Taking a Knowledge Perspective on Needs: Presenting Two Case Studies Within an Educational Environment in Austria

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Abstract: Needs that are shared by members of an organization can trigger an organizational learning process. To a large extent, needs are implicitly anchored in organizations and people can hardly articulate them. In this article, we present Bewextra, a method that allows for identifying hidden needs in organizations. Thereby, we trigger a knowledge conversion process, which is similar to Nonaka's SECI-spiral. In two case studies, we present how our Bewextra-process is applied to projects in educational contexts in Austria. In a first case study, we show that a combination of learning from past and future experiences extend the scope of the overall outcome. Since learning from future experiences requires a distinct environment (enabling spaces), we present a second case study. Here, we conducted a Bewextra-process with a large number of participants (n > 170), focusing on learning from future experiences.

Keywords: organizational learning, need knowledge, learning from an envisioned future, enabling spaces

1. Introduction

The identification of needs seems relevant for the realm of organizational learning and knowledge-based management. It has been acknowledged that understanding what people need may facilitate the development of suitable measures with respect to strategy development, product design, amongst others (Altschuld & Watkins, 2014; Bayus, 2008; Brouwer & Dorst, 2014; Ericson, Müller, Larsson, & Stark, 2009; Goffin, Lemke, & Koners, 2010; Patnaik & Becker, 1999).

What are needs and how can we assess them? The topic of needs has been attracting attention in various fields, the most important being psychology, philosophy and economics (e.g. Deci & Ryan, 2000; Maslow, 1970; Max-Neef, 1992; Sheldon, Elliot, Kim, & Kasser, 2001; Thomson, 2005; Wiggins & Dermen, 1987). Many theories about needs, however, are unsuitable for practical implementation as they either refer to fundamental and *course-of-life needs*, i.e. food, shelter, water, etc., or their suggestions of what needs are seem to be too abstract to find concrete realizations, e.g. Maslow's need of "self-realization" (Chung, 1969; Noddings, 2005).

Goffin et al. (2010) introduced a theory of needs into the fields of marketing and product development. They proposed that many needs are *hidden*. We cannot consciously access them since they are beyond our awareness. They point out that hidden needs may have the greatest potential to develop new products or enter new markets. At the same time, they emphasize that the assessment of hidden needs presents a challenge as they are implicitly anchored in individuals or organizations.

We have been developing a concrete method to assess needs, which are implicitly anchored in organizations. Our method *Bewextra* covers several steps. While we will provide an in-depth description of Bewextra in the following section, we want to emphasize that a crucial element of this method is the utilization of an enhanced learning approach. Whilst all learning is conventionally based on experiences from the past being extrapolated into the future, we propose an additional learning source; *Learning From an Envisioned Future* entails the envisioning of and interacting with an ideal future scenario to derive concrete steps, which can be taken in the present to achieve the desired goal(s). While we repeatedly showed that our approach of Learning From an Envisioned Future extends the output of learning outcomes with respect to quantity and quality (Kaiser, Kragulj, Grisold, & Walser, 2015a, 2015b), we want to investigate the impact of an enhanced learning approach on the generation of hidden needs. Furthermore, since we have been applying our method only to relatively small groups with a maximum number of twenty participants, we want to see if it could be applied to larger settings with a larger number of participants. This seems relevant for the practical implementation of our method since organizational learning processes often involve larger groups of people.

Therefore, this article addresses two research questions.

RQ1: *Is an enhanced organizational learning process including learning from past and future experiences applicable to assess the hidden needs in larger social settings? What types of knowledge are involved in this learning process?*

RQ2: *How is our approach applicable to assess the hidden needs in larger social settings and what challenges arise for the management of emerging knowledge?*

In order to address these questions we present two case studies. According to Yin (1994, p. 63), "the distinctive need for case studies arises out of the desire to understand complex social phenomena" because "the case study method allows investigators to retain the holistic and meaningful characteristics of real-life events," such as organizational processes.

Both case studies were done with educational institutions in Austria. It has been repeatedly acknowledged that the consideration of needs seems relevant in the realm of education; understanding needs may facilitate the development of appropriate measures with respect to curriculum design, transmission of teaching content, organization of space, etc. (Noddings, 2005; Tyler, 1949). However, it seems particularly challenging since there are different stakeholders involved, e.g. lawmakers, principals, teachers, students and parents. They hold respective viewpoints on the system, have different expectations and demands and thus, they may have different hidden needs.

