Experiential and outdoor education: the participant experience shared through mind maps

Ivo Jirásek, Irena Plevová, Miroslava Jirásková and Adéla Dvořáčková

Faculty of Physical Culture, Palacky University, Olomouc, Czech Republic

ABSTRACT
This paper describes an analysis of mind maps capturing the experiences of the participants in an experiential and outdoor education course. The method of mind mapping is usually limited to a quantitative scoring analysis and comparative content analysis of concepts. As a consequence, the visual elements of the information are usually ignored, but to analyze the holistic information, it is necessary to analyze its visual elements. This intention underlines this study of five chosen pairs of mind maps made by participants in the outdoor course comparing their impressions at the beginning and end of the course. A qualitative review of the visual and symbolic levels of information found a significant impetus occurring in the participants' view of their life journey and the possibility of changes due to the course experience. There is a visible tendency toward changes between first and second maps, from vague fears to acceptance of one's self, from polarity to holistically perceived reality, from vague concepts to colorful visual symbolism, from focus on the past to open acceptance of the future, from personality to community, and from the physical dimension of the experience to the spiritual or holistic level of the meaning of the experience.

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1. Introduction
The possibilities for personal development via informal learning have not been adequately addressed in existing research, and studies focusing on outdoor winter courses are almost nonexistent. This was one reason for conducting research on the participant experience of a 12-day-long trek through a winter landscape, as manifested through the participant’s mind maps. We were interested in how mind maps created by the participants are linked with experiences associated with the course title, 'Life is a Gothic Dog' (henceforth, LGD), and which phenomena entered this semantic field for individual participants.

Firstly, we will explain the context of this research, that is, the basic character of experiential and outdoor education in the Czech Republic. We will also summarize the main principles of mind mapping and its role in educational research. After introducing the course itself, we offer a possible approach to qualitative interpretation of mind maps as a new method for educational research. This procedure is applied to five pairs of mind maps.
maps, the visual and symbolic aspects of which will be analyzed in detail. If we are correct, there is some evidence for personal change and development during the course visible in maps themselves.

2. Theoretical background

2.1. Experiential and outdoor education at the Vacation School of Lipnice – Outward Bound

Although there are distinctions between experiential education, outdoor education, adventure education and similar approaches (wilderness, for example) which utilize the educational potential of nature, it is not easy to decide which concept best applies to our research. This is problematic: the difficulty with concepts, terms and their connection to ideas is that they become more complicated when used internationally. Thus, due to differences in cultural understanding, even in this field, outdoor terminology is used differently in British English and Czech (Turcova, Martin, and Neuman 2005). We can see a sort of development in the Czech Republic from the roots of recreation in nature through outdoor education (education in nature, from the end of the nineteenth century), to intensive recreational regimes and the modern form of outdoor education (the so-called experiential project in the 1970s utilizing outdoor education together with games as well as cultural, creative, psychological and other programs) to ‘holiday’ education (in the 1980s) and finally to the term used today, experiential education (Jirásek and Svoboda 2015). However, we are not able to determine (at least in the project we are focused on here) if the case at hand is experiential or outdoor education – since it fits into both of these conceptual frameworks.

Some information about the Czech version of experiential and outdoor education has been published in English (Bartůnek, Neuman, and Martin 2008; Jirásek, Martin, and Turcova 2009; Kudláček et al. 2009). From the outset, the leader in this field in the Czech Republic has been seen to be the Vacation School of Lipnice (VSL). It should be noted that over time generations of volunteers have created a profile for the VSL which includes a unique form of experiential education, known internationally as the ‘Czech Way’ (Martin, Franc, and Zounková 2004). This has drawn particular attention due to its highly developed use of dramaturgy and dramaturgical practice, that is, working with the objectives, themes, places, program resources and people (Drahanská 2009; Gintel 1982; Paulusová 2004), an approach which has been described abroad as design programs or courses (Leberman and Martin 2005; Martin 2001). The present research focuses on one of the projects of this form of non-formal and informal education and examines the experience as reflected in the mind maps of the participants in the winter course LGD.

The VSL courses we are interested in here are prepared exclusively by a team of volunteers, last at least seven days, and consist of approximately 30 persons (such as 24 participants and 6 instructors). The situations set up during the course frequently aim to make the participants step out of their comfort zones into new and unknown circumstances (Brown 2008). Under new circumstances, such as trekking through unknown terrain, it may be possible to achieve more intense learning and self-knowledge. Our research focuses on specifically designed winter outdoor courses incorporating the act of crossing the mountains on snowshoes as the main activity on the program. These courses (LGD 2011 and 2012) were examined repeatedly using different methodological approaches,
like systemic constellations (Jirásek et al. 2014), or sociometric analysis and analysis of essays (Jirásek and Dvořáková 2016). The goal of our study is to uncover more information about participants’ experiences by examining the visual style of the art created in their mind maps.

