. generell am Aufbau noch etwas anpassen. Während der Spielphase kein Austausch zwischen den TN, dies ggf. erhöhen
- Bei der Aktivierung nach der letzten Pause nicht nur einen Punkt abarbeiten, sondern 3 Punkte nennen, damit es auch irgendwas bringt. Das erste war ja fast mehr ein Beispiel. Und vor allem selbst auch vormachen und mitmachen, damit die TN zum Mitmachen angeregt werden
- Bei der 3. Runde SREL-Reflexion reichen insgesamt 10 Minuten
- Auch bei Runde 4 SREL Vorschau & Entscheidungen geht es schneller als 25 Min, kürzen und Zeit einsparen
- Bei der Auswertung hinterher die Unternehmensnamen nennen und keine TN „bloßstellen“, wenn die TN sagen wollen, wer sie waren, können sie das von selbst machen
- Ggf. in der Theorie noch auf Frustration eingehen (?)
- Siegerehrung größer aufziehen, z.B. mit Applaus im Hintergrund und vor allem auch zeigen, dass es nicht nur um den Net-Profit geht, sondern z.B. nach der Verteilung an verkauften Produkten ganz andere vorne liegen
- Das Ende des Tages zog sich extrem, vorher definitiv abklären, wer den Tag abschließt und dann Feierabend, die TN haben da tendenziell eh keine Lust mehr
- Folie mit Titel „Management Summary“ verwirrt TN, woher kommt plötzlich das Management?
    - Vormittag 1. Breakout Raum war gut, nochmal zu überlegen
    - Nachmittag 1. Runde passte die Zeit, manchmal war zu viel Zeit, 30 min war zu lange Zeit
    - 4 Runden war ausreichend, nicht mehr
- Genaue Angaben für die TN war gut
- Sicherstellen, dass wir die Daten der Simulation auch mit den Fragebögen verknüpfen können und entsprechend mit dem Canvas →dürfen wir das? Wegen der Mail, die mir am 17.5. weitergeleitet wurde
- Das Canvas anpassen, das dort auch einzelne Zellen den Code erfassen und das nicht während des Workshops in den Chat kopiert werden muss
- Idee: Statt Vorname bei Account Erstellung den Fragecode verwenden, damit wir das verknüpfen können
- TN-Code sollte in der Excel auch explizit abgefragt werden und dort vorbereitet sein, nicht in den Chat kopieren
- Zu Beginn des Tages klären, dass im Workshop geduzt wird, das war beim internen Pretest besser
- Trainer 1 hat insgesamt 135Minuten für die Theorie gebraucht, dort ggf. zwei 5 Minuten Pausen einbauen o.ä.
- Morgens das Team besser vorstellen, die TN konnten so doch gar nicht genau wissen, wofür der Fragebogen war
- Die Zusammenarbeit der HSG und der UPB wurde für mich persönlich in der Einleitung nicht ganz klar

- Theorie und Praxis besser aufeinander abstimmen, nach der ersten Runde ggf. mal ein Beispiel aufzeigen, wie das jetzt zusammenhängt, damit TN bessere Vorstellung davon bekommt
- Praktische Beispiele aus der Unternehmenswelt mit Beispielen aus den Interviews aufbereiten, damit die TN bessere Anknüpfungspunkte haben
- Bei den Persönlichkeiten die Namen drunter schreiben für diejenigen, die die Leute nicht von Fotos erkennen
- „Bessere“ Unternehmer-Persönlichkeiten aufnehmen

Participant feedback during the training

- Echt schwierig mit so vielen verschiedenen Fenstern
- CANVAs war gut und hilfreich für eine aktive Reflexion
- Am Anfang wollte man noch aufsteigen, am Ende wollte man nicht weiter absteigen, weil die anderen auch ihren Net Profit erhöhen konnten
- War am Ende sehr müde, Motivation ist gesunken
- Abrutschen ist demotivierend, Spitze kann nicht erreicht werden, neues Teilziel gesetzt wieder in die Mitte kommen
- Wenn man in bestimmten Bereichen abgehängt wird, wird man demotiviert, Ranglistenpositionierung stimmte aber
- Hatte von Anfang an eine gute Strategie, deshalb war die Motivation hoch, aber der Gedanke die Konkurrenz kommt, Unsicherheit
- Einer hat mit höchstmöglichem Preis gestartet, Gamification Anteil gefiel sehr gut deshalb motiviert

Thematic Analysis of Participant Feedback

Welches Feedback geben Sie uns zum gesamten Workshoptag?

