Using visual-biographical interviews to analyze learning and spatial experiences

Felix Bentlin and Sarah Klepp

As part of life-long learning and experience processes, humans come into contact with built space and their socio-spatial environment. In educational research, however, the planning, building, and designing of spaces is a surprisingly neglected and comparatively undeveloped area, especially from the perspective of the learners. Nevertheless, it is possible to employ research questions, methods, and findings from the field of built environment education using an inter- and transdisciplinary approach, thus offering reciprocal points of reference between spatial sciences and educational research. Starting from an integrated understanding of space (Löw 2001), forms of (spatial) appropriation (Deinet/Reutlinger 2004) and self-efficacy (Bandura 1997) are also inherent components of the spatial design disciplines: acting autonomously and being creative in one's own environment. Understanding how built environment skills and knowledge are acquired is not just necessary for training architects, planners, and urban designers. The influence of different lifeworlds on the learning and educational process is highly relevant for all educational biographies, especially given the interdependency between educational success and social background: How does the creation of spatial contexts impact learning? What role does learning play in and about the space? How are learning processes initiated or restricted in terms of shaping the environment? Therefore, we regard biographical learning processes as an interplay between various educational settings, as well as educational and learning environments, in one's life history. As such, we focus our research on spatial references and the significance of different informal and formal educational settings. Based on the everyday lifeworlds of young people, we illustrate how numerous educational opportunities and biographical learning experiences in *Baukultur* can be described and analyzed in different learning spaces.

Our everyday experiences are interconnected to such an extent that a special method is required to identify spatial references in biographically relevant moments and processes of a learning path. The method presented here is used to provide an overview of individual learning biographies from a disciplinary perspective: In addition to the institutional acquisition of knowledge and skills, informal appropriation and learning processes are also taken into account with regard to multidimensional empirical aspects.

Below we describe how visual survey techniques can help us to stimulate and classify narratives from different spatial settings and to better understand learning processes. To introduce the approach, we first outline a conceptual framework and then explain the methodological principles. Afterward, we present the method as a combined qualitative and visual technique and describe how to use it based on a case study. In accordance with visual elicitation techniques, such as *graphic elicitation techniques* (Bagnoli 2009; Crilly et al. 2006), we refer to the method we have developed here as the life events approach. Beyond the context of *Baukultur*, this approach facilitates access to educational-biographical narratives and shows how people acquire and potentially expand personal skills and exploit spheres of activity by engaging actively with their environment. This, in turn, shows how learning about and in the space unfolds. Visualizing and describing individual learning spaces and learning worlds provides insight into complex learning biographies, documents multidimensional lines of development in the learning and experimenting process, and evaluates these in relation to space. By reconstructing the subject, it is possible to retrace the learning experiences and individual educational requirements in terms of their biographical relevance and to depict various dimensions of participation in the built space. This results in a themed and space-based learning matrix representing the embedded processes and frameworks for action of the subjective spatial constitution at the interface between *lebensraum*[1] and learning biography.

1 Reconstructing biographical narratives along the graphical timeline

We obtained significant insights into inter- and transdisciplinary research on built environment education in a long-term collaborative project between education and urban scholars.[2] As part of this partnership, we used biographical narratives as a methodological tool to generate findings about built environment learning.[3] We define built environment learning as the creative engagement of the subject with their socio-spatial environment and the built space. Accordingly, we analyze biography—in the sense of a reconstruction of lived experiences (see Ecarius 2008)—based on narrated experiences in the described lifeworld. The biographical perspective of learning and educational processes allows for an analytical approach that "understands these [processes] not as separate entities but within the temporally structured context and in relation to other life history experiences and processes, as well as their arrangement, which can be reconstructed in the

1 For a more detailed explanation see footnote 3 in Weidenhaus and Norkus in this handbook.

2 The starting point for this article was a three-year study on built environment learning in Germany and Austria carried out by Technische Universität Berlin, the University of Siegen, and the Wüstenrot Stiftung foundation under the leadership of Prof. Dr.-Ing. Angela Million (TU Berlin, Department of Urbanism and Habitat) and Prof. Dr. Thomas Coelen (University of Siegen, specialized in socialization, youth education, and life course research).

