

# Students' Responses to Teachers' Epistemological Frames in Entrepreneurship Education in Higher Education

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## Abstract

The focus of this study is on the epistemological frames that teachers employ to facilitate student learning in entrepreneurship education (EE). Drawing on three epistemological frames that teachers exhibit in teaching: delivering knowledge, guiding knowledge construction, and making space for collaborative and iterative knowledge construction, this study investigates what and how students learn about entrepreneurial behavior in response to teachers' epistemological frames. Our qualitative study focuses on a bachelor's-level EE course investigating the learning reflections of 12 students from six different teams, all of whom provided a report on a team exercise *The Entrepreneurial Movement*. For the students, the course was experienced as a relational activity that, through their responses and reflection, produced a learning journey with various knowledge-related and affective learning outcomes on entrepreneurial behavior. Our study introduces “*through*” competition as an applicable mode of learning in EE and shows how the suggested epistemological frames stimulate different student responses and complement each other in students' holistic learning about entrepreneurial behavior. We identify potential future research directions and provide implications for educators and students in EE.

## Keywords

framing, entrepreneurial behavior, entrepreneurship education, higher education

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## Introduction

The literature on entrepreneurship education (EE) has examined how students learn in different contexts (Thomassen et al., 2020). Many scholars agree that to learn entrepreneurship, one must engage in entrepreneurship (Neck & Corbett, 2018; Neck et al., 2014). Hence, practical orientations, such as experimentation, practice-based approaches, and learning by doing, have been introduced and applied in EE to provide real-life learning experiences (Hahn et al., 2017; Lackeus, 2013). Challenges in aligning academic traditions and practical orientations make higher education a complex context for learning entrepreneurship (Blenker et al., 2006; Delanty, 2003) because entrepreneurial practice-based approaches are not considered to “fit” with traditional education (Pittaway & Thorpe, 2012).

Entrepreneurship teachers apply various approaches to creating favorable pedagogies and learning environments (Ilonen, 2020, 2021). Several EE scholars have highlighted the need to deepen our understanding of the theoretical grounds for EE teaching approaches and learning (Fayolle et al., 2016; Pittaway & Cope, 2007) and the theories tying EE to the educational sciences (Walmsley & Wraae, 2022). To address the lack of a robust theoretical foundation in EE research, this study draws on science education research, which has attempted to understand how to support learners’ engagement in authentic representations of scientific activity in classrooms (Bell et al., 2012; Lehrer & Schauble, 2006). Chakrin and Campbell (2022) explored epistemological framing, which shapes the ways in which individuals process a particular situation based on their knowledge. Epistemological framing occurs when epistemological frames shape an individual’s responses in a situation (Elby & Hammer, 2010). Chakrin and Campbell (2022) identified three related epistemological frames that science teachers exhibit during their teaching: (1) delivering knowledge, (2) guiding knowledge construction, and (3) making space for collaborative and iterative knowledge construction. Although they revealed how and in which situations epistemological frames are activated and shape teachers’ teaching, it remains unclear how students respond to these frames. EE is a particularly important and relevant context for studying framing in teaching and learning because it uses experimentation and learning-by-doing techniques to enhance students’ learning in real-life settings, which challenge traditional approaches, particularly in higher education (Solomon, 2007).

By building on epistemological frames, we aim to understand students’ learning of entrepreneurial behavior in higher education and ask the following: *What and how do students learn about entrepreneurial behavior in response to teachers’ epistemological frames?* Empirically, we draw from students’ individual learning reflections and team reports collected from a bachelor’s-level course on entrepreneurial behavior and corporate entrepreneurship. For the students, the EE course was experienced as a relational activity that, via students’ responses and reflection, produced a learning journey with a variety of different knowledge-related and affective learning outcomes on entrepreneurial behavior.

Theoretically, our study links the widely used *about*, *for*, and *through* learning modes of EE to the epistemological frames employed by teachers. Our study introduces *through* competition as a complementary learning mode in EE and demonstrates the

relevance of teachers' epistemological frames as a promising theoretical foundation in EE research. Thereby, we contribute to the research on EE and deepen the understanding of teachers' conceptualizations of learning and students' responses in EE. Our study also contributes to the literature on epistemological framing by positing competitive knowledge construction as a highly applicable epistemological frame in EE. We argue that no one epistemological frame is necessarily better than the other, but it is necessary to understand how epistemological frames complement each other in supporting student learning journeys to facilitate holistic learning in EE.

This paper is structured as follows. First, we provide a theoretical background by discussing EE in enhancing entrepreneurial behavior, as well as framing and epistemological frames in learning, particularly from the perspective of EE. We then present the research methodology and data and discuss our findings. Finally, we highlight the implications of our study for theory and educational practice and propose future research directions.

## Theoretical Background

### *Enhancing Entrepreneurial Behavior in EE*

Entrepreneurship and entrepreneurial behavior are considered critical for organizational vitality and wealth creation (Dess et al., 2003). Their role in enhancing individuals' and organizations' efforts to create new business opportunities and exploit current competitive advantages has been widely acknowledged (Urbano et al., 2022). Given the importance of entrepreneurial behavior for individual, organizational, and economic renewal and growth, it is critical to examine how entrepreneurship and entrepreneurial behavior are approached, taught, and learned in higher education (Kuratko & Morris, 2018). Although there is currently no scholarly consensus on the exact content of EE, most scholars agree that its main aim is to facilitate students' personal growth and transformation by providing them with entrepreneurship-related knowledge, skills, and attitudes (Gedeon, 2014; Solomon, 2007). Teaching students to become academics or teachers in the field (*about entrepreneurship*), to become entrepreneurs (*for entrepreneurship*), and to become enterprising individuals (*through entrepreneurship*) (Fayolle & Gailly, 2008; Hytti & O'Gorman, 2004). The diverse aims of EE and the experimentation and learning-by-doing approaches may contradict traditional teaching approaches, particularly in higher education (Solomon, 2007). Furthermore, the research on EE is challenged by the lack of a robust theoretical foundation (e.g., Fayolle & Gailly, 2008; Pittaway & Cope, 2007). We address this widely acknowledged research gap by introducing framing as a concept to understand how teachers instruct and guide students and the ways in which students learn in response (Kaur & Dasgupta, 2024).