interessante Thematik, **leider sehr lange und man wird schnell müde**
Super gemacht. Mir gefallen solche Simulationen sehr gut, ich versuche dabei auch wildeste Situationen oder Extremsituationen zu testen. Mir kommt es gar nicht so stark darauf an, erfolgreich (der Beste) zu sein, eher darauf eine tolle Erfahrung während der Simulation zu machen. Daher war es für mich optimal und sehr spannend.
Guter Workshop, die Simulation hat auch Spass gemacht, aber vielleicht wäre eine vorgezeigte Proberunde angebracht und eine anonyme Fragestellung, sodass man sich nicht geniert (falls die Frage für andere dumm erscheint).
Der Workshoptag war super interessant und mir hat die Simulation mega gefallen. Vlt könnte man den Theorieteil noch einbisschen verkürzen, ansonsten super. Leute waren super nett!
Die erste Hälfte war anstrengend und die zweite Hälfte hat super Spass gemacht.
top. super vorbereitet. gute mischung aus input und eigenen aufgaben
Der Workshop **war zu lang.** Sowohl der Input als auch der Freiarbeitsteil. Auch das Canvas sollte prägnanter sein, da man sonst nicht die Zeit hat sich in die Aufgabe zu versetzen und das Canvas auszufüllen.
was nice. Ihr seid gute Redner, gut vorbereitet, spannedes Set-up mit der Sim, die auch Spass macht. Der Lerneffekt war für mich aber jetzt spontan klein. Ich hatte aber auch schon einmal im Rahmen eines Kurses eine ähnliche Sim durchgespielt. Der Umgang mit Unsicherheit ist ziemlich banal. Vielleicht ist das ein Asset eures Modells, dass es so einfach wirkt, weil ihr es so gut geschafft habt, Dinge herunterzubrechen, wirklich etwas gelernt habe ich nicht. Selbstreflexion ist wichtig, Planung, Ausführung und Reflexion als Schritte sinnvoll,

und daraus einen bewussten Prozess zu machen immer gut, klar. Vieles ist für mich sehr gut aufgearbeiteter common sense, aber ich habe jetzt auch ein Jahr International Management studiert und bin vielleicht auch allzu sehr sowieso auf dieser Schiene unterwegs
Viel aber interessanten Input anfangs erschwert den Anfang der Simulation. Dort ggf. bei der Übungsrunde und der Runde 1 mehr Zeit einplanen. GGf. den Bericht einmal zusammen durchgehen bzw. erklären
Grundsätzlich gut, den Input am Morgen könnte man vielleicht etwas mehr aufsplitten (zb. 2 Pausen). Bei der Simulation war ich am **Anfang ziemlich gefordert, um überhaupt die Fragestellung zu vertstehen und mit dem Tool umzugehen**, bevor ich mich überhaupt auf eine Strategie konzentrieren konnte. Die Arbeit mit dem Tool hat aber im Nachhhinein Spass gemacht.
I thought the whole day was great, and every aspect of it was in support of the purpose of the workshop, 100%. my only concern was that having to fill out the same questions every round on the excel was quite hard after a while. The line of questioning was a bit vague as well, so I had to leave some blank, because I felt that I had answered that in the previous question box. Also because of time pressure I did not have a chance to review what I wrote on the excel, so it is not my proudest work.
Ein sehr gutes Feedback. Ich fand den Theorieblock am Morgen sehr anregend, weil der Referent praktische **Beispiel mit dem Skifahrer Marcel Hirscher** gemacht hat. Solche Beispiele unterstützen, um ein besseres Verständnis für die Thematik zu bekommen.
Sehr interessanter und lehrreicher Workshop, dadurch, dass man Theorie und Praxis verbunden hat.
well done! es war spannend sogar der Morgen, der doch viel Theorie hatte. gut war, dass ihr mit den Runden Zeit eingespart habt. Es war zu Beginn eher langatmig (viel Zeit), am Schluss zackig. Das war gut!
Ich fand der Tag war gut strukturiert, auch der Theorieteil am Morgen ging völlig in Ordnung. Ich finde alle Teile einzeln an sich waren sehr sinnvoll und hilfreich sowie lehrreich, aber ich muss auch ehrlichsten, dass besonders der letzte Teil mit der Simulation in Kombination mit dem Canvas, dort fehlte mir der Bezug. So ausführlich wie man die Fragen des Canvas hätte beantworten können, konnte man das "Spiel gar nicht spielen" bzw. ich hätte viel mehr Zeit gebraucht, für beiderlei, falls ich mir ernsthaft etwas dahinter hätte überlegen wollen. Also nicht falsch verstehen, ich habe mir natürlich meine Gedanken gemacht, aber halt nur sehr oberflächlich, was ich fast Schade fand.
Ich habe viel gelernt und werde im Beruf sicher noch besser performen können.
war intensiv, viele neue Inputs, aber drei Simulationsrunden hätten m.E. genügt, weil Motivation irgendwann schwindet.
Sehr interessanter und lehrreicher Tag! Ich konnte sowohl einige Inhaltliche Punkte wie auch ergebnisse aus der Reflektion für mich mitnehmen, Die Breakoutdiskussionen morgens waren eine super Auflockerung des Theorieblocks!
ich bin zufrieden, der Workshop **ging mir persönlich etwas zu lang.** Ich fand es aber sehr toll wie versucht wurde so viel Interaktivität herzustellen
Super Ausarbeitung
Super organisiert, sehr kurzweilig präsentiert, spannendes Thema und coole Aktivität (Simulation). Insgesamt: Sehr spannender Tag!