The first case study was done with students at the Vienna University of Economics and Business. To answer the first research question, we compared the resulting needs of two groups of students who have either learnt from past or future experiences.

In a second case study, which we conducted with pupils in a high school in Austria, we aimed at answering the second research question. Here, we invited more than 170 pupils to participate in a workshop all at once. Subsequently, we analysed and validated the large bulk of data.

The paper will be structured as follows. First, we will present the theoretical background of our method to assess hidden needs. We will elaborate on our enhanced learning approach including both learning from past and future experiences. Second, we will present the case studies. We will describe the procedure as well as the analysis and the results. Third, we will provide a conclusion and give recommendations for further research.

2. Theoretical background

2.1 Hidden needs

The satisfaction of needs is vital for any entity to survive and flourish. This holds true for simple organisms as well as complex social systems, such as organizations (Sheldon et al., 2001). From an economical point of view, this bears two consequences. Firstly, in order to sustain, an organization must satisfy the needs of its members, e.g. employees. Second, in order to grow in terms of profit, any organization must be capable of meeting the needs of their customers (Porter & Kramer, 2011). Integrating "the voice of the customer" (Griffin & Hauser, 1993) into new products is almost universally recognized by scholars and managers as being crucial for new-product success. It can either be done by responding to already well-known needs or by learning about needs that have been unconsidered and thus, unpleased.

According to Goffin et al. (2010), there are three different kinds of needs. They distinguish between known needs, unmet needs and hidden needs. The first ones are commonly known within an industry and are already addressed by products and solutions. The second ones are needs that are known on the market but have not been serviced yet. Hidden needs have not been articulated by customers nor are they known by the industry. Goffin et al. (2010) argue that individuals are not consciously aware of their hidden needs. Their identification may yield the potential for an organization to enter new markets with innovative products and services; thus, learning about hidden needs of their customers may provide organizations with competitive advantage. However, identifying hidden needs appears to be challenging since the individuals themselves cannot articulate them.

Goffin et al. (2010) argue that common approaches are insufficient for the identification of hidden needs since one cannot articulate what she is not consciously aware of. As a result, surveys and many other common market research

tools fail in identifying customers' hidden, as they are hidden (Goffin et al., 2010). Consequentially, there is a need for alternative methods to reveal hidden needs.

In this paper, we use Goffin's idea of hidden needs and discuss how we could identify them; little to no theoretical or practical work has been done to identify hidden needs in the context of organizational learning and organizational learning in education, respectively.

2.2 Learning from an envisioned future

Conventional experiential learning theory defines learning as "the process whereby knowledge is created through the transformation of experience" (Kolb, 1984, p. 41). Knowledge results from the combination of grasping and transforming experience. Accordingly, learning is understood as an action-reflection process based on reflecting experiences from the past. Learning from the past is well known and well developed. It underlies all our major learning methodologies, best practices and approaches to organizational learning. There are several learning theories which all are based on the paradigm of learning from past experiences; the most influential theories may have been formulated by Argyris and Schön (1978, 1996), Bateson (1972), Kolb and Boyatzis (2000) and Kolb (1984).

Breaking with the conception of learning as strictly and solely connected with our past experiences and questioning the belief that the future is a mere forward projection of the past, several authors (Greenleaf, 1977; Jaworski, 1998; Scharmer, 2000; Senge, Scharmer, Jaworski, & Flowers, 2005) are proposing an alternative source of learning: learning from the future. The idea is to shift attention to the individual's inner world and to sense the very moment by "connecting with the source of one's best future possibility and of bringing this possibility into the now" (Scharmer & Kaeufer, 2010, p. 28f). Thus, it is about learning "from a reality that is not yet embodied in manifest experience" (Scharmer, 2000).