2.2. Mind mapping

There are different ways of utilizing the techniques of examining visual representations and mapping ideas for educational purposes and goals. Mind mapping uses associative maps to represent ideas and the relationship between them. Concept mapping is a relational method which visualizes the hierarchical structure of subordination but is less pictorial in its substance, while argument mapping is a tool for explication of inference and judgment of arguments (Davies 2011). It is also possible to compare techniques of mapping with the effects of other visual forms, like concept diagrams and visual metaphors, where various formats can be used in complementary ways to improve motivation, attention and understanding (Eppler 2006).

The basic difference between mind mapping and other forms of visualization is that it utilizes visual representation, meaning that it makes use not only of concepts, but also of pictures and precise symbols. These cannot be expressed fully by language, and a broader use of mind mapping in educational research can resolve the problem of interpreting non-verbal responses.

Mind mapping can be used to examine very different aspects of social life and various disciplines, two of them are important for the subject of this paper: research (Crowe and Sheppard 2012; Wheeldon 2010; Wheeldon and Faubert 2009) and education (Hay, Kinchin, and Lygo-Baker 2008; Jonassen et al. 1997; Nesbit and Adesope 2006; Twardy 2004).

Moreover, although mind mapping has been used in educational research, we have not found this method used in the framework of experiential and outdoor education. We also have not found any research dealing with intervention programs in the field of education, which use comparisons between pre- and post-mind mapping. This represents a gap in existing research and our findings should help fill this gap, not only in terms of the subject matter studied but also in its verification of the chosen methodology.

3. Research objectives

The objective of the research was to gain insight into the experience of the participants of the Outward Bound – VSL course, LGD, as it was manifested in the mind maps of participants. The central concept around which the participants were asked to construct their mind maps at the beginning and end of the course was the course title – which is an enigmatic phrase the meaning of which will be explained below.

4. Methodology

4.1. Participants: research sample

Twenty nine participants, 18 men and 11 women, choose to take part in the LGD 2012 course. The average age of the group was just less than 33 years. The youngest participant
was 23 years old and the oldest 51 years old. Twenty seven participants came from different parts of the Czech Republic (from a total of nine regions), while two were from Slovakia, and none of them knew each other before the course started.

The pairs of mind maps were collected from 17 participants (nine males and eight females). These individuals participated in the main part of the course, during which the first mind maps were created, and also completed the final part, when the second set of mind maps was created.

For the qualitative analysis, five pairs of mind maps were chosen by an expert team. Four of these maps were created by women (23, 27, 29 and 30 years old) and one by a man (44 years old). Four of them were working, and one was a student at the time of the course.

4.2. Program: the course LGD

A brief summary of the course and its origins is necessary to place the participants' responses on context. The name of the course 'Life is a Gothic Dog' (in Czech: ‘Život je gotickej pes’) is a pun which makes little sense even in Czech but has, nonetheless, become integrally associated with the course. We do not have specific information about how this name was chosen. However, according to the traditions of VSL, the course team (or lead instructor) selects a name which they see to be directly connected with the aims, goals or program (or just to be humorous). The winter course with this name was prepared for realization in the early 1990s. However the course was never offered and creator of this idea died tragically. It was partly to commemorate this individual that years later an instructor at the VSL, Miroslav Hanuš, decided to implement a winter course with this name.

The LGD project has undergone major dramaturgical changes since 2000. Originally a facility-based course, it gradually widened to include direct contact with the reality of the natural winter environment and became a combined course, eventually becoming a trekking course (as it is now). The focus of our research was the snowshoe trekking course in 2012.

The main foundation for the program was the metaphor of winter wandering (a non-religious pilgrimage) as a biodromal project (bios = life, dromos = journey). The goal of the project was described in the final report from the 2011 course as follows:

Our major dramaturgical challenge was our goal to frame the winter hike within the mental context of a journey in such a way that it was not understood as a winter survival course or as a strenuous mountain march, but rather as a pilgrimage. Not only a pilgrimage to a destination, but also a pilgrimage to discover oneself. (Hanuš 2011, 7)

The main aim of the project was:

To use a winter hike to help participants to create a space to reflect on their life values. There is an effort to influence the attitudes of participants and direct them to value activity, responsibility, self-sufficiency/independence, self-restraint, initiative, healthy self-esteem and serving others. (Hanuš 2012, 12)

The project consisted of three parts, metaphorically entitled the Appetizer, Main Course and Dessert. The preparatory phase was a three-day camping experience (4–6 November 2011, camping in Trniště in the Jizera Mountains in the Czech Republic).
The second and main part included a 12-day trek on snowshoes in the Eastern Carpathians (4–15 January 2012, the Poloniny National Park, Slovakia). The third and final part took place six weeks later (1–4 March 2012, Lipnice nad Sázavou, the Lipnice Castle, the Czech Republic).