3 The study involved 44 interviews with young people between the ages of 8 and 18 years old. A comprehensive documentation of this study can be found in the monography published by Angela Million, Thomas Coelen, Felix Bentlin, Sarah Klepp, and Christine Zinke titled *Educational Institutions and Learning Environments in Baukultur. Moments and Processes in Built Environment Education for Children and Young People* (Million et al. 2019).

biographical material" (Ruokonen-Engler 2018: 441, own translation). Combining visual and narrative methods results in an approach to biographical research that represents an alternative to narrative-focused research methods. The central object of investigation is significant for this interdisciplinary approach: The biographical narrative and biographical space are united and visualized by using the life course as a graphical communication element (Lackner-Pilch/Pusterhofer 2005: 182 et seqq.).

Together with the learners, we concentrate on life experiences and life events that can at the same time serve to shape their identities (Ecarius 2008). They are recounted in the course of qualitative interviews, combined with visual survey techniques, and arrange chronologically according to the *biographical narrative*. Here, the representation aims to differentiate between the different biographical characteristics in terms of their spatial educational settings and subjective learning processes based on socialization spaces in what we refer to as a life course: In the empirical material we collected, we find the family as an educational environment, daycare and school as learning spaces, leisure time, peers, and media as learning worlds, and social space (Million et al. 2019: 26 et seqq.). We use the biographical *timeline* within structured interviews as a graphical guide and stimulus in order to encourage the respondents to fill in any gaps in their memories. At the same time, the timeline serves as a structural element for the dialogue, which can be used to categorize and arrange life events both visually and narratively in order to address the space-related aspects of subjectively relevant experiences in the biography. Within this *biographical space*, we illustrate the experiences young people have with architecture and space. This approach facilitates low-threshold access to biographical experiences by not only focusing on the verbal exchange and the individual being interviewed but also by adding visual aspects to the dialogue that can provide new impetus. As a result, it is possible to elicit aspects that are difficult to verbalize, such as everyday experiences, emotions, or implicit knowledge.

1.1 Educational-biographical spatial research: Theoretical and methodological basis

Assessing the relationships between *lebensraum* and educational biography requires an inter- and transdisciplinary exploration, as well as a biographical perspective of learning and appropriation processes. In the field of educational-biographical spatial research (see, among others, Bertels/Herlyn 1990; Meusburger 1998), we adopt a socio-spatial perspective that takes into account both the pedagogical level of biographical learning and—as in our example—the architectural and space-related experiential level (Kogler 2017: 2 et seqq.). In general, we make use of research methods from the spatial sciences in order to uncover references and interfaces to other areas of education (Million et al. 2019: 16 et seqq.). Biographical-analytical approaches, as well as theoretical approaches to education and learning, can be found in a wide range of different disciplines; nevertheless, there have been attempts to determine the nature of the relationship between educational and learning processes (Ruokonen-Engler 2018: 441; also see Marotzki 1990; Ecarius 2006).

1.2 Biography and space as social constructs

At first glance, biography and learning are traditionally central fields of research in educational studies (Ecarius 2006: 92 et seq.). We intend to use both concepts here as the starting point for examining biographical dimensions of built environment learning and for expanding the socio-spatial analytical category of space as defined by Martina Löw (Löw 2001). Thus, our thematic focus on built environment education and learning implies a dual approximation to definitions. One attempt at defining the term understands built environment education as "self-constructed built environment knowledge, skills, and aptitudes […] aimed at raising awareness for an architecture surrounding and appropriated by people and at examining built space" (Reiterer 2017: 137, own translation).