We extended Scharmer's idea and introduced "Learning From an Envisioned Future" (Kaiser, Fordinal, & Kragulj, 2014; Kragulj, 2014a, 2014b), which is a method that fosters the imagination of an ideal future scenario, i.e. the imagination of a situation in which all desires, wishes and dreams have become true, and to experience how this looks and feels like (Atance & O'Neill, 2001). Thereby, people are able to overcome possible restraints that result from current limitations and previous experiences (Seligman, Railton, Baumeister, & Sripada, 2013). Our approach makes use of our capability of imagination (i.e. to have experiences in the absence of visual-sensory input) and, thus, it enhances the creation of knowledge that is less affected by past experiences. Our experience shows that the outcome of this learning approach covers categories that are more substantial since their generation is not influenced by every day limitations, problem-oriented aspects and thoughts about implementation. A more detailed description and discussion of our approach of Learning From an Envisioned Future along with a proposal for an enhanced theory of learning can be found in Kaiser et al. (2016) and Kaiser (2016).

We label the articulated dreams, wishes and desires that result from this learning mode as *satisfiers*. We emphasize that they do not stand for the respective needs of organizations but they embody patterns that point towards their hidden needs. In the following, we will discuss how these patterns can generate needs.
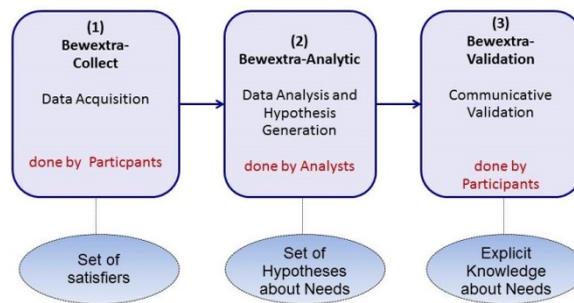
2.3 Bewextra

Over the past years we have developed a method for creating and inferring explicit knowledge about needs in organizations. Applying our method called "Bewextra", we have conducted several projects with organizations in different fields and with different sizes. Bewextra can be seen as an organizational learning approach, which consists of three steps.

The first step (Bewextra-Collect) covers the data acquisition where we utilize our approach of Learning From an Envisioned Future in a group setting. The output of this step is a great number of possible satisfiers, articulated by the members of an organization in a process of responding to questions from facilitators.

The second step (Bewextra-Analytic) entails the generation of hypotheses about the substantial needs of the organization. The generation of these hypotheses is enabled by a hermeneutic method, which is based on the technique of generative listening.

The third step (Bewextra-Validation) covers the validation of the formulated hypotheses by communicative validation and quantitative analysis. Figure 1 summarizes the three steps of the Bewextra framework.

Figure 1: Bewextra framework

Bewextra has been described in detail in Kaiser and Kragulj (forthcoming), Kaiser et al. (2014a) and Kragulj (2014a). In the following, we will give a brief description of the three steps of Bewextra along with the main aspects of our method.

2.3.1 Bewextra-Collect

A crucial element of the first step is the creation of an enabling space where we facilitate participants to make explicit a great number of wishes, dreams, visions, goals and ideas. We refer to the overall outcome as satisfiers. As described in the previous section, we use our approach of Learning From an Envisioned Future to support the participants in reporting their wishes for a fulfilled life. When participants engage in a learning cycle that allows for learning from an ideal future scenario future, we can generate sustainable satisfiers more effectively as compared to the reflection of past experiences (Kaiser, Kragulj, & Grisold, 2016). Our learning approach may foster the detachment from today's circumstances, including restrictions, boundaries and impossibilities (Kaiser, Kragulj, Grisold, et al., 2016). Situated in enabling surroundings, people should be able to shift their thinking to come up with visionary and creative results transcending the boundaries of the current situation as well as of the environment.

2.3.2 Bewextra-Analytic

For the data analysis and the generation of hypotheses about needs we follow a hermeneutic approach (Davis, 1997) and apply the idea of generative listening (Senge, Scharmer, Sol, Jaworski, & Sue, 2004; Yackel, Stephan, Rasmussen, & Underwood, 2003). Thereby, we reveal these patterns and create knowledge about underlying needs. Generative listening is a dialogue setting where knowledge is generated that transcends the information carried by spoken or written words (Kaiser & Kragulj, 2015; Scharmer, 2008). The idea is that while listening to what someone is saying, we dwell in a state where we are open for whatever knowledge wants to emerge; we suspend our assumptions, prejudices and unquestioned assumptions to connect with a "deeper source of knowing" (Scharmer, 2008, p. 58). By listening to the articulated satisfiers we try to understand what the speaker wants to express; we aim to grasp the essence of not what is being said but what is being meant. For a detailed description of generative listening in an interview setting see Peet et al (2010).