The initial session in November was attended by 32 participants. In the second part of the course, 29 participants were present (18 males and 11 females). Seventeen participants completed all three program sessions (nine males and eight females); these individuals became our research sample. Participation in every part of the course was voluntary—so we do not know the reason why some of the dropouts decided not participate in the last part and we are not able to explain this attrition. Our presumption, it should be said, is that the Main Course, the longer winter trek on snowshoes, was probably seen and judged by the participants to be the most challenging part of program, and thus some did not consider it necessity to continue with the third part, which consisted of helping in an institution for mentally handicapped people. This final Desert part, however, was arranged thanks to an awareness of the meaning of the whole project: it is not only a trip in the mountains, but an active approach toward one’s own environment and a way of serving other people.

The main part of the project consisted of 11 trekking stages totaling 107 kilometers (66 miles) in mountain terrain. Every trekking day began with a wake-up signal at 6:30 am, followed by making breakfast, packing tents and belongings, morning exercise and departing the campsite at approximately 9 am. Each daily stage on snowshoes was approximately 10–12 kilometers long and ended at approximately 3 pm, followed by erecting tents, making dinner, collecting firewood, making the campfire and participating in an evening program around the campfire (6–10 pm). In the middle of the whole journey, one day was reserved for relaxation (including a half day before and after) as well as hygiene and other program activities.

4.3. Measures: mind mapping

There are several possible ways to measure the data collected. One of them is quantitative scoring. The quantitative analysis of mind maps was conducted by the elaborate methodology of Mind Map Assessment Rubric (MMAR) scoring system. The authors of one study (D’Antoni, Zipp, and Olson 2009) convincingly demonstrated that this is a valid tool with a high degree of reliability across raters. As we will demonstrate further on, although this is the most elaborate method of quantification of the assessed artifacts, mere numeric expression is an insufficient instrument for a genuine evaluation of values, attitudes, perceptions or existential experiences and symbols which may be expressed via mind maps.

A second possibility is an analysis of the concepts and structures used in the mind maps. Because this is not the only information contained in the artifact (unlike in concept maps), the concepts are excerpted and transcribed. Thus the maximum amount of information present on the verbal level of mind maps is maintained in terms of the content and structure of individual concepts.

The third possibility is a qualitative analysis, which will be described later in detail. Interpretation is the only possible way to define the content of symbols with knowledge of their historical and contextual continuity. We can approach the interpretation of mind maps by using these criteria (Jirásek 2015):
We do not judge the aesthetic quality of the images. For the analysis and interpretation of mental maps, what is crucial is not the aesthetic dimension, but the semantic dimension. While it is true that aesthetic analysis can also contribute to a deeper understanding of non-aesthetic communication and identify certain qualities (Sibley 2003), the differences between the presentations of the aesthetic impressions of individual respondents are not significant.

Theoretically, we anchor our analysis in the assumption that archetypes, figures of the collective unconscious as universal human experience (Jung 1993, 2004; Rafailov 2010), are at work, and they are projected into the individualized expressions of artifacts based on the existential situation of the authors.

In our content analysis we use the vocabulary of symbols, sometimes with the support of specialized publications (e.g. dictionaries of symbols, publications in the field of art therapy, etc.).

We presume that the visual symbols and verbal terms used indicate, refer to, represent (Goodman 2007) denoters (referents), which are the experience of the creator of the mental maps (in our particular case tied to a specific in project of experiential and outdoor education).

Space for interpretation is opened by the method of free association, that is by sharing all the impressions and associations evoked by looking at the visual elements and symbols on the mental maps. The verbatim transcriptions of these notes are then reformulated into a meaningful description.

4.4. Procedure: data collection

A part of the program was dedicated to an explanation of the principles of mind mapping and individual mind map creation (Buzan 2007, 2011). The instructions to the respondents were always identical – the key word, the central point for all of the mind maps created – was the title of the course, LGD. The project participants were asked to record what they associated with this VSL course title by means of mind mapping. Each participant received a blank sheet of paper (300 × 400 mm) on a cardboard base and a set of colored crayons. The instruction was: ‘Draw a mind map on the theme of LGD. What does this topic represent to you personally?’ The associations were recorded on mind maps twice.

The first data collection took place as a part of the campfire program on the first evening after a half day of wandering. The technique of mind map creation was explained to the participants by the researcher (who was a member of the team of instructors), who also described the reason for our interest in the mind maps as well as how and in what context they would be used. At the same time, they were familiarized with the intent of the research and given the option to hand in their outputs to the researcher if they agree to the use of the pictures. The respondents were given around 45 minutes to complete their mind maps. One of the instructors played moving songs on the guitar in the background near the crackling fire.