### *Frames and Framing*

The current study draws from the constructs of frames and framing, which have been widely used to conceptualize and explain individual sensemaking (e.g., Weick, 1995) or

strategic processes of evoking meaning and mobilizing support or gaining legitimacy (e.g., [Creed et al., 2002](#)). Since its popularization by Goffman in the 1970s, the use of framing has progressively permeated the social sciences. [Goffman \(1974\)](#) suggested that “we can hardly glance at anything without applying a framework, thereby forming conjectures as to what occurred before and expectations as to what is likely to happen now” (p. 38).

Framing has been used to explain different linguistic, cognitive, and cultural processes across a variety of organizational and institutional settings ([Cornelissen & Werner, 2014](#)). Recently, there has been growing interest in framing in entrepreneurship research, when attempting to understand how entrepreneurs construct meaning around novel endeavors in an effort to legitimize their venture offerings, business models, and field practices as well as to influence audience engagement ([Snihur et al., 2022](#)). Framing research may also be used to understand organizational behavior, such as employee engagement in ideation or innovation. [Rigtering et al. \(2019\)](#) showed that different framing interventions may impact both participation in and the quality of entrepreneurial behavior within an existing organization, suggesting that related field experiments are important for understanding the ways in which entrepreneurial behavior among employees can be promoted by applying different framing techniques.

Cognitive frames or knowledge schemas need to be separated from discursive framing, even though they are interconnected in the construction of meaning. This implies a distinction between instances where already available frames of reference, cognitive frames, or knowledge schema are activated (primed) at the individual level and instances where frame-based meanings are constructed and negotiated in and through processes of communication by individuals ([Cornelissen & Werner, 2014](#)). The literature has mainly focused on priming effects or accessing certain cognitive frames rather than actively constructing them (i.e., framing).

At the micro level, research on framing has focused on the priming and activation of knowledge schemas that guide individual perceptions, inferences, and actions in contexts ([Cornelissen & Werner, 2014](#)). A frame is understood as a knowledge structure that guides an individual’s processing of information ([Benner & Tripsas, 2012](#); [March & Simon, 1958](#)). At the meso level, framing research has focused on the construction and negotiation of meanings within organized groups, and framing is understood as a “bottom-up” process of meaning construction rather than a “top-down” process of accessing cognitive meaning. Framing refers to “the use of rhetorical devices in communication to support and minimize resistance to a change” ([Cornelissen & Werner, 2014](#), p. 185). At the macro level, framing research concentrates on the broader cultural templates of understanding and the ways in which they become institutionalized and provide rules for appropriate behavior in particular social settings ([Cornelissen & Werner, 2014](#)).

### *Teachers’ Epistemological Frames and EE*

[Hammer and Elby \(2003\)](#) introduced a theoretical framework of teachers’ epistemological framing for understanding how teachers and learners think about their experiences. Epistemological framing shapes the ways in which individuals process what is going on in a particular situation as it relates to their knowledge. Epistemological

framing takes place when epistemological frames, that is, a collection or set of epistemological resources, shape individuals' responses in a particular situation (Elby & Hammer, 2010). Chakrin and Campbell (2022) investigated the actions and instructional moves that preservice science teachers use during their early teaching episodes. Based on the categories: source of knowledge, knowledge-related activity, stance toward knowledge, and form of knowledge, and related epistemological resources, they identified three clearly visible epistemological frames exhibited by teachers (Table 1). The collection of epistemological resources (i.e., the epistemological frame) is important for understanding how individuals think and act in different contexts (Chakrin & Campbell, 2022).

First, *delivering a knowledge frame* relies on teachers delivering curricular content to students via a more traditional delivery pedagogy (Stroupe & Windschitl, 2015) and transmission models of instruction (Davis, 1996), such as lecturing. Knowledge is propagated and accumulated as disciplinary knowledge possessed by a teacher and distributed to learners. Although teachers apply this frame in providing information to students and students canonically accept the ideas included in such information, teachers do not consider the frame to be well-aligned with theories of teaching and learning (Chakrin & Campbell, 2022). In EE, delivering a knowledge frame complements the "about" mode of EE, which aims to raise awareness by providing students with information and facts about entrepreneurship as a phenomenon using "traditional" pedagogies, such as lecturing (Hytti & O'Gorman, 2004). This contradicts the contemporary ideal of EE, in which active

**Table 1.** Three Epistemological Frames With Related Resources (Elaborated From Chakrin & Campbell, 2022, EE Mode Added by Authors).

Category/ Epistemological frame	Delivering knowledge	Guiding knowledge construction	Making space for collaborative and iterative knowledge construction	Competitive knowledge construction <sup>a</sup>
Source of knowledge	Propagated (type 1) accumulated	Propagated (type 2) canonically accepted	Constructed Mechanistic Fine-grained resources	Need for achievement
Knowledge- related activity	Acceptance	Acceptance Understanding	Understanding Puzzlement	Evaluating Benchmarking
Stance toward knowledge	Accumulation	Confirmation Redirection	Formation Checking Activation Sensemaking	Being affected
Form of knowledge	Fact	Fact Story	Story	Story Performance
EE mode	"About"	"For"	"Through"	"Through" competing

<sup>a</sup>Competitive knowledge construction as an epistemological frame in EE added as a finding of the study (see p. 27).

learning is hailed. The ideal of active learning challenges the traditional educational practice of higher education (Pittaway & Thorpe, 2012). Traditional delivery pedagogies featuring passive elements, such as lectures, videos, dialogue, and readings, do not support active learning (Walter & Dohse, 2012). Notwithstanding the call for more active learning, many entrepreneurship courses and programs still employ traditional delivery pedagogies (Nabi et al., 2017). Fayolle and Gailly (2008) pointed out that there should also be room for traditional teaching because “doing” for the sake of “doing” does not serve its purpose. In addition, there is contradictory evidence on whether EE interventions with active elements lead to higher levels of learning outcomes than more traditional delivery pedagogies (Kozlinska, 2016).

Second, *guiding the knowledge construction frame* implies that teachers plan the specific ways in which they support students in constructing knowledge in relation to standard documents. Knowledge is understood as canonically accepted and true or right by the scientific community. Teachers introduce ideas but not real-world events and, by doing so, support students in trying to apply the introduced ideas in meaningful ways (Chakrin & Campbell, 2022). This frame allows teachers to leave space for students’ own reasoning while providing direct instruction on canonical correctness when needed to guide students’ knowledge construction (Russ, 2018; Windschitl et al., 2018).