Using the approach of generative listening we code the articulated ideas, wishes and answers of step-1. To facilitate the coding and illustrate hierarchies among the satisfiers, we use ATLAS.ti. The unit of the analysis (defined as a quotation in ATLAS.ti) is each participant. The unit of coding (a code in ATLAS.ti) is the needs that are included (implicit as well as explicit) in their ideas and wishes. Finally, we utilize a haptic approach and place the codes on the floor. We then organize and cluster them so that patterns are found and the main categories of the hypotheses about possible hidden needs emerge.

In short, Bewextra-Analytic enables the emergence of hidden needs of the participants and results in a set of hypotheses about needs.

2.3.3 Bewextra-Validation

In the final step, the set of hypotheses generated during Bewextra-Analytic has to be validated. The hypotheses can be validated in terms of both quality and quantity.

For the validation, we use an online questionnaire containing the hypotheses generated in step-2. This questionnaire is sent to all participants. On a Likert-scale from 1 to 4, where 4 means that the hypothesis does not fit at all and 1

means that the hypothesis fits perfectly, participants are invited to assess each hypothesised need. Additionally, participants can leave comments if relevant needs are missing in the proposed hypotheses. The simultaneous use of qualitative and quantitative validation allows us to accept or reject the generated hypotheses about needs in order to finally create a catalogue containing explicit knowledge about substantial needs.

3. Knowledge perspective

In the following section, we provide a knowledge perspective on the generation of needs. We follow Nonaka, who defines knowledge creation as a continuous, self-transcending process through which one transcends the boundary of the old self into a new self by acquiring a new context, a new view of the world and new knowledge. In short, it is a journey "from being to becoming" (Nonaka, Toyama & Nagata 2000, p. 8). The ability to constantly generate new knowledge and to transfer, use and apply existing knowledge is a crucial factor for individuals and organizations if they want to be capable to meet the future. We learn to create new knowledge. The Bewextra method as an organizational learning approach is based on a knowledge orientation as well as knowledge creation.

A holistic definition of knowledge – neither on an individual nor on a collective level – has not yet been found and a variety of epistemological and ontological assumptions lead to conceptual plurality and debate. We follow the definition of knowledge as capacity to act (Sveiby, 2001) and a radical constructivist definition of knowledge in which knowledge is seen as something which the organism builds up to organize the amorphous flow of experience by establishing repeatable experiences and relatively reliable relations between them (Glasersfeld, 1984).

The Bewextra method can be seen as a knowledge creating process by itself, as it generates knowledge to act in the here and now based on substantial needs as well as towards the ideal future described in the first step. Furthermore, it can be described as a knowledge creating and knowledge transforming process which has in its center four different fields of knowledge:

a) *Explicit need knowledge*

With this field of knowledge we focus on explicit knowledge about substantial needs. Need knowledge can be created and externalized when answering the questions "what do I need for a fulfilling life and a fulfilling future?" and "why do I desire the imagined future?" Needs are the most fundamental basis in a hierarchy of needs, desires and their corresponding satisfiers. In general, there are many actions, which can be taken in order to satisfy a specific need. Knowledge about needs is highly valuable in the sense that it enables us to find a variety of different solution strategies. Explicit need knowledge helps to escape binary decisions on actions (i.e. yes or no-decisions) and allows for developing alternative strategies.

b) *Implicit need knowledge*

McLeod emphasizes that "needs are not themselves experienced" (McLeod, 2011, p. 215). They are not to be confused with the desires they generate. Therefore, knowledge about needs cannot be accessed directly (McLeod, 2011). However, implicit need knowledge is an already existing and important as well as invisible fundament and part of the decisions we make in our life. Furthermore, implicit need knowledge is related to the idea of hidden needs, as both cannot be articulated.

c) *Explicit satisfier knowledge*

This field of knowledge can be described as explicit knowledge about dreams, wishes and ideas. They can be summarized as satisfiers. Satisfier are articulated and externalized when answering the question "what do I really want?". Thereby, participants visualize concrete states and satisfiers. It is important for moving persons and even whole social systems into the positive emotional attractor (Boyatzis, Smith, & Beveridge, 2012) and therefore, to bundle energy for moving forward as well as specifying a picture of the vision. Explicit satisfier knowledge serves as an essential starting point for inferring explicit knowledge about needs (Kaiser, Feldhusen, & Fordinal, 2013).