Was könnten wir am Workshop verbessern?

mehr pausen
Es war am Anfang vielleicht etwas viel Theorie. Oder vielleicht auch etwas wenig Pause zwischen der Theorie. Hier wäre es sicher besser gewesen, das etwas aufzulockern.

Siehe oben zur Simulation. Zusätzlich habe ich nicht ganz verstanden wie das SREL im allgemeinen Komplexität und Unsicherheit reduziert. Es war sehr auf die eigene Persönlichkeit ausgerichtet. In anderen Kurses wird das Thema ganz anders angegangen- jedoch auch aus der aufgezeigten Perspektive des SREL macht es Sinn.
Den Theorieteil ein bisschen verkürzen und allenfalls mehr Pausen?
Weniger Zeit bei der Simulation, damit man eventuell mehr Runden spielen kann.
weniger Zeit für Simulation
siehe oben
Für mich hätte es weniger Zeit für die Sim gebraucht, das wäre für mich auch gerne kompakter gegangen. Inwiefern jetzt der Link mit Unsicherheit zur Sim da war, ist für mich nicht ganz klar. Klar, es gab unbekannte, aber es wäre wohl spannender gewesen, wenn man viel weniger gewusst hätte. Unsicherheit ist für mich relevant bezüglich Black Swan Events, bezüglich fundamental ändernden Rahmenbedingungen, unknowable uknonwns, known unknows und nicht eine Firma führen in einem stabilen Marktumfeld. .
Bei der Übungsrunde und der Runde 1 mehr Zeit einplanen Ggf. weitere Komplexität wie in Runde 3 einbauen (Hat bei mir die Motivation gefördert, da es den Eindruck macht, man könnte noch Plätze aufholen) 1-2x 5 Minuten Pausen zusätzlich bei Längeren Phasen am Vormittag
Villeicht vor der Simulation genauer erklären wie der Nachmittag abläuft und was das Ziel der Übung ist. Also konkret, dass man sich eine Marktstrategie überlegen wird und diese mit dem Tool umsetzt, eifach um ein besseres Grundverständnis zu schaffen.
Change the reflection process. Ask less questions perhaps, or give people more opportunity to give more in depth answers in one question box. I often realized i had already answered the question in the previous question box.
Die Breakoutsession könnte man ein wenig länger machen. In meiner Gruppe war die Zeit eher zu kurz, da wir reichlich viel zu besprechen hatten.
Ich denke für den Zweiten Teil, könnte man ein weiteres **etwas schematischeres "Canvas" erstellen,** welches mehr auf Funktionen und Handlungsmöglichkeiten der Simulation spezifisch eingeht. Und das jetzige Canvas finde ich eher als Anfangs und Schluss-Evaluation gut geeignet, bei der man dann alle Strategischen Komponenten vergleichet von Anfang bis ende und dafür etwas gründlicher, um sich dafür auch intensiver mit dem Thema auseinandersetzen zu können. (Bzw. mit den Gedankenschritten)
Alles top.
Mehr praktische Inputs aus Ihrer Sicht hätten mir gefallen; **Reelle Beispiele wo man kritische Situationen gehandelt hat.**
Den inhaltlichen Input am Morgen könnte man z.B. mit einem digitalen Whiteboard vorbereiten und präsentieren, das ist meiner Erfahrung nach angenehmer und interaktiver als Powerpoint über Zoom o.Ä. Die Idee mit dem Energizer war gut nur nicht optimal umgesetzt, ich persönlich mache da gerne Dinge "Rennt allemal bis vor die Türe und kommt zurück" oder kurze interaktive Kraetivübungen (z.B: 5 Min Breakouts zu zweit, verkauft euerem Gesprächspartner in 2 Minuten dan Gegenstand links von euch [Impovisations Pitch]).
Etwas lang und irgendwann (besonders die 3. und 4. Runde) waren dann echt mühsam, weil man irgendwann etwas gelangweilt von der Aufgabe war
Sobald wieder möglich vor Ort durchführen

Für Runde 2-4 der Simulation hatten wir m.E. etwas zu viel Zeit. Nach einer Weile hat man den Dreh raus und benötigt nciht mehr 25 Minuten. Meiner Meinung anch hätten 15 Minuten gereicht. Dann hätte man den Tag auch etwas früher abschliessen können

Was lief in Ihren Augen beim Workshop gut?