In EE, this can occur in “for” entrepreneurship interventions, where students seek support and training for their entrepreneurial project (Fayolle & Gailly, 2008; Hytti & O’Gorman, 2004). The “for” EE mode is often organized to allow students to experiment with a business idea and try out entrepreneurship in a controlled educational environment. This can happen, for example, by setting up so-called mini-ventures or providing basic knowledge and skills on starting and running a business and being an entrepreneur (Hytti & O’Gorman, 2004). Educators can facilitate students’ knowledge construction by designing “adjustable” course meeting sessions: assignments, scientific materials, and content are preplanned but can change to support learning (Ilonen, 2021). Preplanning educational activities also helps incorporate theory into learning activities (Higgins & Elliott, 2011; Higgins et al., 2013; Jack & Anderson, 1999). Often, EE brings together heterogeneous student groups from multidisciplinary backgrounds (Ilonen, 2021; Pardede, 2015). This can facilitate interaction and dialogue with others who possess differing perspectives, and ideas can lead one to question their own ideas and practices (Higgins et al., 2013).

Third, *making space for collaborative and iterative knowledge construction* relies on students collaboratively and iteratively constructing knowledge in the form of explanations or solutions to problems. Students connect their ideas with newly introduced ideas in ways justified by evidence. Knowledge is understood as constructed through the collaborative, social process of students, during which students may be puzzled in making sense of knowledge. Exposing teachers to a strong practice-based framework during their studies in a particular context may help teachers apply this framework (Chakrin & Campbell, 2022).

EE studies have embraced active, experiential forms of learning, as expressed by the words “creative,” “novel,” and “new” (Chang et al., 2014; Gibb, 2011; Kuratko, 2005; Rae, 2012). These interventions often take place “through” entrepreneurship courses

(Fayolle & Gailly, 2008; Hytti & O’Gorman, 2004). The “through” mode is an activity-oriented form focusing on developing entrepreneurial individuals more generally (than being an entrepreneur). Furthermore, the “through” mode has been seen as more inclusive than the other modes, aiming at transforming the entrepreneurial attitudes of students, regardless of their interest in starting their own businesses (Kakouris & Liargovas, 2021). For students, this means that they are expected to actively engage in different learning interventions, such as pitching, competitions, and other entrepreneurial activities, compared with listening to lectures, watching videos, or reading academic articles (Higgins et al., 2013; Kirby & Ibrahim, 2011; Walter & Dohse, 2012). Engaging in such interventions can help students to develop affective learning outcomes via which it may become possible to internalize entrepreneurial behavior as one’s own mode of behavior (Ilonen & Heinonen, 2018).

Competitive elements with awards have been used to motivate and inspire students to perform and to achieve goals in education (Brentnall et al., 2018; Kistruck et al., 2016; Worrell et al., 2016), as well as to develop their skills, behaviors, and entrepreneurial intent (Arranz et al., 2017; Russell et al., 2008). Typical ways to incorporate competition in EE is through business plan competitions, hackathons, and pitching competitions, with the first being the most common way (Stolz & Sternberg, 2022; Watson & McGowan, 2020). However, these are mostly used in the context of learning “for” entrepreneurship (i.e., to encourage and train students for business startups). Notwithstanding their benefits, however, competitions have come under criticism (Watson & McGowan, 2020) for motivating and impacting only the winners exclusively.

The identified frames are not exclusive, and all frames can play a productive role in teaching and learning when the consequences of each frame are considered within the broader aims of instructional objectives (Chakrin & Campbell, 2022). Drawing from constructivism, objectivism, Kolb’s (1984) theory of experiential learning, Schön’s (1983) reflection-in-action theory, and Mezirow’s (1997) theory of transformative learning, Bell and Bell (2020) developed a framework to support the delivery of experiential EE forms, arguing it can combine the objectivist approach with more constructivist and experiential processes to provide sufficient knowledge. Although their framework must not be interpreted as having three different frames, it provides information of the different stages or approaches used to support student learning in the entrepreneurial process. Similarly, Jónsdóttir and Macdonald (2022) suggested that by applying the different strengths of framing, teachers can control or give students the agency and freedom to be creative. The epistemological frames resonate well with the about/for/through modes of EE as suggested in Table 1.

In all, as a response to the lack of a strong theoretical foundation and linking research more closely with the educational sciences in terms of learning (Fayolle & Gailly, 2008; Pittaway & Cope, 2007), we introduce framing as a theoretical concept to better understand how teachers instruct and guide students, and how students learn in response in EE (Kaur & Dasgupta, 2024). Accordingly, we ask the following research question: *What and how do students learn about entrepreneurial behavior in response to teachers’ epistemological frames?*

## **Methodology**

The present qualitative study reports on the learning of university students in a bachelor's-level course on entrepreneurial behavior and corporate entrepreneurship. It empirically focuses on a student cohort totaling 84 students who completed the course in 2023. The cohort was primarily from business disciplines but included a small number of engineering and exchange students. In accordance with the guidelines of the Finnish National Board on Research Integrity TENK ([Finnish National Board on Research Integrity TENK, 2019](#)), this study did not require ethical approval. The students provided written informed consent prior to participating. They signed permissions to allow the utilization of all their course materials for research purposes.

### *Course Overview*

The course focused on entrepreneurial behavior in existing organizations ([Antoncic & Hisrich, 2003](#); [Åmo & Kolvareid, 2018](#)). Prior to the course, the students submitted pre-assignments, for which they were expected to read a scholarly article on what intra-preneurship is and to assess whether and to what extent an organization close to them is an entrepreneurial organization. The course started with an introductory meeting session, where the teachers introduced the course outline and objectives and delivered basic knowledge on the topic briefly. After the introductory meeting session, the students participated in reading clubs in teams and discussed scholarly articles they read on entrepreneurial behavior and corporate entrepreneurship to further learn “about” the phenomenon studied. The reading materials provided an accumulated scholarly understanding of entrepreneurial behavior as a way of doing things differently as well as its antecedents and outcomes (facts). The three reading clubs were designed to encourage students to jointly discuss the individual lessons learned from the pre-readings and to deepen their understanding of entrepreneurial behavior. The students were responsible for organizing the reading clubs by themselves, and the teachers did not take part in them.