d) *Implicit satisfier knowledge*

Implicit satisfier knowledge is related to knowledge of artefact functions. This type of knowledge is indispensable for our everyday lives. Typical examples are a consumer knowing that a telephone is for calling people, a maintenance person knowing which component of a broken hi-fi set needs to be replaced, or a designer knowing that the inner ribbing of a car is meant to strengthen the construction and to insulate it from electrical signals as well (Houkes,

2006). Therefore the implicit satisfier knowledge is an essential enabler to create explicit satisfier knowledge and formulate concrete dreams, wishes and ideas.

All these fields of knowledge are strongly interrelated. Their interaction drives the Bewextra-process in a similar way as the SECI knowledge spiral drives the creation of new knowledge (Nonaka, Toyama, & Nagata, 2000). Implicit satisfier knowledge is necessary for generating explicit satisfier knowledge and at the same time, explicit satisfier knowledge already contains implicit need knowledge. In Bewextra-Collect, both types of knowledge are involved when participants learn from an envisioned future, which results in a set of explicit satisfiers. In Bewextra-Analytic, analysts transform these satisfiers (explicit satisfier knowledge) into explicit need knowledge by applying generative listening (abductive reasoning). Figure 2 summarizes these knowledge conversion processes.
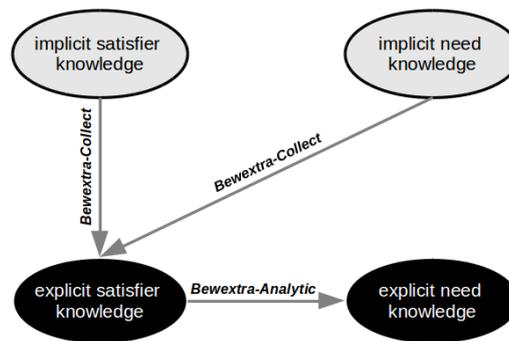
Figure 2: Knowledge conversion processes

4. Case studies

In the following section, we will show the implementation of our Bewextra-process to two case studies we did in an educational context in Austria.

In the first case study, we will present a case study we did with students at the Vienna University of Economics and Business. Here, we investigated the difference between learning from past and future experiences and how they affect the need creation process.

In the second case study, we will present our findings from applying the Bewextra-process to a large number of participants (n > 170).

4.1 Case study 1: Vienna University of Economics and Business

4.1.1 Scope and procedure

Data acquisition

While a previous case study (Kaiser et al., 2015a) focused on the satisfier level and thus, only referred to the first step of the Bewextra-process, we want to extend our findings by analysing the effects that the different learning approaches have on the generated needs, i.e. on the overall outcome of the Bewextra-process.

For this purpose, we conducted a study with 25 students from the specialization field "Information Systems and Operations" at the Vienna University of Economics and Business. We separated our participants into two groups. The 16 students of the first group were introduced to the approach of Learning From an Envisioned Future. We provided them with an enabling space where they felt safe and free to engage with their envisioned future and create unfamiliar scenarios. We emphasized the mental time travelling by playing Richard Strauss' "Thus spoke Zarathustra" and welcomed them in the year 2020. Flip charts were revealed that stated "Welcome to the year 2020". A member of our team acted as a facilitator and engaged them with a narrative where they imagined attending the ideal university in the year 2020. Afterwards, they were asked to write down what made this university ideal in their envisioned future (they were asked to answer two questions: "What has ended in 2020?" / "What has newly emerged in 2020?").

The nine students of the second group were not introduced to our future-based learning approach. Instead, they were asked to write down their ideas for an ideal future academic environment based on their current and past experiences (i.e. what they would like to improve). The two questions for this group were the same: we asked them about what has ended and what has newly emerged in the year 2020. Both groups together produced a total number of 572 satisfiers.

Analysis

We then analysed the generated satisfiers as described in the previous section. Through generative listening we identified 115 codes. Subsequently, we clustered these codes to find underlying needs. The clustering was conducted twice, once with the needs that originated from the past-based workshop and once with the needs of the future-oriented workshop. We generated hypotheses about hidden needs of the students. Table 1 summarizes the quantity structure of our case study.