Die Simulationen waren der Hammer.
War gut strukturiert.
organisation, time mngt, absprache der redner
Kommunikation mit den Teilnehmern, Vermittlung der Grundidee, an welcher geforscht wird.
Planung, time management, war alles sehr smooth. Ich habe auch den Sprechern sehr gerne zugehört, und habe mich nicht wie bei so vielen online-formaten nach spätesten einer Stunde abgewendet
Erklärvideo war sehr gut Simulation hat Spaß gemacht Theorieinput war interessant
Ihr wart alle sehr motiviert und das hat geholfen, dass es sich nicht in die Länge gezogen hat, auch wenn es unter dem Strich von der Länge aus dem Homeoffice am oberen Limit ist.
The simulation was great, the breaks were well fitted in. I also really appreciated when we got a longer break, because i really needed it then. I also really enjoyed the presentation in the morning due to how intuitive, informative and implementable the content was. Very glad i participated in this course.
Balance zwischen Theorie und praktischem Beispiel. Auch fand ich die Breakout sessions gut, denn so konnten man sich austauschen und das gelernt gleich anhand eines Beispiels besprechen.
Gute Strukturierung und Vorbereitung des Workshops, Gute Aufteilung in Theorie und Praxis , Agenda als Überblick und gutes Zeitmanagement.
Theorie war spannend Gaming war cool!
Sehr sehr spannende Inhalte!
Die gesamte Organisation, die Pausenzeiten waren sehr gut gewählt und durchgeführt. Gute Abwechslung zwischen Vortrag vormittags und aktivem Teil nachmittags.
Zeitmanagement, Spannendes Simulationsgame gewählt
Direkte Anwendung des Kanvas während der Simulation, Vorstellungen einzelner zwischenergebnisse der Breeakouts in der großen Runde, Sich in der Simualtion ausprobieren zu können
Das im Theorieteil immer wieder in den break out rooms diskutiert werden konntewar eine super Idee un hat die Stimmung total aufgelockert

Welche Anmerkungen möchten Sie uns sonst noch zum Workshop mitgeben?

Gute Frage, ob man vielleicht **Simulation und Theorie auch vermischen** hätte können? Das würde den Theorieblock weiter entschärfen. Mir gefallen diese Gamification-Elemente wahnsinnig gut, daher sicher der Schwerpunkt in diese Richtung.
Weiter so.!!!!!!

gerne wieder
Coole Sache, hat sicher Potential, gerade mit der Simulation. Der Link Theorie-Sim könnte stärker betont werden, ich fand die Sim eher nicth so komplex und VUCA wie was ich mir im Vorhinein vorgestellt hatte (ich hatte mehr das Bild Airline nach 9/11 o.Ä. im Kopf, also absoluter Ausnahmezustand). **Auch das Framing zur Zielgruppe sollte für mich ein wenig klarer sein**. Als Business/Management Student sind diese Inhalte vielleicht nicht ganz so relevant, wie für einen Naturwissenschaftler, der sich an dieses Thema rantastet. Alles in allem aber ein Danke für eure Zeit, Inputs, und den Workshop als Ganzes! Alles Gute auf eurem weiteren Weg!
Austausch nach der Simulation in der 2er Gruppe vom Vormittag für den Erfahrungsaustausch
Vielleicht könntet ihr noch die Übertragung vom abstrakten Modell (input am Morgen) in die Simulation und das Canvas verbessern, indem ihr aufzeigt wie sich diese Phasen in der Praxis äussern. Grundsätzlich macht ihr das aber schon ziemlich gut. Ich denke es ist einfach als Aussenstehender zuerst schwierig vom abstrakten Model zu konkreten Learnings und Takeaways für sich selbst zu kommen. Da könntet ihr noch stärker unterstützen, indem ihr einen Framework bietet wie man das einfacher macht.
Well done. Would love to have another opportunity like this. And the simulation aspect was an amazing opportunity to put what we learned into practise. there were also many interactive elements, and people were open to share, so it was an exciting day!
ich fand ihn super!
alles in allem sehr spannend gewesen
Bin im Grossen und Ganzen zufrieden, da ich ein neues Tool kennengelernt habe und zum ersten Mal eine solche Online-Simulation erleben durfte (:
Ganz toll dass man dafür ein HSG Zertifikat bekommt :)
Vielen Dank an das ganze Team für den super Workshop!

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