The concrete task given to the student teams was to jointly create awareness of the recently established entrepreneurial hub of the university and execute a real-life entrepreneurial movement around it in an entrepreneurial way. Flexible guidelines given by the teachers nudged the students to conduct an ideation workshop, discuss how the university could utilize the space, execute and present the movement and its impact at a fair. The loose instructions emphasized open-ended guidance and broad goal of creating the movement rather than a fixed process or specific outcomes of the movement. The movement was launched as a competition between the teams, and the assessment was conducted by the student teams and the teachers at the end of the course. This was done to motivate and expose the students to entrepreneurial behavior in a real-life setting, giving them space for collaborative and iterative knowledge construction on entrepreneurial behavior, thus encouraging their learning “through” entrepreneurial behavior. Therefore, the aim of the reading clubs was also to encourage students to learn “for” entrepreneurial behavior and to guide and stimulate the students’ thinking and

ideation needed for their team exercise. The teachers guided the students' knowledge construction by providing guiding questions for their team exercise to redirect their thinking and enhance their collaborative learning "about" and "for" entrepreneurial behavior.

By providing the students with a somewhat safe space to "taste" entrepreneurial behavior in ideating and executing the entrepreneurial movement, the teachers pushed the students to create their own stories of entrepreneurial behavior and to genuinely learn "through" entrepreneurship (Johannisson, 2011). The teachers did not guide or coordinate the task and refrained from delivering further knowledge. Each team's ideas and outcomes of organizing the entrepreneurial movement were presented at a fair at the end of the course to enhance collaborative knowledge construction between the student teams. At the fair, the students voted to decide on the team that had created the most entrepreneurial movement. The criteria were as follows: the idea was executed in an innovative way which was distinct from other executions and that the students convincingly communicated its potential impact.

The course pushed the students to learn collaboratively about entrepreneurial behavior and apply the knowledge constructed during their team exercise. The ultimate aim was to push students to apply their learning in a real-life setting and experiment with entrepreneurial behavior during their entrepreneurial movement. The course relied on different epistemological frames of teachers to provide a holistic learning experience. The course elements, learning goals, and epistemological frames employed by the teachers are summarized in Figure 1.

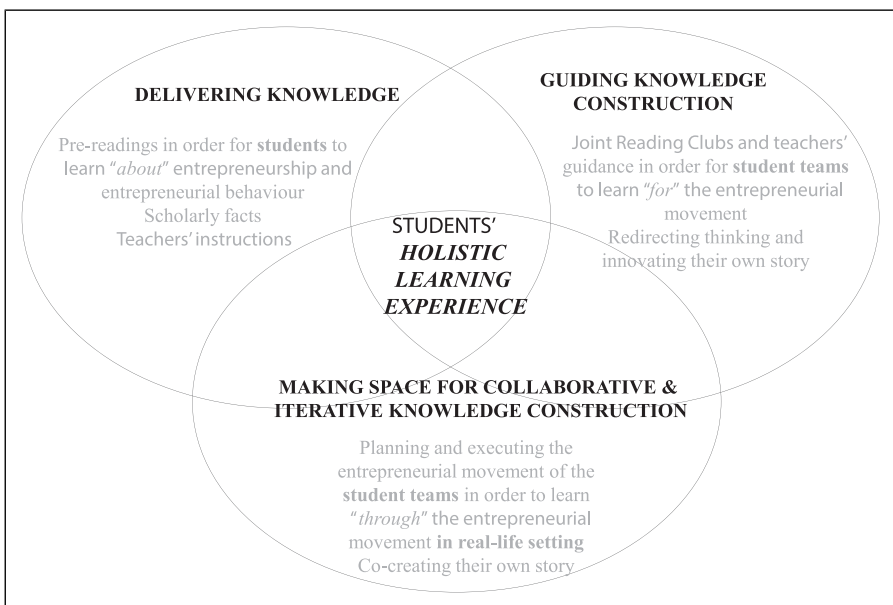


Figure 1. Course overview.

## Data

The present study relied on students' self-reports as our research materials consisted of students' reflective learning diaries (10–15 pages each, or 10–15 minutes per video or podcast if recorded) and team exercise reports (1–2 pages each). The informants comprised 12 students from six student teams: they belonged either to the winning team (four students) or the team that received the lowest score in the team exercise (three students) and those who received the highest (two students) or lowest grades (three students) based on their individual learning reflections. In selecting these students, we focused on the best and worst performers, both in terms of individual learning and team performance. Hence, we highlight the differences in students' responses to our teaching approach and make clear the differences rather than focusing on average responses. Furthermore, selecting these students made it possible to investigate both better and worse performances at the individual and team levels, thus, tracing students' reflections of their performances and related learning. We acknowledge that learning in EE is an individual experience that occurs in and is shaped by a team (see [Steira & Steinmo, 2021](#)). [Table 2](#) provides information on the students, their teams, and the selection criteria.

## Data Analysis

The analysis was carried out in stages, drawing on the steps of thematic analysis outlined by [Braun and Clarke \(2006\)](#). First, we read/listened through the learning reflections and team exercise reports and made initial remarks, highlighting where the students described their learning outcomes and responses to the course content and related pedagogies. Based on [Chakrin and Campbell \(2022\)](#), we further categorized the identified sections based on the specific epistemological resources related to the three epistemological frames. The analysis focused on students' knowledge-related activities (i.e., acceptance, understanding, and

**Table 2.** Informants of the Study.

Student	Team	Selection criteria
Emily	Alpha	Winning team of the movement/team exercise
Ian	Alpha	Winning team of the movement/team exercise
Sarah	Alpha	Winning team of the movement/team exercise
Sophie	Alpha	Winning team of the movement/team exercise
Oliver	Beta	Lowest outcome in the movement/team exercise
Rachel	Beta	Lowest outcome in the movement/team exercise
Tiffany	Beta	Lowest outcome in the movement/team exercise
Liam	Gamma	Highest grades in the individual learning reflection
Roxanne	Delta	Highest grades in the individual learning reflection
Ruth	Epsilon	Lowest grades in the individual learning reflection
Alice	Mu	Lowest grades in the individual learning reflection
Sabrina	Mu	Lowest grades in the individual learning reflection

puzzlement), their stance toward knowledge (i.e., accumulation, confirmation, redirection, formation, checking activation, and sensemaking), and the form of knowledge acquired (i.e., facts and stories). Given the nature of the learning reflections, in which students were requested to highlight and reflect upon their learning, we focused on their individual and joint learning activities. Furthermore, we focused on the learning outcomes meaning the knowledge acquired about and stance toward entrepreneurial behavior experienced based on their learning activities. We interpreted these as the ways in which the students learned about entrepreneurial behavior as responses to teaching and the application of epistemological frames in EE.

## Findings

The students' learning reflections revealed their learning outcomes and the ways in which they learned about entrepreneurial behavior during the course in response to their teachers' approaches and the course activities. The course appeared as a relational activity for the students, whose responses to the course activities varied.