Table 1: Quantity structure of our case study

No. of participants	25
No. of satisfiers overall	572
Avg. no. of satisfiers per student overall	22.8
Avg. no. of satisfiers per student past group	29.5
Avg. no. of satisfiers per student future group	19.1
No. of codes overall	115
No. of codes past group	41
No. of codes future group	74
No. of hypotheses about needs	19

In a next step, we compared the resulting need clusters of the respective learning modes with regards to quality and quantity. Figure 3 shows that both workshops together generated 19 different need clusters. 4 clusters emerged regardless of the respective learning approach, 7 clusters emerged from the satisfiers collected in the past-oriented learning approach and 8 clusters emerged from the satisfiers collected in the future-oriented learning approach. Similar to our previously conducted case study, this finding suggests that applying both learning methods leads to a considerably higher number of unique satisfiers and resulting need clusters. More precisely, using Learning From an Envisioned Future as an additional source of learning led to an approximately 64 per cent increased number of covered need clusters.
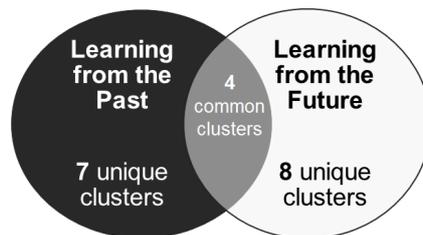
Figure 3: Number of need clusters generated by respective learning source

Validation

After clustering the generatively listened needs, we then formulated concrete hypotheses as a basis for the last step of our method. During this third and last step of Bewextra, we aim to validate the formulated hypotheses in order to find out whether our assumptions about the hidden needs are correct. The validation was performed using an online survey. 16 students from the Vienna University of Economics and Business took part in the survey. Within this questionnaire, each of the 19 needs (formulated as hypotheses along with a short description) was tested for their agreement. The participants could choose between four options for each hypothesis: (1) I agree, (2) I rather agree, (3) I do rather not agree, (4) I do not agree. The results of the approval rates can be seen in table 2.

4.1.2 Results

Overall, the approval rate was 84 per cent. This result is similar to a previous project (Kaiser et al., 2014; Kragulj, 2014a). The needs with the lowest agreement rate originate from the past-oriented workshop. It must be doubted, whether the needs efficiency (50%), security (63%) and sustainability (69%) constitute needs of the whole system; the high rejection rates indicate that further discussion in the system is needed.

Table 2: Acceptance rates of the needs

Need	Learning Source	Agreement Rate
Need for individuality	Past & Future	81 %
Need for community	Past & Future	81 %
Need for freedom and Flexibility	Past & Future	88 %
Need for quality	Past & Future	94 %
Need for efficiency	Past	50 %
Need for security	Past	63 %
Need for sustainability	Past	69 %
Need for self-Realization	Past	88 %
Need for consideration	Past	94 %
Need for practical Relevance	Past	94 %
Need for transparency	Past	100 %
Need for convenience	Future	81 %
Need for communication	Future	81 %
Need for appreciation	Future	81 %
Need for purpose	Future	88 %
Need for variety	Future	88 %
Need for curiosity	Future	88 %
Need for being on the Pulse	Future	94 %
Need for holism	Future	100%

4.2 Case study 2: High school in Austria

The second case study was done with a high school in Lower Austria. This school is part of a compound of six private schools in Vienna and Lower Austria. The presented case was part of a larger project where we sought to identify what needs are shared by the members of the system. The overall project lasted for several months and included a number of crucial steps. One of them was the realization of a "Bewextra-XL-workshop", where we invited over 170 participants to engage with our method at once. In the following, we provide a brief review of our procedure to subsequently present and discuss our findings from the Bewextra-XL workshop.

As mentioned before, the goal of the project was to identify the needs of a school. Our reasoning was that when the members of the school were aware of their needs, they could understand their common needs, which might provide the basis for developing strategies and measures to satisfy them.

4.2.1 Scope and procedure

The first step of our project included the identification of all relevant stakeholders. For this, we conducted a system constellation at the Vienna University of Economics and Business. Inspired by systemic therapy and family constellations, this method has been attracting increasing interest in organizational work to reveal social dynamics (Ameln & Kramer, 2007; Böhm, 2016; Groth, 2004). We invited 12 participants to take part in the constellation; they had no previous experience with the school, i.e. they were unfamiliar with the system. One member of our research team acted as the constellator; he attended the school and had rich experience of how decisions are made, who is involved etc. (Varga von Kibed & Sparrer, 2011). Furthermore, an experienced coach supervised the constellation.