The second data collection was conducted at the end of the project during the closing weekend. This took place at the castle in Lipnice nad Sázavou (the Czech Republic). The participants were reminded of the techniques of mind map creation; they received the
same instructions, including the possibility of voluntarily participating in the research. The same conditions were prepared. Participants could choose any place in the castle, in the courtyard, or its surroundings to produce their maps. They were not given the opportunity to see their first mind map before drawing the second one, so they had no opportunity to compare their content and statements.

4.5. Data analysis

One of the specific features of our research was the fact that the visual works were appraised by a group of experts, thus enhancing the validity of the analysis through a combination of researchers, which is one of the four possible types of triangulation (Hendl 2008). A team of five experts was created for the data analysis: a philosopher, a sociologist, an instructor from VSL, the main instructor of the LGD project and a psychologist.

The method used, free association, originated in psychoanalysis, and at first glance, it appears very simple – the researcher says everything that comes to mind, freely expressing everything, even if the thought or association might appear trivial (Prochaska and Norcross 1999; Vybíral and Roubal 2010). Using this method the artifacts created may thus be verbally reflected, and the projected sense and meaning may be revealed by means of associations. Our approach is based on an effort to understand the participant experience, not to evaluate it.

The selection of responses for analysis was made by the expert team to illustrate the most distinct expression of the experience of the intense winter expedition and the shift in the participant experience, expressed visually in the artifacts produced at the end of the course. All the start-of-course and end-of-course mental map pairs were numbered and simultaneously submitted to the research team, each member of which individually wrote down which pairs of maps they saw the biggest difference in. In total, we subjected 11 selected pairs of maps to free association by the entire team, and after recording these associations they were reduced by team consensus according to the interestingness of the themes that emerged, and these were used in the subsequent qualitative analysis.

The experts were asked to focus on the visual works and express freely whatever came into their minds: feelings, thoughts, ideas and notions, and differences or similarities. The instruction was: ‘Focus your attention on the drawings, take a good look and let them affect you. Try to see everything that is possible and express everything that comes to your mind.’ The team was presented (by the psychologist) with the individual mental maps, and each member commented on the questions posed:

1. What does the map depict, what you see on the map?
2. What impression does the map give you?
3. State the differences between the depictions in the first and second mental maps. To what do you attribute the visible difference?

The research team met three times; intentional insight (deliberately focusing on the creative product and subsequent expression of free associations, feelings and thoughts which the product evokes) was used at the first meeting and the stream of free associations was recorded and later transcribed. The text of the spontaneous reactions from the first meeting were then shared via e-mail and fine-tuned. The second meeting focused on
the analysis of concepts from the mind maps by means of content analysis, that is, the verbal line was studied and the visual aspects excluded. Individual processing of the concepts was subsequently conducted by means of the MMAR scoring system (D’Antoni, Zipp, and Olson 2009). The individual results (none of which differed by more than ten points) were compared at the following meeting and the total average scores calculated. An analysis of concepts was also made.

5. Results

Although we prepared a comprehensive summary of all the individual mind maps (17 pairs) and the quantitative assessment of individual entries and the total points, presenting these findings in detail would not enrich our findings. In brief, mere quantification is not very helpful in assessing the results. We can only conclude that map no. 2 often has a lower score than map no. 1, which might be a sign that there is less elaboration in the mind maps at the end of the project, but that is not a conclusion that could be generalized: This is true of only 11 respondents, whereas 6 respondents have a higher score on map no. 2 compared to map no. 1.

By focusing on the concept structures contained in the mind maps, richer material for interpretation was obtained. Because of the limited extent of the paper this part of the research has been summarized without the process description. The entire analysis of the concept structures can be summarized by stating that the concepts bring forth more profound information than the quantification of individual dimensions of the mind maps. Nevertheless, it does not involve a genuine, in-depth understanding of the participant experience because it is completely detached from the visual element of the created artifacts.

A holistic understanding of what can be read from a participant’s experience from a mental map requires a consideration of not only the verbal, but also the visual and symbolic elements of this artifact. That is why our analyses emphasizes the written text as along with the pictures (colors, contours), which together make a complete whole interpretation possible. In the analysis which follows, we have placed all words extracted from the mind maps and translated from Czech in quotation marks, while our concepts and interpretations which follow the quotes are left unmarked. In cases where there are more hierarchical levels to the structure, the main notion is outside of brackets, while the more segmented notions (connected to this main one) are inside the brackets (Figures 1 and 2).