### *The Course as a Relational Activity and Students' Responses*

*Reading and Accepting.* During the reading clubs, the students familiarized themselves with the course topic by reading the prereadings and discussing them jointly with other team members. For some students, it was difficult for them to understand that their teachers were not leaning on the traditional university approach but instead attempted to apply more constructivist frames. The students expected the teachers to simply transfer the knowledge and facts for them to read and accept, and they could not see the point of the reading clubs or the team exercises. Oliver, who received one of the lowest evaluations on his learning reflection and was part of the team that received the lowest outcome in the team exercise, found it challenging to grasp the course and the topics without teachers delivering the knowledge for him:

"I wish I had more background information on this topic before I read this article. That way, I might have taken more from that reading club ... I found it hard to link this with the existing knowledge on entrepreneurship or intrapreneurship." (Oliver/Beta)

Oliver's reflections demonstrate how difficult it may have been for some students to glean the necessary information from scholarly articles and apply it in joint discussions and exercises without concrete support from teachers. In the students' minds, the teachers' roles and pedagogies seemed to contradict traditional (behaviorist) university teaching, causing confusion and even some anxiety.

*Inquiring, Accepting and Escaping.* As the teachers did not provide further guidance or concrete suggestions for the team exercise, some teams decided to consult another superior: the hub manager. The hub manager, unlike the teachers, was more eager to

guide the students for the benefit of the hub, and the students wanted him to accept their initiative. Team Gamma pointed out:

“[A team member] soon reached out to the hub manager to introduce our idea, and as soon as we got the green light, we started to plan the execution.” (Team Gamma)

Ultimately, some students realized that the guidance they had received from the hub manager was not useful. In his reflection, Oliver pointed out that the hub manager was the bottleneck in their execution of an innovative idea:

“We did not fully understand whom we were doing the project for, the hub or the course. Therefore, there were two separate “managers” whom we tried to please. One encouraged innovation as much as possible, while the other was focused on more standard things ... many of the ideas were put down in the beginning by the hub manager.” (Oliver/Beta)

As teachers, we (the researchers) were unprepared for the hub manager’s straightforward advice, which shaped students’ ideas. Similarly, the students’ learning was shaped by yet another “third party”: the university administration (e.g., communication office) to whom the students approached for support when planning and executing their ideas. This was further highlighted, as the students faced some rigidity from the university administration:

“I think that the university allows people to be creative at a certain level with entrepreneurship courses, but often, it is also very bureaucratic and can easily extinguish the innovative acts that are starting.” (Sophie/Alpha)

Conversely, the best-performing teams realized that, during the course and particularly during the execution of the movement, they needed to rely only on their own insights and escape the university’s bureaucracy or other superiors’ comments that impacted the teams’ work. Perhaps the students were slightly naïve because they thought that the university communications department, for example, would immediately let students design a website for the entrepreneurial hub or create social media accounts just for the course. The students felt disappointed because their sound ideas were not supported by the administration or because they were not given permission to carry out their ideas by themselves on behalf of the university. The best-performing teams initiated ideas that did not require university resources but rather relied on students’ innovations and execution, that is, their own entrepreneurial movement.

*Understanding and Puzzling.* The students clearly utilized the reading clubs differently. Some discussed the topics together and reassembled the reading materials in a mature way to gain a better understanding of entrepreneurial behavior. For instance, Ian, who received a high grade on his learning reflection, shared the following:

“In the reading club, as a team, we came up with these three key drivers of corporate entrepreneurship: company structure that enables corporate entrepreneurship, entrepreneurial company values, and entrepreneurial aptitude in employees.” (Ian/Alpha)

Even Sabrina from the team Mu, who gained a lower grade on her learning reflection, claimed that “...*all the given articles truly gave our team some good ideas, and we truly thought they were helpful,*” suggesting that it was possible for students to benefit from the prereadings and apply the knowledge when creating their own story in relation to their entrepreneurial movement. The role of joint discussions in complementing individual studies was also acknowledged. Roxanne, a high-performing student, concluded that “*It was a good learning experience to talk and share ideas together*” (Roxanne/Delta).

Some students who received high marks on their learning reflections genuinely pondered the content of the articles in relation to their team exercises and obtained new ideas as a result. However, this required putting extra effort into further familiarizing themselves with the topic and searching for extra readings to ideate the entrepreneurial movement:

“During this reading club, our team members shared their thoughts on questions by referring to extra materials because we thought that the given materials did not contain much information on the questions.” (Emily/Alpha)

From the same winning team, Alpha, Sarah further described how the team members started the “*brainstorming process to generate a creative idea about how to do the awareness campaign*” during the first reading club meeting. Students’ team reports showed that those teams that came up with more innovative ideas reported using some time at the beginning for joint brainstorming of different ideas. They listed several options at first but eventually decided to do something else that they considered to be more unique to differentiate their entrepreneurial movement from others’. The team reports demonstrated that it was the competition that made some teams work hard and strive for something different that would stand out from other teams. Sarah shared their competitive motives and the ways in which the competition served as a triggering event and catalyst for entrepreneurial behavior and good performance (Shapero, 1975):

“At the beginning, they [the teachers] said that they were going to award the best team. This motivated the students and increased their productivity, and thus, the students put forth their maximum effort to create innovative campaigns.” (Sarah/Alpha)

**Evaluating and Benchmarking.** The final event, the fair, was considered extremely insightful and a space for students to learn from other teams. Because all ideas were presented, it was possible for students to evaluate and benchmark their own ideas and execution against other teams’ outcomes. The ways in which the experiences were addressed in the students’ learning reflections demonstrated that much of the learning took place during the fair and through related individual and team reflections afterward.

Interestingly, the diversity of the teams' entrepreneurial outcomes was acknowledged when teams assessed their own performance against other teams' performances. As Rachel from Team Beta described, "*The fair showcased many entrepreneurial ideas from the groups.*"

Some students found it challenging to respond to the course activities because they expected teachers to play a more active and instructive role in supporting their learning. For some students, the reading clubs and even the hub manager's consultancy served as guidance for constructing new knowledge on entrepreneurial behavior as well as for ideating and executing the team exercise. By having the opportunity to discuss the topics with their teammates, the students broadened their thinking and obtained confirmation if they were unsure about their readings. Furthermore, during the fair, each team and student was activated to benchmark other teams' entrepreneurial movements in comparison to their own.