The constellation took about three hours and revealed six stakeholder-groups who should be taken into account for the assessment of the system's needs: (1) school provider, (2) parents, (3) teachers, (4) pupils of the commercial college, (5) pupils of the commercial college in an elite programme, and (6) pupils of the commercial school.

In a next step, we addressed each stakeholder-group to assess their hidden needs. In a first step, each stakeholder-group learnt from an envisioned future. We approached the identified groups differently. While we collected data from groups (2), (3), (4), (5), and (6) using our Bewextra method, we interviewed the school providers (1) in one-on-one settings. One member of our research group visited them in their office and asked two representatives to take part in the study. One executive was responsible for the marketing. Furthermore, we interviewed the CEO of the holding, which supplies the schools. In both cases, we engaged them in a narrative, where they envisioned a school festival in 2020, where everything was just ideal. By letting them describe *what* this festival makes ideal, we collected a number of potential satisfiers.

4.2.2 Bewextra-XL

Data acquisition

Part of the project was the implementation of a workshop where we collected the satisfiers of a large number of participants. Previous research showed that a future-oriented learning approach yields several advantages (Kaiser et al., 2015a, 2015b). However, workshops that we have conducted so far had only included small groups, i.e. groups with approximately 20 participants. Since organizational learning requires methods to include a large number of people in different units, we wanted to see if our approach could be applied to a larger setting. Therefore, we invited more than 170 participants to take part in a workshop, which we named *Bewextra-XL*. We asked pupils of two branches as well as teachers to take part in the workshop.

The workshop took place in the sports hall of the high school. A team of five researchers facilitated and supervised the process. In line with the well-proven procedure of Bewextra, which we applied to workshop 1, the process went as follows.

First, we welcomed all participants. We asked them to take seats and get comfortable. We provided a short introduction to our research and outlined what the project was about.

We then initiated the mental time travel ritual. First, we encouraged them to let go their current doubts and concerns. By playing Richard Strauss' famous piece "Thus spoke Zarathustra", we emphasized that the participants were leaving the year 2015, and after the piece was over, we literally welcomed them in the year 2020. We underlined the mental time leap by enrolling banners where was written, "Welcome to the year 2020" We emphasized that they are in a future, which is *ideal*, i.e. where everything is the way the subjects would imagine it to be in their biggest dreams. We engaged them in a narrative where they imagined attending a school party in 2020 where everything felt perfect and would be as in their biggest dreams. We let them interact with this envisioned scenario and asked them how it feels like to be in this future. Subsequently, we posed the questions, what had come to an end in this future and what new elements had emerged, respectively.

For about 15 minutes they could write down whatever came to their mind. Afterwards they gathered in groups of about five people to think of additional ideas. This step took about 20 minutes.

All sheets were collected and while the process ran anonymously, we labelled each sheet with regards to the stakeholder-group, i.e. whether it came from teachers or pupils.

Analysis

173 participants generated a total number of 2587 satisfiers. This resulted in an average number of 15 satisfiers per participant.

The set of satisfiers emerging from Bewextra-XL and the two interviews were randomly divided into two subsets. One subset was analysed by trained analysts, while the other subset was analysed by bachelor students who practised the method of generative listening (part of a course on „knowledge-based system analysis"). Generative listening fulfils two crucial functions. First, it is the abductive reasoning step, which transforms statements about satisfiers into hypotheses about underlying needs. Second, it condenses the data and reduces the number of items (codes).

We held three rounds of generative listening. In a first round, we collected the results of generative listening (codes) via an online form (students) as well as a work sheet (analysts). Students analysed the data of 72 participants and came up with 391 codes. The team of researchers analysed the statements of 101 participants and came up with 435 codes. In a second round, we clustered and aggregated the resulting codes with regards to their content and created 301 codes. In the third round, we condensed the 301 to 130 codes, which were the basis for formulating 15 need hypotheses including a detailed description, which covers the different dimensions of each need. The need hypotheses are shown in table 3.

Validation

In order to ask the stakeholders for their assessment, we conducted an online survey to validate the need hypotheses and encourage their feedback. We invited all participants to take part in the survey. In total, we gathered 97 responses.