Similar to how this applies to sociological approaches, biographical research in educational studies understands the concept of biography as a social construct that can both be constituted by the dialectical relationship between experience, memory, and narrative and reconstructed by the dialectical relationship between the individual and society (Rosenthal 1995; Völter et al. 2005: 10). Against this backdrop, the biographical-analytical approach strives to reconstruct "patterns of individual structuring and processing of experiences in social contexts" (ibid.: 7 et seq., own translation), which always refer to underlying societal and social conditions. Even though the biographical-theoretical premises resemble one another, the perspectives in educational studies focus more on the learning experiences and educational and socialization processes of the subject (Ecarius 2018: l66) compared to sociological biographical research (see Rosenthal 1995). Biographical-analytical educational research, for example, uses biographical methods to reconstruct "individual and collective learning and educational processes" in both formal and non-formal (educational) settings (Ruokonen-Engler 2018: 440, own translation).

First and foremost, *biography* describes "[t]he arrangement of times, experiences, and social circumstances in one's own life" and can therefore be considered a process of appropriation (Böhnisch/Schröer 2010, own translation). This thinking is discussed and propagated in research using the socio-spatial concept of *biographical space*. The "aspect of a learning and educational space" structures and outlines experiences, while at the same time making them compatible (Lackner-Pilch/Pusterhofer 2005: 282 et seqq., own translation). In contrast to the subject-oriented educational theory of Winfried Marotzki (1990), Jutta Ecarius (2006, 2008) differentiates between learning and educational processes. She deems "narrated experiences" as learning (Ecarius 2008, 2018: l69, own translation). Learning, according to Ecarius, "is then no longer just reflexive or conscious but rather gradual or delayed" (ibid., own translation). Thus, the analysis of biographically relevant learning processes requires to a much greater extent the reconstruction of social interactions and contexts (Ecarius 2006: 98 et seqq.). In this context, the "manner in which the social world, spatial arrangements, and key attachment figures are perceived and the experiences that result from them, which are likewise emotionally biased, […] is of fundamental importance" (Ecarius 2008: 104, own translation). In connection with biography and built environment learning, we are interested in learning experiences that are biographically significant in retrospect; that is to say, we use the memory-based narrative style of young people to gain access to subjective learning experiences. As part of their actions and experiences in connection with the built environment in di-

verse learning and educational spaces, children and young people appropriate individual knowledge and skills, expand their own competences and spheres of action, and train biographical orientations that can be evaluated empirically with the concept of (spatial) appropriation as developed by Ulrich Deinet and Christian Reutlinger (2004, 2014: 11 et seqq; see also Kogler 2017, 2018). Consequently, people collect (built environment) learning experiences in varying formal and non-formal settings, with space representing a fundamental commonality as a multifaceted learning and educational space.

2 Combined qualitative-visual techniques

In empirical biographical research, interviews represent a standard data collection tool, used to generate contexts of experiences in particular by means of verbal communication based on the biographical-narrative approach (Schütze 1983; see Weidenhaus/Norkus in this handbook). In terms of our research topic, as well as the narrative elements of our data collection, we use the principle of the (partially structured) guided interview (see Thierbach in this handbook) as a guide, contrary to standard practice in biographical research. This allows for a thematic focus on built environment learning experiences. At the same time, this approach offers possibilities for an open narration of biographically relevant experiences. We believe that the advantage of using guided interviews is that the researcher deliberately asks as few open questions as possible with a reference to the subject and the biography (see Fig. 2). In addition, we were faced with the methodological challenge of finding an appropriate method for assessing different levels of experience: This includes the practice-oriented dimension of building, as well as the young people's perceptions of architecture and space.

2.1 Combining visual and verbal survey methods: Participatory guided interviews and graphic elicitation techniques

It is not just difficult for young people to verbalize everyday experiences or implicit knowledge. Our daily experience is made of a multiplicity of dimensions, "which include the visual and the sensory, and which are worthy of investigation but cannot always be easily expressed in words, since not all knowledge is reducible to language" (Bagnoli 2009: 547). When choosing their survey method, researchers who work qualitatively with children and young people are therefore presented with the challenge of selecting an approach that conceives young people as subjects and competent actors in their lifeworld and, ideally, includes them as participants in the research process (see Million in this handbook). Classic data collection methods quickly reach their limits here, such as narrative interviews in biographical research. Guided interviews are also usually based entirely on narrative elements. Verbal survey methods require certain powers of recollection on the one hand and good storytelling skills on the other. Furthermore, visual means of expression allow for not only low-threshold access but also the development of various levels of experience (Bagnoli 2009: 547 et seqq.).