First mind map: The mind map consists mainly of concepts, with an image of a dog, a symbol of the course title, in the center. The orange figure of the dog appears to be static, yet wild. The dog is baring his teeth, drooling green saliva, giving the impression of imminent aggression. The dog is facing the left (the symbol of the past), where his goals relate to ‘ambitions’ (‘to increase self-esteem’); his back is turned to ‘worries’ (‘physical condition’, ‘health’, ‘my own mistakes’). In the lower part of the map, ‘reality’ is laid out, exclusively associated with the phenomena of experience itself and to being affected by sentiment (re-visiting the same location after 13 years), pointing to the realization of aging. An optimistic motto is located above the figure of the dog: ‘Every dog looks forward to it.’

Second mind map: The mind map consists of fewer concepts, with the central motif being an image of a dog again. This dog, however, demonstrates different qualities: it is
Figure 1. The mind maps F1 (male, 44 y.o.). Reproduced with permission.

Figure 2. The mind maps F2 (male, 44 y.o.). Reproduced with permission.
dynamic, as if moving, turned to the right (toward the future), has a bright spark in the eye, and appears rather playful and optimistic. The dog is surrounded with lines of various colors, going from the left to the right, where they all intertwine and join into one powerful stream. These connected colorful streams create a sort of protective barrier (that could be interpreted as a placenta or womb) with an ‘archetypal fire’ above. The left side verbally relates to ‘history’ (mainly in the sense of being outdoors), to ‘family’ and ‘the necessity of change’. In the middle, there is a distinct boundary called ‘archetypal journey’, surrounded with trees drawn in black. On the right, the open future is visible in the form of a big, bold question mark (or two antagonistic curves drawn in blue and red, with a subtle purple background and a giant green dot) labeled with the words ‘We will see.’ In the upper part of the map, the author’s shift and becoming refreshed is mentioned (Figures 3 and 4).

First mind map: The mind map consists mainly of concepts and its center is an image of a small black dog, enclosed in a black circle. The upper part of the diagram is dominated by the symbol of the sun with the author’s name. The central figure of the dog is small, not elaborated in detail, drawn in expressive black color that does not repeat anywhere else. The course manifests as something unknown, associated with apprehension and personal insecurity. Verbal concepts stand out and relate directly to the author four times: ‘I’, ‘overcoming’, ‘self-discipline’, ‘family’, once to ‘nature’. A number of question marks with themes relating to identity and the purpose of doing the course (‘New/unknown people’, ‘Joy? Fear?’, ‘Will I manage it?’, ‘I can’t give it up’, ‘How do I find the road to myself?’, ‘What am I doing?’, ‘Why am I doing it?’, ‘Why am I so far from myself?’)

Figure 3. The mind maps H1 (female, 27 y.o.). Reproduced with permission.
'Who am I?') intensify certain tensions, uncertainty and concerns not only from the forthcoming unknown activity but also from the personal attitude and approach to this activity. However, the concepts concerning the natural world ('respect', 'beauty', 'freedom', 'roaming', 'friendly, severe, fair', 'my home place') indicate sufficiently strong determination to undertake such a demanding activity.

Second mind map: The expression was completely reversed after the completion of the course: the role of words diminishes, whereas colorfulness and visual symbolism strongly dominate and a different dynamics of expression arises. It seems that the focus has shifted from personal inquiry to acceptance. The fundamental question of philosophical anthropology remains: ‘Who am I?’, yet the potential acceptance of one’s own shadow leads to deeper recognition of new possibilities: ‘my life under the hood’, ‘new quality of living together’, ‘taking care of myself’. The concept number is ‘vacuum’ (on the side symbolizing the past), which may also be interpreted in the form of the philosophical model of self-emptying/fulfilment (Kenosis/Pleroma) – in other words, the necessity to get rid of the moribund forms and boring parts of life as an opportunity to welcome the new. The drawing does not demonstrate the author’s instinct for self-presentation as much as her opening to the outdoor, natural environment with all its colorfulness, its variability of values and contrasts. The cloud with shades of blue and black (the dark side is symbolically located in the past) and as the sun in shades from yellow to orange (the future is perceived with optimism) indicate that the oppositeness is not based in polarity, but in the continuum of transitions. Similarly, the shades of the landscape depicted in the form of the hills shifting from brown (firm foundation, anchoring in the world of nature) through
dark and light green and proceeding to another horizon of white hills up to the clear sky and toward the sun. The dramatic shift in expression is depicted by a different choice of verbal cues as well as by the use of many different shades of color, as if symbolizing the insight under the surface of things with the possibility of perceiving the polysemy of all of the phenomena in their colorful diversity. The radiant colorfulness with a certain structured arrangement involves the central circular shape (a mandala) with its distinct boundary, where tentacles or seats are projected, carrying the significant questions concerning the respondent’s current way of experiencing and self-awareness. It naturally involves asking essential questions, inquiring about identity and the ability to search for new qualities in life. All of the movement, transformation and opening demonstrate the respondent’s enrichment, intrinsically involving radiation of energy and order (Figures 5 and 6).