The questionnaire consisted of two questions: "Is the list of need hypotheses complete?" and "Are these need hypotheses correct?". While participants were free to answer the first question by free text statements, in the second part they were asked to rate the need hypotheses on a four point Likert-scale, whether a need hypothesis was (rather) correct or wrong.

4.2.3 Results

Considering the seven free text answers to question 1 of the online survey, we could not identify any significant statements, which were not reflected in the previously defined need hypotheses.

In short, the survey participants accepted all need hypotheses with an average acceptance rate of 89 %. However, only the need hypotheses "persistence" turned out to be controversial, as it was accepted by 69 % of the participants. Table 3 depicts the results. An in-depth analysis of the survey data showed that - different to the concrete satisfiers, which were controversially viewed among different stakeholders - needs have an inclusive quality; different stakeholders can commit themselves to common needs to largely the same degree than others.

Table 3: Acceptance rates of the needs

Need	Agreement Rate
Need for solidarity [dimension A *]	99 %
Need for justice	96 %
Need for quality of school food	96 %
Need for wellbeing	96 %
Need for quality of teaching	95 %
Need for practice orientation	95 %
Need for flexibility	94 %
Need for unfolding the self	90 %

Need for space for unfolding	88 %
Need for participation	87 %
Need for modernity by means of technology	86 %
Need for internationality	83 %
Need for variety	82 %
Need for solidarity [dimension B *]	81 %
Need for persistence	69 %

* The need for solidarity was split into two dimensions A and B indicating that those were of opposing quality. However to our surprise, both hypotheses were accepted by the survey participants.

5. Discussion

Bewextra is a method that allows for identifying needs, which are implicitly anchored in organizations. We argue that they are strongly related to what Goffin et al. (2010) refer to as hidden needs as they are not articulable by the members of the system.

In this paper, we presented two case studies, where we conducted Bewextra and investigated specific elements of this process.

In case study 1, we compared learning from past and learning from future experiences and analysed their impact on the outcome. In line with previous research on enhanced organizational learning approaches, we found that a combination of learning from past and future experiences increases the overall number of identified hidden needs. However, learning from future experiences poses a challenge for the process since we must provide participants with an enabling space where they are free to detach from current restrictions and doubts.

Therefore, we present a second case study where we conducted this process with a greater number of participants to see if this approach can be used in larger organizational settings. We found that such a process requires additional considerations.

First, since large systems cover a variety of stakeholders, we had to identify all relevant stakeholder groups. We did this with a system constellation approach, where we gained knowledge about the groups that were of interest for our project.

Second, we emphasize that an enabling space must be designed so that it affects all participants in a way that they can think freely and outside the box. We found that our existing approaches can be well applied (e.g. a piece of music to facilitate the time travelling ritual). However, we saw that a trustful relationship between the facilitator and the participants is the prerequisite of the success of this alternative learning mode. This must be kept in mind when planning the scenario and evaluating supporting tools; e.g. we advise to be careful when using a microphone as this could have a negative impact on the trustful relationship between the facilitator and the participants.

Third, the sheer amount of data resulting from involving more than 170 participants requires a structured plan of how to analyse the data. We found that it is useful to divide the randomized data among several groups of analysts. This, of course, is only possible when the analysts are familiar with the method and willing to engage in generative listening.

Finally, we found that our existing approach to validate the results with online surveys can be easily scaled to large systems. However, we suggest including an additional loop to be prepared for many participants commenting on the results; in this case, we must conduct an additional cycle to integrate the data.

6. Conclusion

Taking a knowledge perspective on needs and using our Bewextra method it is possible to initiate an organizational learning process and trigger a knowledge conversion among four types of knowledge (implicit satisfier knowledge, implicit need knowledge, explicit satisfier knowledge, explicit need knowledge).

Further research could investigate the possibility of facilitating the analysis using information communication technology in order to conduct the process with even very large systems (e.g. a city); a crucial point would be the question how we can ensure that there is an enabling space providing trust and the willingness to engage with the learning mode.

With regards to the analysis of the data, we suggest investigating the role of the individual analyst when doing abductive reasoning. We would be interested in the extent to which the analyst must be acquainted with the system. We are also interested in the factors, which are crucial for training participants to perform generative listening.

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