2.2 Graphic elicitation techniques

Visual survey methods can serve as a methodological tool for stimulating stories about biographical experiences, implicit knowledge and skills, and personal competences or emotional experiences (Lobinger/Mengis 2018: 3). Various visual elicitation techniques exist that make use of different kinds of visual elements: including, for example, maps, drawings, or photographs (Crilly et al. 2006: 341; see Dobrusskin et al. in this handbook). Visual elicitation techniques can vary in terms of the origin or production of the visual material (Lobinger/Mengis 2018: 3 et seq.; Pauwels 2012): The researchers or participants can incorporate this material into the conversation, or graphical elements can be developed in the course of the conversation (Crilly et al. 2006: 342).

In the field of *graphic elicitation techniques*, diagrams and drawings are also integrated into the research process as visual stimuli in the context of qualitative interviews (ibid.). In English-language research, *timelines* are used in interviews as graphic elicitation techniques in order to encourage young people to reflect on biographically significant events in their past, present, and future (Bagnoli 2009: 560). While "already *existing visual artifacts*" are used more frequently in *photo elicitation* (Lobinger/Mengis 2018: 3, own translation, emphasis in original), visual material produced by the respondents themselves has been used to date to create a stimulus for the timeline (Crilly et al. 2006: 342). These *participant-produced visuals* are also conceivable "in the form of co-production with the involvement of researchers and participants," which in turn entail "different degrees of involvement" of the interviewees (Lobinger/Mengis 2018: 3 et seq., own translation). Similar to children's drawings, timelines can serve to stimulate conversation, thus helping to encourage narrations about biographical experiences. The participant-produced timeline can act as a memory-aid to help remember certain biographical details or verbalize subjective experiences (Bagnoli 2009: 549 et seqq.).

3 Triangulating methods, collecting data, and performing analysis: From the biographical timeline to the space-based life-events approach

We discuss the application of the biographical timeline as an example below: a variant of the timeline developed by Bagnoli (2009) adapted to our research that we used as part of the study "Learning in Built Environment Education" as a complementary method and refined to create the *life-events approach*. In this case, further biographical observations and links with emotional events play a role that must not be underestimated: After all, the life-events approach not only reconstructs direct and indirect learning and experience processes but also makes it possible to understand ascriptions of meaning and emotional connections.

3.1 Applying this approach

A timeline printout, colored pencils, and Post-its are prepared for the interview. The interview is recorded using a voice recorder. During the interview process, the respondents create a life-events line themselves or in collaboration with the researchers. The time-

line is a horizontal arrow; at the start of the interview, the current age of the interviewee is entered at the end of the arrow (see Fig. 2). During the interview, the interviewer or respondent elicits experiences on Post-its; that is to say, they collect memories, teasing out diverse moments and events from the respondent. Milestones represent especially prominent events here, which the respondent marks as particularly important built environment memories in the interview. In order to gain a comprehensive understanding of the educational background, both individual and institutionalized learning processes are collected together.

3.1.1 Terms and approaches

The interview is conducted based on general terms from the discipline being studied, such as building, planning, and designing from architecture. The topics are developed continuously by means of the verbal questions and corresponding specifications about the subject and adapted situationally to the individual stories of the respondent (see Fig. 2). In order to help the participants find the answers, references to the subject are used: an appropriate interview setting characteristic of the location together with descriptive questions and associations. Indirect experiences of built environment teaching formats and retrospective built environment learning experiences are explored by means of follow-up questions as to whether the contents can be processed biographically somehow or show connections to other lifeworlds.