### *Knowledge and Affection as Student Learning Outcomes*

The course as a relational activity provided a variety of spaces for students to gain new knowledge on the studied topics ("about" entrepreneurship) and new directions for their thinking and team exercises ("for" entrepreneurship). Furthermore, the course activities pushed them to experience entrepreneurial behavior by themselves ("through" entrepreneurship). During their learning journey it was possible for students to unravel what entrepreneurial behavior is (knowledge-wise) and, most importantly, to experiment (affective learning) with entrepreneurial behavior themselves.

*Uncertainty, Innovativeness, and Uniqueness.* Although entrepreneurial behavior was considered challenging and uncertain, it was also seen as a deeply rewarding pursuit fostering innovation and autonomy. The students found the journey of entrepreneurship to be fraught with challenges and uncertainties. The process of ideation, coming up with viable and innovative ideas, was considered particularly difficult with the given resources. For instance, Sophie, a student from the winning team, confessed the following: "*In the beginning of this course, I thought I wasn't innovative enough and found the team exercise very difficult.*" (Sophie/Alpha).

Students recognized that to make a significant impact, their ideas and approaches needed to be unique and different from others. This required a constant push toward creativity and originality. "*For me, our campaign based on the Jodel is kind of a disruptive innovation,*" claimed Emily from the winning team. Interestingly, the execution of their movement was quite simple: just an approachable, spoken-language discussion via Jodel (social media) among the target group (students of the university). "*The winning group had a very simple idea,*" confirmed Rachel from Team Beta, who also realized that the winning idea and execution did not necessarily need much effort, as the idea was unique. Emily, for example, admitted her surprise and key learning that it is possible to perform well without extreme effort in execution if one has an innovative idea:

“I felt uncertain about that idea because we needed to do a little task to execute our movement. When compared with the other groups, we did not put much effort into this task.” (Emily/Alpha)

Another group that invested great effort and time into executing several related activities realized that, although they worked hard to execute many complementary ideas, they were not able to innovatively attract the audience. The winning team had executed something quite simple but different, reflecting the phenomenon of entrepreneurial behavior:

“But the groups that won were the ones that truly stood out by being different. This made me think about how entrepreneurship truly works...” (Roxanne/Delta)

Notwithstanding their time investment, Roxanne’s team did not perform very well. She realized that although they had executed their exercise well and made a significant effort for the movement, it was not innovative enough: “*Our campaign was not unique; it did not stand out...*” (Roxanne/Delta). In her learning reflection, Roxanne clearly demonstrated that she had learned via her experience what entrepreneurial behavior means: It is not the volume of effort that matters but rather the quality and uniqueness of an idea.

**Autonomy.** One of the most appealing but also challenging aspects of entrepreneurial behavior for students was the autonomy it offers: they were able to work in their own way, make independent decisions, and take full ownership of their projects. This sense of autonomy was considered empowering because it enabled students to shape their own paths and work according to their personal values and vision. Sarah, for example, thought that specific instructions from the outset would have been restricting and would not have allowed their entrepreneurial behavior:

“They gave freedom for students to use their entrepreneurial mindset to generate creative ideas to execute innovative awareness campaigns ... providing freedom helps students to utilize their skills and hidden talents to be more innovative.” (Sarah/Alpha)

She truly appreciated the autonomy, the need for self-regulation, and a deeper understanding of the studied phenomenon. However, this autonomy also caused confusion and even some anxiety among some of the students and teams that were not able to see beyond the hub manager’s guidance, indicating that entrepreneurial behavior might not be suitable for all.

**Taking Action and Creating Value.** Furthermore, the students learned that entrepreneurial behavior is about taking action and perseverance. The students experienced the importance of pushing through doubts and obstacles to achieve their goals. Liam clearly demonstrated the essence of entrepreneurial behavior:

“It is basically upon the shoulders of an individual who comes up with a new process or new innovation to also push it through an organization to get the recognition they need.” (Liam/Gamma)

The students’ reflections also demonstrated that it was difficult for some to understand that they were expected to execute their ideas in an entrepreneurial movement without being provided any extra resources or funding. This suggests that the students were accustomed to crafting plans and strategies in university courses but not implementing them. The idea of practicing entrepreneurial behavior was considered strange, even though the teachers had highlighted the importance of entrepreneurship (see [Johannisson, 2011](#)) and throwing oneself into an entrepreneurial process. Many students realized that following scarce instructions and perhaps even making considerable effort to plan an initiative would not necessarily make a difference if the actual movement did not take place after all. This highlights the role of action, in addition to ideation and planning, in EE in accomplishing something (see [Kassean et al., 2015](#)). In planning and implementing the movement, the students realized that the core of entrepreneurial behavior is the goal of creating value. The students’ reflections highlighted that their ideas and efforts were geared to serve and address customer needs to ensure the desired impact. A team also highlighted the value added for the hub:

“When tackling this exercise, the biggest struggle that the team faced was coming up with something that would set us apart from all the other teams while still bringing tangible value to the hub.” (Team Gamma)

**Breaking Boundaries.** The students’ reflections further demonstrated a variety of activities through which they learned “through” entrepreneurial behavior and experienced affective learning outcomes. During their entrepreneurial movement, students realized that entrepreneurial behavior requires breaking existing boundaries, which implied stepping out of their comfort zones, challenging existing norms, and daring to start something new. Emily pointed out that her team members allowed her to change her behavior, which made her feel empowered and enabled her to enjoy engaging in entrepreneurial behavior:

“As an introvert, I lacked self-confidence during group work. Earlier, I was reluctant to express my ideas in group work. But entrepreneurship has helped me to overcome my weaknesses. Now, I am used to expressing my ideas and sharing my knowledge in group work. In most cases, I used to avoid risks. Now, I really like to execute innovative ideas.” (Emily/Alpha)

The execution of the entrepreneurial movement provided the students with the opportunity to cocreate their own entrepreneurial stories and learn “through” entrepreneurship by throwing themselves into the process. The winning team showed that it was possible for students to learn about entrepreneurial behavior through collaborative and iterative knowledge construction and to accomplish something unique.