First mind map: The mind from the beginning of the course contains the metaphor of the tree of knowledge. The tree, standing in the center and occupying a major part of the artifact, is spreading widely, branching out, and has strong roots balanced with the top of

**Figure 5.** The mind maps I1 (female, 29 y.o.). Reproduced with permission.
the tree. The tree distinctly delineates the polarity of the crown: ‘day’ as the sun and the roots: ‘night’ as the moon and stars. The tree crown with branches spreading in the daylight versus its roots growing in the darkness may be interpreted on the level of conscious and unconscious; the recognition of experience obtained during the course does not have to be limited to the consciously perceived information. The earthly, hidden part is under the influence of the elements: ‘earth’, ‘water’ as well as ‘the human’ who is also highlighted (in the polarity of two figures, again). The upper (light, conscious) part of the tree contains concepts amplifying the symbolic meaning of light: ‘sky’, ‘air’, ‘clarity’, then a few expected constituents, associated with winter trekking: ‘animals’, ‘nature’, and also ‘silence’ and ‘quiet’, complementing the harmony. ‘Team’ (in other words, those who know, who prepare the project and become the trek guides) is located at the very top, in a semantically prioritized position.

Second mind map: At the end of the course, the presentation of the participant’s understanding dramatically changed: the signs of being outdoors, the elements of ‘earth’, ‘water’,
and ‘animals’ that played a substantial role are totally absent, along with the polarized arrangement. Instead of the division and branching out of the center to the sharply marked periphery, we can see a fusion of waves, utilization of the whole space, dynamics of wavy spirals and compactness of a circle. The prevailing color is purple (a blending of blue and red), a symbol of transformation. The polarity seems to have changed into a whole that gives an impression – despite all its dynamics – of certain tranquility. The change is also apparent in the choice of descriptive concepts: ‘community’ became the most significant concept in terms of the acquired experience and its description. ‘Community’ is located at the very top, as the very first concept and is drawn in a purple color that enters all planes of the picture (this is how the respondent does not accent the importance of the organizing team anymore and includes the participants because they together form one coherent community). The second most significant concept following ‘community’ at the top is ‘energy’ (also radiating from the excited arrangement of whirling elements). A semantically lower level includes a complex of three significant phenomena: ‘nature’ (in all its complexity, without the need to exclude its individual representatives), ‘knowledge’ (which used to be a central question before the course, symbolized by the capitalized ‘tree of knowledge’, perhaps in a metaphor of the biblical good and evil, is now a much smaller and probably changed into an answer, not deserving so much attention and highlighting) and ‘humility’ (awareness of one’s own power and limitations, potentially including the perception of what is beyond our power, and larger than ourselves) (Figures 7 and 8).

First mind map: The mind map mainly consists of concepts and the center is occupied by a symbol of a dog’s head (rather reminiscent a wild wolf) and the course title. The

![Figure 7. The mind maps J1 (female, 30 y.o.). Reproduced with permission.](image-url)
symbol of the dog’s head is enclosed in a circle of blue snowflakes. The blue also dominates in the statements and images developing the central theme, so the first impression is that of coldness. Winter is specified in two of the semantic lines: in ‘natural conditions’, where symbols of freezing, raining, snowing and clouds appear (along with a peripheral symbol of the sun) and in ‘equipment’, where the individual words and images (a sleeping bag, tent, sleeping mat, stove, dishes, etc.) also prevail in proportion to the less distinct ‘fun’ and ‘warmth’ with the image of fire. Other lines lead to ‘landscape’ (symbolized by a tree, ‘ancient beech’), people (with the expectation of ‘new relationships’, ‘help’ and ‘shared experiences’) and to ‘Vacation School of Lipnice’, highlighted in a slightly disarranged network similar to the neural system (probably the network of human relationships, further specified with words ‘instructors and novices and other engaged people’).

Second mind map: This time, the mind map is reduced to symbolic visual expression, without any words or rational structure; the dynamics of the expression transformed into emotions. It utilizes the power of colors and the potential of abstraction, shifting from words to images, from a firm structure to looseness. The map center is not depicted, and the prevailing blue color increases its intensity and fullness, covering dynamically the whole surface of the lower part of the picture (in the form of a wave, water, snow-covered mountains?). Two spherical symbols draw one’s attention with their energy and dominate the whole artifact. In the front part of the wavy winter (snow-covered?) landscape, a seeing eye emerges (as if from the dark depths). Something hidden seems to be getting through to the light, from concealment to unconcealedness (the ancient Greek definition of the truth in the form of Aletheia is actually understood in the mode of transition). A red (blazing?) sphere reminiscent of the planet Mars (with a symbolic

Figure 8. The mind maps J2 (female, 30 y.o.). Reproduced with permission.
Figure 9. Mind maps K1 (female, 23 y.o.). Reproduced with permission.