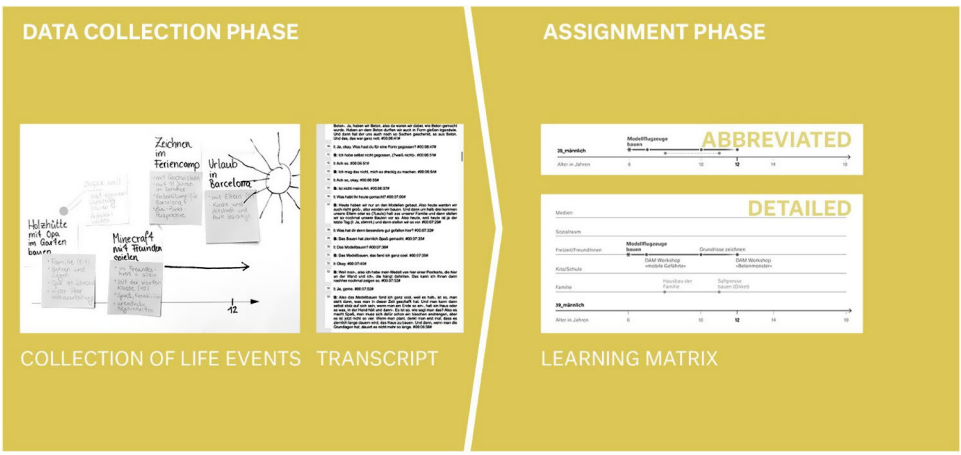
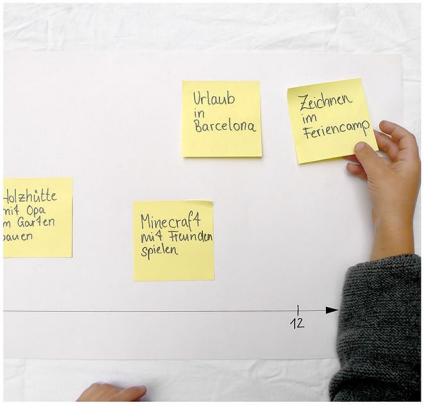


Fig. 1: The phases and products of the method can be divided into the data collection phase (life-events collection, transcript) and the assignment phase (learning matrix. | ©Felix Bentlin and Sarah Klepp)

1. CREATE TIMELINE AND COLLECT EVENTS

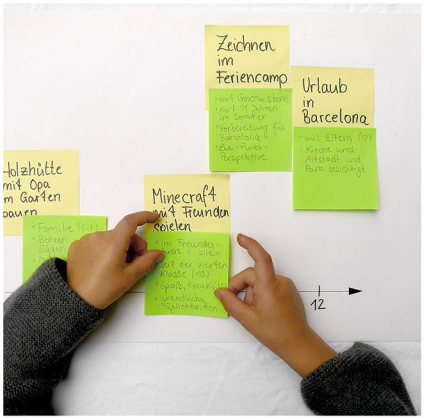
COULD YOU PLEASE DESCRIBE WHAT YOU UNDERSTAND OR HAVE EXPERIENCED IN CONNECTION WITH BUILDING, PLANNING, AND DESIGNING?WHAT DO YOU INCLUDE HERE AND WHEN WAS IT?



2. SORT AND SPECIFY EVENTS

DIRECT: *PLEASE THINK ABOUT EVERYTHING THAT YOU HAVE EXPERIENCED IN THE [WORKSHOP]. HAVE YOU EVER HAD THE OPPORTUNITY TO EXPERIENCE THINGS RELATED TO BUILDING OR DESIGN? HAVE YOU EVER BUILT ANYTHING? IF SO, COULD YOU DESCRIBE WHAT IT LOOKED LIKE?*

INDIRECT: *COULD YOU PLEASE DESCRIBE IN MORE DETAIL WHAT YOU DID IN [THIS EXPERIENCE]? WHAT WERE YOUR TASKS? WHAT DID YOU LIKE/DISKLIKE IN PARTICULAR ABOUT [THIS EXPERIENCE]?*



3. MARK AND EVALUATE MILESTONE

WHAT DID [THIS EXPERIENCE] MEAN FOR YOUR EVERYDAY LIFE? DID YOU DO SOMETHING COMPLETELY NEW? HOW CAN YOU USE YOUR EXPERIENCE IN YOUR EVERYDAY LIFE?