**Belonging.** The students highlighted the importance of leveraging the complementary skills of other team members. By joining forces, they combined diverse talents and perspectives, enhancing their creativity and problem-solving capabilities. For instance, the winning team benefited from identifying and using the strengths of its team members. “*It is almost impossible for one person,*” Rachel from Team Beta shared. Team Beta received the lowest scores on the movement, indicating the power of collaboration and complementary skills during the team exercise. However, joint planning and execution were also considered challenging:

“When many innovative minds come together, it might be hard to do effective decision-making, as many opinions collide. As a group, we had many disagreements, but luckily, we were able to conduct the group work and finish it properly.” (Rachel/Beta)

Compared with the other teams, the winning team benefited from identifying and using the strengths of its team members. The complementarity of their skills, competences, and behaviors was visible in the individual learning reflections because they reported how they learned from their teammates and enjoyed the process. Furthermore, the best-performing teams, particularly the winning team, managed to co-construct their own unique stories, even though they faced some challenges during the process. In their learning reflections, the students highlighted how they cleverly used their joint resources when ideating and executing their movements.

The students stated that entrepreneurial behavior is about building a strong sense of community and belonging; they appreciated the camaraderie and shared experiences that came with working in a team. Even Ruth, who received the lowest grades on the individual learning reflection, recognized the sense of belonging:

“It was not necessarily the most innovative idea... but it was really nice to get to execute the idea with such a great team.” (Ruth/Epsilon)

This collective effort not only made the journey more enjoyable but also provided emotional support and motivation. For example, Ian from Team Alpha reported, “*The most important learning for me was to trust my own and team members’ ideas.*” The findings suggest that creating and maintaining sound team dynamics and a trusting atmosphere (see [Welter, 2012](#)) supported favorable learning experiences.

### ***Becoming Disappointed and Failing***

The students also learned that failing and getting disappointed go hand in hand with entrepreneurial behavior. For instance, Tiffany from Team Beta pondered their less successful, although finalized, movement because of struggles in their execution: “*We did have some misunderstandings in our group, and we ended up doing two websites*” (Tiffany/Beta).

Furthermore, the competition and final evaluation likely pushed the students to finalize their team exercises and have something to present. This resulted in some learning about entrepreneurial behavior and failure:

“We discussed that it was unentrepreneurial to give up, and we had to come up with something that worked ... Even though it was hard, we thought that this, at least, would get the job done.”  
(Alice/Mu)

Overall, the learning reflections of the students from the winning team and other well-performing teams demonstrated that these students were able to benefit from the course much more than the students with mediocre ideas. This finding points to the power of joint and iterative knowledge construction, suggesting that some students learned about entrepreneurial behavior via a more constructive approach to knowledge creation applied by the teachers. The relational activities of the course managed to produce some expected knowledge-related and affective learning outcomes in entrepreneurial behavior. The competitive element of entrepreneurial movement seemed highly motivating for many students. Executing the entrepreneurial movement in particular pushed students toward collaborative and iterative knowledge construction, which produced the most successful outcomes in entrepreneurial behavior. In addition, the competitive entrepreneurial movement engaged students to affective learning and changed their thinking and own behavior in relation to entrepreneurship (see affective learning outcomes [Ilonen & Heinonen, 2018](#)).

## Discussion

The starting point of the present study was the lack of a robust theoretical foundation of EE and the acknowledged need to link EE research more closely with the educational sciences and the conceptualization of learning in particular ([Fayolle et al., 2016](#); [Pittaway & Cope, 2007](#); [Walmsley & Wraae, 2022](#)). Given this, our study aimed to gain a more in-depth understanding of learning of entrepreneurial behavior within higher education by drawing from teachers' epistemological frames investigated in science education ([Chakrin & Campbell, 2022](#)). We asked the following question: *What and how do students learn about entrepreneurial behavior in response to teachers' epistemological frames?* By empirically drawing from student reflections of a bachelor's-level course on entrepreneurial behavior, our study provides fresh insights into students' learning of entrepreneurial behavior as well as related theoretical and educational implications to offer further research suggestions. The main findings of the students' learning journey are summarized in [Figure 2](#).

Our findings demonstrate how the EE course was experienced as a relational activity that, via students' responses and reflection, produced a learning journey with a variety of learning outcomes on entrepreneurial behavior. Our findings suggest that students learn differently, and thus, the epistemological frames applied by the teachers produce different responses and learning outcomes. It is impossible to tell how achieved learning outcomes “came to be” (see on process theorizing [Cloutier & Langley, 2020](#))

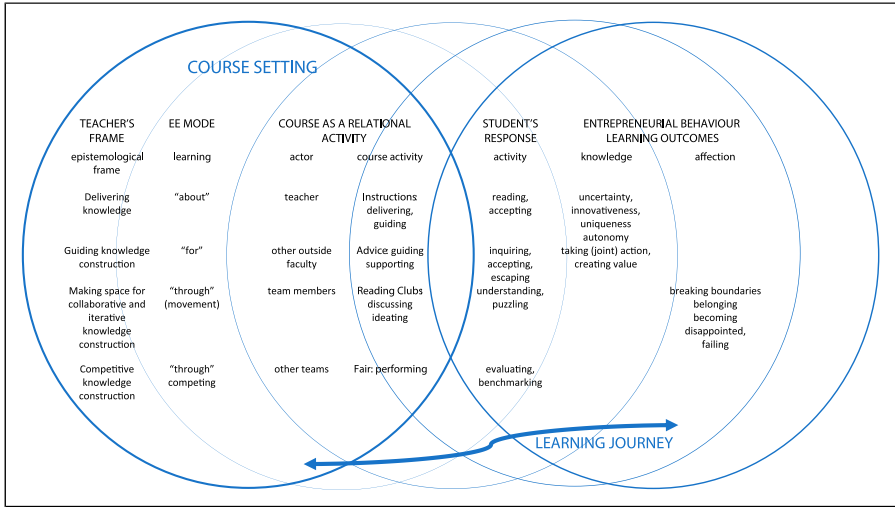


Figure 2. Learning journey.

during the students' learning journey, but our findings suggest teacher's frames, a course as a relational activity, EE learning modes, and students' responses to these together constitute a process that may create a holistic learning experience with knowledge-related and affective learning outcomes. There is no "right" single approach or epistemological frame for teachers to apply; instead, our findings highlight a need to understand how the frames overlap and complement each other in supporting students' learning journey. Dynamic use of frames reaches students with a variety of learning styles, complements each other in capturing the notion of entrepreneurial behavior, and forms a holistic learning experience thereof. Complementarity is further emphasized because frames are criticized for representing rigid data structures that limit events that are out of the ordinary (Cornelissen & Werner, 2014; Wilensky, 1986). The complementarity supports students in constructing their understandings of entrepreneurial behavior by providing needed flexibility and alternative approaches in novel and uncertain situations that otherwise might lead to failure (Benner & Tripsas, 2012). This also resonates with conjunctive nature of process theorizing suggesting that "no one decision or choice is necessarily better" (Cloutier & Langley, 2020, p. 21) but all depends on how the teachers and students co-create the learning journey.