Figure 10. Mind maps K2 (female, 23 y.o.). Reproduced with permission.
meaning of belligerent energy) rises above the horizon. This red sphere, in the upper part of the picture and dominant in size, gives the impression of the raw energy or fire, being like a fiery planet that can bring positive energy and warmth as well as destruction. In the distance between both spherical objects, there is a triangular object (a stone?) slightly reminiscent of a shark’s fin; its meaning is a matter of speculation. The triangle, in its three-dimensional depiction, is shaped like a pyramid, perhaps associated with a fortress, base, or power. The triangle may also be interpreted as an indicator of direction or a warning sign, an indicator of danger. Its corners are not pointed as in traditional depictions, but rounded; the whole symbol is thoroughly elaborated, shaded with black color, passing to blue. All in all, it appears to be enigmatic, dangerous and open to various interpretations. The artifact emanates antagonistic elementary energies, the power of emotions and the power of life. Any attempt at interpretation should leave much unspoken to avoid mere speculations or impressions, given the lack of support for clear, distinct meanings for the symbols used (Figures 9 and 10).

First mind map: The mind map is focused on verbal concepts, with the addition of two visual elements: a group of four human figures and a central object, an igloo. The igloo is apparently constructed from individual snow (ice) blocks, and there is a fire burning inside, whose flames and smoke are visible even above the structure itself. It manifests a contrast of a cold-looking (blue) provisional home, enabling survival in extreme conditions, and of a red-glowing fire (the interior energy penetrating through the roof into the surrounding environment). The image may be interpreted as the inner fire, hidden from the surroundings, probably being surrounded with a cold, inhospitable landscape. The respondent’s concepts are divided into three semantic areas: ‘psyche’ (with the opportunity to think about herself, her relationships and life), ‘experiential education’ (theoretical reflections of her experiences in the future) and ‘outdoor lifestyle’ (emphasizing ‘movement’, ‘training’, ‘equipment’, ‘nature’ and ‘community’).

Second mind map: The mind map radically changes. It is evident in the central object, where the igloo is replaced with an intense red fire with purple smoke and a living tree, as well as all the other scenery. The central scene seems to divide the landscape into two areas: the left one (symbolizing the past) is wintertime mountain scenery with a setting sun and a provisional camp made of tents and a campfire, while the right one (symbolizing the future) depicts the mountains in the summertime, during the day, with the sun at its zenith. The deeply red (not orange or yellow) fire extends into a purple area (the symbol of transformation as mentioned in the interpretation of the previous respondent’s artifact, as well as spirituality), probably depicting the smoke, or the process of transformation between the fire and the tree. The essence of the transformation is defined by the course title, informally named ‘Gothic 2012’. Whereas fire naturally feeds on wood and such a transformation usually involves trees changing into ash, here the opposite idea is depicted: the fire nurtures a living tree, whose trunk with branches and leaves grows out of the energy of the fire and aims both upwards and toward the sun, being open toward the future. Even the recorded concepts differ substantially in comparison with the previous map of the same respondent; one line represents fundamental human values: ‘truth’, ‘genuineness’, ‘sincerity’ and ‘love’ (which is highlighted with red color and the symbol of heart), while another line leads (as in the previous map) to ‘people’; however, there is a shift from an anonymous group of people to a journey leading to the fulfillment of ‘purpose’ and ‘mission’, that is, to ‘children’. This journey is crossed by a line expressing the transition from the ‘lie’ to the
future’ and to the ‘truth’ via ‘intuition’. The third concept line connects ‘nature’ and ‘God’s creation’ with the ‘spirit’ which equals ‘life’. All three branches radiating from the central symbol are interconnected (e.g. ‘values’ and ‘spirit’ are linked strongly) and the whole area is employed for the expression of feelings.

6. Discussion

From examining existing research using mind maps in educational discourse, most often using quantitative or concept analyses, we have found that the quantitative scoring system (D’Antoni, Zipp, and Olson 2009) is the most elaborated tool for the evaluation of mind maps offered in the literature. We have not been able to find any article offering a methodology for performing qualitative analysis of the visual components of mind maps. Thus, we were not able to find any instructions as to how to evaluate such artifacts as research data. So we offer our findings as not only for the insight it offers about the topic (participants’ understanding of their experience from a winter snowshoeing course), but also to propose a possible methodology (how to utilize pictorial and symbolic aspects of mind maps as research data).

Selecting five pairs of mind maps from 17 can be considered to be the limit of the study, but we believe that there is sufficient saturation and that more cases would not radically change the perspectives. In addition, considering the limited extent of the article, the number of maps chosen seems to represent the maximum possible data set.