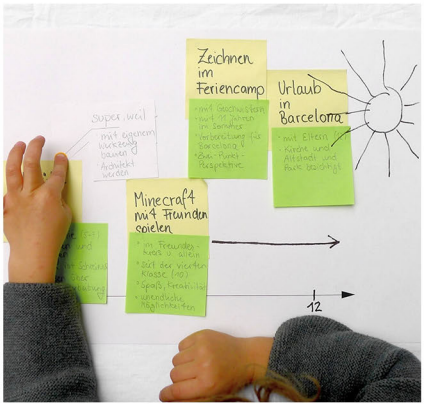


Fig. 2: The reconstructed mock-ups for conducting the interviews show the individual steps of co-producing the visual material. | ©Felix Bentlin and Sarah Klepp

With the help of these two steps in the interview, new stimuli for conversation are constantly being introduced to acquire information about the young people's understanding of architecture and space.

3.1.2 Data collection on the timeline and assignment in the matrix

The survey takes place in two phases: the data collection phase and the assignment phase (see Fig. 1). In order to create the timeline, the following steps are carried out in the data collection phase (see Fig. 2), which should not be understood as a sequence of analytical steps but rather as partially parallel, interlocking, and iterative strands of data collection. In the interview, events are first collected and sorted together on Post-it notes. These events are then described in detail and characterized. Using targeted follow-up questions, the events are analyzed to determine their significance for the individual's everyday life. As soon as the life-events collection is considered complete, particularly important events are marked with a sticker. Afterward, the life events are fixed on the timeline.

In the second phase, the final collection of life events is transferred digitally to a matrix of five socialization areas developed by us (see Section 1). A standard hierarchy, color-coded styles, and formal coding make it possible to compare the different surveys. Figures 3 and 4 illustrate how the selected graphic language is coded using both colors and symbols. The different color categories are assigned to the physical educational institutions and learning or educational environments that were found. In this case, educational settings—such as childcare centers and schools, along with leisure time and friends—are grouped together in one color category. The symbols designate moments and processes of built environment experiences, as well as biographical milestones. The latter represent events that denote particularly important built environment memories for the children and young people in the interviews.

At the same time, the chronological visualization is presented as a schematic diagram of life events. Because this order is based on memories, it comprises only rough estimates of the periods of time in some instances. It is important to assign the events and processes as best possible. The temporal units are only collected schematically for each year, which means the events need not be entered for precise months. Periods of time ranging from early childhood to adolescence are indicated, frequently including memories as early as the age of six. The matrix is created with a detailed account of all events, while a second abbreviated matrix is created in parallel for the purpose of a comparative overview. The block graphics (see Fig. 4) represent the diverse range of experiences related to the built environment.

Fig. 3: Detailed learning matrix: The three examples show the subjective learning path within the five socialization and learning spaces (Million et al. 2019: 166).