In this study, we successfully captured how certain course activities pushed students to move between accepting, understanding, puzzling, escaping, and evaluating new knowledge on entrepreneurial behavior, which demonstrated learning "about," "for," and "through" entrepreneurship during one course and their entrepreneurial movement. Our study highlights that benchmarking and competition motivated students also "through" entrepreneurship (i.e., through their entrepreneurial movement) whereas competitions are oftentimes used "for" entrepreneurship and business startups in EE (e.g., Watson & McGowan, 2020). Additionally, our study linked, theoretically, the widely used

learning modes of EE, “about,” “for,” and “through” entrepreneurship, to the epistemological frames used by teachers. Our study introduced “through” competition as a complementing learning mode of EE. By doing so, we contribute to the existing EE literature by drawing from the educational sciences, particularly from the conceptualization of learning, and by strengthening, thus, the theoretical foundations of EE research.

Epistemological framing has not been extensively studied in EE, although it is an interesting context given its experimental nature. Our study demonstrates how the competitive element during students’ entrepreneurial movement shaped students’ learning. Through competition, students engaged with and became affected by their joint entrepreneurial movement, which demonstrated their need for achievement (see [Hansemark, 1998](#)) in performing well when creating their own stories. Furthermore, benchmarking and evaluating their own performance against their peers’ during the fair supported their learning. Our findings contribute to the literature on teachers’ epistemological framing by putting forward competitive knowledge construction as a highly applicable epistemological frame in EE ([Table 1](#), the fourth frame\*). As such, it complements the epistemological frames of [Chakrin and Campbell \(2022\)](#) by building upon and extending their findings on science teachers to EE.

In real-life settings, the interactions between students and teachers play a significant role in how students engage in education and learn about entrepreneurial behavior. Interestingly, relational activities within the course encompassed other superiors or “third parties,” such as the university administration, who contributed to and challenged students’ learning. The best-performing teams were able to escape such obstacles and stretch beyond them to reach the learning goals. In line with previous studies (e.g., [Neumeyer & McKenna, 2016](#); [Thomassen et al., 2020](#)), our study suggests that external stakeholders and networks play a role in student learning, a topic that has been only scarcely studied. These studies highlighted the role of business stakeholders and networks, whereas our study recognizes the role of those university actors external to the classroom and widens our understanding of actors that can influence learning.

Overall, our findings underscore the importance of epistemological frames, competition, and learning as a process in gaining a deeper understanding and individual experience of entrepreneurial behavior in higher education. When effectively integrated during the learning journey, these elements can significantly enhance the learning experience in connecting theory and practice, preparing students for real-life entrepreneurial behavior.

### *Implications for Education*

Our study provides clear insights for educators. It is worthwhile to consider one’s own epistemological frames for each course and intervention. However, teachers’ frames do not necessarily become accepted by students, or they are interpreted differently, eventually producing a variety of learning outcomes. Therefore, it is important for a teacher to be prepared for different and even unexpected responses by, for example, highlighting learning goals, the structure of a course, and the role of a chosen teaching approach in supporting the learning targets in EE. As students learn differently, it is recommended to engage students

through different relational activities and conceptualizations of learning during different phases of a course to provide different types of learning opportunities. Furthermore, the competition served as a triggering event (see Shapero, 1975), motivating the students in their course activities. This suggests that it is important for teachers to find ways to engage students in activities and learning. Importantly, competition is not only a motivational element but can be understood as an epistemological frame in EE.

As students' learning is a holistic experience and learning is a process, students need to dare to throw themselves in it to learn successfully. Our recommendation for students is to be open, although critical, to a variety of teachers' approaches to EE. We hope our experiments in EE and this explorative study will inspire EE teachers to boldly apply different epistemological frames and reflect on the related consequences.

### *Limitations and Future Research Directions*

Our study provides new and interesting insights into how students learn about entrepreneurial behavior in response to teachers' epistemological frames. However, many important questions are beyond the scope of this study and are yet to be addressed. Given the complementarity of frames in student learning, future research could provide in-depth insight into how students move between frames. This is critical because different students learn differently.

For the students, the EE course was experienced as a relational activity involving numerous actors and stakeholders, highlighting the social context in which learning occurs. Only a few studies have focused on the role of stakeholders in learning in EE, either external or internal to a university, and this deserves further examination. Future research should investigate the impact of stakeholders' frames on learning and learning outcomes as multiple important actors are involved. These frames likely shape not only student learning but also teachers' approaches to their teaching, that is, their choice of the epistemological frames to be applied. How to integrate the different frames of teachers and stakeholders in EE is a promising direction for future research. Furthermore, students' preexisting frames need to be explored because they shape students' learning irrespective of and parallel with teachers' and stakeholders' epistemological frames. Finally, autoethnographic research on teachers' experiences can provide deeper insights into how teachers apply their epistemological frames. Understanding that not everything can be meticulously planned or predicted, educators must remain flexible and responsive to EE's dynamic learning environment.

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### **Ethical Approval**

This study did not require ethical approval. In Finland, research with human participants must comply with the guidelines of the Finnish National Board on Research Integrity TENK ([Finnish](#)

National Board on Research Integrity, 2019). University of Turku has undertaken to comply with TENK's guidelines. Ethical review is to be carried out prior to gathering data, if the research contains one or more of the following factors: (a) Participation in the research deviates from the principle of informed consent; (b) The research involves intervening in the physical integrity of research participants; (c) The focus of the research is on minors under the age of 15, without separate consent from a parent or carer or without informing a parent or carer in a way that would enable them to prevent the child's participation in the research; (d) Research that exposes participants to exceptionally strong stimuli; (e) Research that involves a risk of causing mental harm that exceeds the limits of normal daily life to the research participants or their family members or others close to them; (f) Conducting the research could involve a threat to the safety of participants or researchers or their family members or others close to them. If none of the above factors is met, as in the case of this study, ethical review is not required. Further information about the ethical review system in Finland is available at <https://www.tenk.fi/>.

### **Consent to Participate**

Informants provided written informed consent prior to participating. They signed permissions allowing the researchers of this study to utilize all their course materials for research purposes.

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### **Data Availability Statement**

Metadata is available from the corresponding author upon request.

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