The mind maps created at the beginning of the course and at its end demonstrate distinct differences and dissimilarities. The evaluation conducted by a team of experts resulted in the following characteristics appearing in the investigated mind maps.

The drawings made prior to the outdoor camping expedition appear to be more rational, schematic and concrete. They contain a higher number of specific concepts, which may refer to the prevalence of cognition, thinking and rationality. The visual artifacts seem to express the respondent’s need to sort out, settle, disclose and understand schemes, to organize everything systematically in graphs. They seem to map specifically that which is significant or expected. The impression that they give is static, without movement and energy. They do not absorb the viewer’s attention. They do not express experiences, but rather a structure of the future, of experiences, fears and questions, and a rendering of facts.

The drawings made during the final part of the LGD project, a period of time after the intense outdoor program, convey a certain otherness, even though the instructions were identical. Most respondents apparently abandoned rationality and preferred an intuitive perspective and deeper reflection of feelings. It may be sensed and seen that they were absorbed, and drawn into in the experienced event. The drawings become more abstract and colorful. Some contain magical shapes reminiscent of mandalas; others emphasize symbols of nature (fire, mountains, sun, water) in all of their power. The drawings mostly appear to be more harmonious, even meditative; there is an increase in the coverage of the drawing area and in the number of shades of color used, as if their emotions harmonized and their expression became stronger and more intense. The drawings do not contain as many words and concepts; words seem to have lost their meaning and are not necessary anymore. There is a transition from words to images, from reason to emotion, and from concreteness to abstraction.
In our attempt to ascertain specific information concerning the participant experiences from a winter trekking course, as manifest in the comparison of the participants’ mind maps created at the beginning and end of the course, we conclude with these particular generalizations:

- From vague fears and inaccurate expectations of self-overcoming to acceptance of one’s self and higher self-confidence.
- From polarity to a holistically perceived reality with emphasis on energy and dynamics, movement and transformation, simultaneously conditioned by an order.
- From concepts to colorful visual symbolism (with emphasis on the symbols of the elements, particularly fire, or a journey, including the purpose of one’s life journey and mission), from concrete phenomena to their abstraction.
- From focus on the past (winter, stability, firmness) to open acceptance of the future (fire, sun, energy, dynamic change).
- From the respondent’s personality to community.
- From the bodily, physical dimension of experiencing to the spiritual or holistic level in the meaning of the experience.

7. Conclusions

The research presented here tried to demonstrate the polysemous richness that is potentially inherent to the visual symbolism of mind maps and is naturally ignored by quantifiable approaches based upon the positivistic ideal of science. Needless to say, the value of potential interpretative discourses may vary depending on the contexts and experiences of the researchers who use this tool. We are aware of the possible risks associated with such a research design, so we conclude by pointing out some of them.

Above all, there is the risk of subjectivism, amplified in an interpretation provided by an individual with a lesser degree of experience and high self-confidence. This risk may be reduced by active humbleness during the hermeneutic effort to gain deeper insight, and also by conducting a team interpretation, recording the associations of the individual researchers and using these in specific formulations only after reaching consensus. In this way, it is possible to fulfill the condition of triangulation, through the collaboration of a group of experts, which helps increase the validity of the interpretation.

Furthermore, there is the risk of excessive generalization of one’s findings. Such research, dealing with personal experiences, is anchored in a hermeneutic and phenomenological philosophical approach rather than in a positivistic one. That is why there is a strict limitation to the applicability of interpretations derived from individual experience which should not be expanded to make a general claim of truth. Perceptions are valid for the respondents, not for whole society – they allow us to better understand them, not explain their behavior.

Despite these (and other possible) risks, we believe that the possibility of analyzing mind maps in educational research is an inspirational method, which enriches our knowledge with meaningful experiences that are either difficult to detect by other methods or would otherwise remain completely unexamined.
Disclosure statement

No potential conflict of interest was reported by the authors.

Notes on contributors

Ivo Jirásek is a professor and vice-dean for research at Faculty of Physical Culture, Palacky University Olomouc, Czech Republic. He undertakes philosophical aspects of movement culture (game and play, experience, body, movement), including topic of spirituality of movement activities and spiritual health. His interests are also in experiential education and outdoor education.

Irena Plevová teaches general psychology and developmental psychology. Her researches focus on issue of stressful situations in the educational environment and research on school readiness. She leads training courses of ‘children’s drawing’ for teachers.

Miroslava Jirásková is Ph.D. student with the topic focusing on meaning of life and education.

Adéla Dvořáková is Ph.D. student and instructor of Vacation School of Lipnice. She participates in the organization of experiential education courses for both non-profit and profit organizations.

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