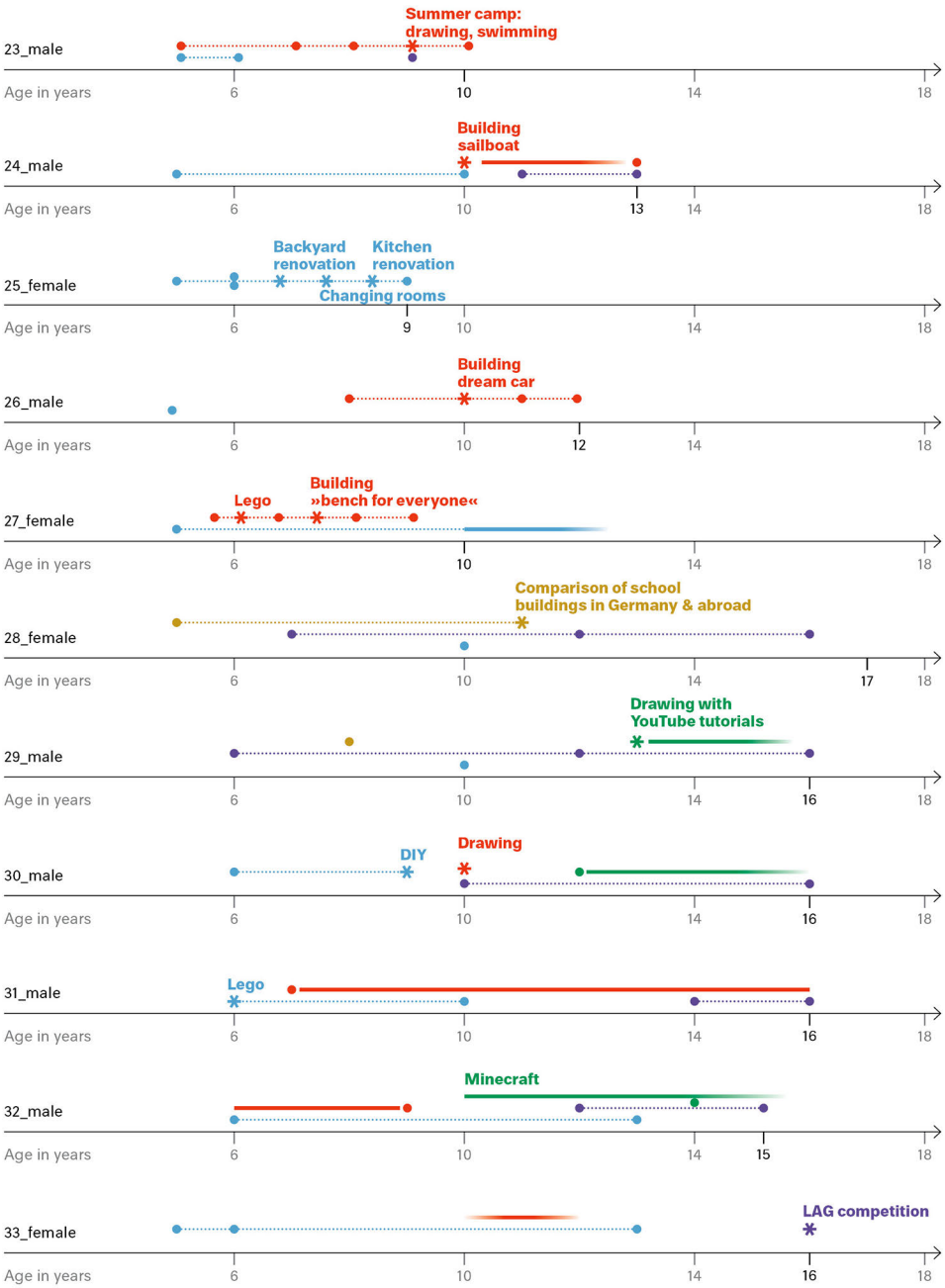


Fig. 4: Abbreviated learning matrix: The summary makes it possible to compare and obtain an overview of the learning paths of a certain group (Million et al. 2019: 86).

In this step of the digital styling, the life events are transferred to the timeline as moments (point) or processes (line). Multiple moments and events are related to one another across extended periods of time although this link is not expressed or arranged as such by the interviewees (point-line-point). The association to the areas of socialization are identified by the details and descriptions in the collection of life events. In addition, only the descriptions of the actions are filtered out as activities. All life events are then organized horizontally and listed vertically, thus linking together various life events and processes, which are related to one another.

The (co-)production of visual material serves both as a thought-structuring element and as a memory-aid for the verbal narration of the respondents. The respondents and interviewers can refer to the experiences collected on the timeline at any time, which makes it possible to visualize or ask about details in the narration. This procedure demonstrates how both visual and text-based materials resulting from the interviews are interrelated and therefore analyzed as one unit (Lobinger/Mengis 2018: 11 et seq.; Bagnoli 2009: 567).

3.2 Analysis and interpretation

This approach *first* entails the manual collection of life events, *second* the creation of the digital learning matrix, and *third* the recording and transcription of the interview. To integrate the narrative and visual data, it is practical to use a comparative triangulation method when analyzing the empirical material (see both Heinrich and Million in this handbook). With the help of the MAXQDA software, the transcribed interviews were analyzed and coded inductively, ensuring the greatest possible openness based on a qualitative content analysis to structure the content (Kuckartz 2014). The interpretation focuses on the biographical experiences with planning, building, architecture, and space mentioned during the interview in the broadest sense. Here the respondents describe spatial experiences, important attachment figures, and details about the narrated (built environment) activities. Key criteria for the reconstructive analysis of the interview include:

- Form and perspective of the experiences (reference to social and lifeworld-related dimensions of experiences, such as mentioned attachment figures)
- Form of the activities and level of detail of the descriptions (reference to level of involvement)
- Description of a personal or observed action (reference to active or passive participation, as well as level of self-efficacy)

Key starting points for analyzing the collection of life events include:

- Positioning and temporal arrangement of the life events (as reference to the distinction between a long-term process and a momentary event)
- Striking or additional representation methods, such as symbols, drawings, explanations of events, or objects (as reference to biographically relevant experiences)

Both the visual material and the transcribed text are analyzed with regard to the narrated experiences on the basis of the criteria listed above. The life events placed on the visual material are first identified and evaluated manually in terms of their processuality. In order to link the text to visual citations, the transcribed interviews are analyzed using *MAXQDA* and then the code tree is complemented with visual material. In this way, the coding in MAXQDA can be condensed with the results from the visual material and the findings acquired from both sources can be merged (Bagnoli 2009: 567 et seq.). The cross-references between the analysis of the visual material and the interview transcript enable us to understand and categorize the narratives better; both data materials complement and enrich one another. Moreover, the triangulation of the different data material helps with the graphic preparation and translation of the timeline into a schematic diagram, as well as with the digital stylization of life events, which also allows for cross-case comparisons (see Fig. 3 and 4).

An analysis of all life courses reveals both processual experiences and intermittent recollections (Million et al. 2019: 83 et seqq.). Learning environments and educational institutions can be analyzed in terms of their biographical relevance and quality. For learning environments and educational institutions as a whole, but especially for the family as an educational environment, the respondents describe the self-determined appropriation, development, and use of these lifeworlds for both long-term experiences and intermittent recollections.

4 A reflection on methods: Between support and influence

By adding a visual and participatory survey environment, it is especially important to question critically the influence of the researcher. When producing and interpreting the visual material, researchers can influence the outcomes by providing indications or presorting material and can even prescribe mindsets. For example, "[t]ime may be subjectively experienced in ways that are not linear and that do not easily rest within the parameters of a mathematical progression" (Bagnoli 2009: 566 et seq.). An undesired result would be a distraction or limitation due to a targeted stimulation in the interview setting. But also a lack of confidence on the part of the respondents to formulate certain points must be reflected. For example, the horizontal arrow can also be drawn by the respondents, and the labels should at least be added collaboratively. Any individual ideas of the respondents, such as marking multiple milestones or unusual stories, should be integrated as best possible. This demonstrates the ambivalence of the combined narrative-visual approach: On the one hand, the method supports the subject, while on the other hand, it poses a higher risk of being influenced.

At the same time, the translation of the biographical timeline and the transcript into a schematic diagram and interpretation require a great deal of critical reflection. Biographical milestones, moments, and learning processes reflect the diverse range of memories that are mapped out by the co-productive reconstructive work between researchers and respondents: experiences in the family environment, role models and occupational profiles in the intimate social sphere, travel experiences, observations of architecture and space, interest-specific fantasy worlds, and even digital worlds, such

as blogs or gaming platforms. Especially outside of institutional education, there is a variety of educational and learning environments in which children and young people experience the built environment. Further correlations between learning and spatial experiences are still to be discovered and explored.

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