



The Application of Ego-Network-Centred Cards and Storylines in the Practice of Educational Research

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Abstract:

In the wake of the profound social and economic shifts following the COVID-19 pandemic, qualitative research faces the urgent challenge of adapting its methodological tools to a rapidly changing world. This study responds to that challenge by examining how innovative and revitalized qualitative approaches can enhance the credibility and depth of educational research in contemporary contexts. Emphasis is placed on the need for indirect methods, especially in studies involving teachers, teacher trainees, and parents, where conventional, passive roles in research are shifting toward more active and engaged participant involvement. Two methods – ego-network-centred card and storyline – are introduced in the study, which have been applied in the investigation of teachers' thinking, but are adaptable to various educational contexts, including both institutional and individual research. These methods are presented in a practical, user-focused framework, prioritizing their reproducibility and providing detailed guidance for their application. In order to this, methodology is structured around the methods' history, advantages, challenges, and comprehensive examples of their use in educational research.

Keywords:

ego-network-centred cards, storyline technique, qualitative research, teacher thinking research

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Introduction

Qualitative research methodology has been increasingly responding to the challenges generated by economic and societal changes in the post-pandemic period with an expanding methodological repertoire over the past decade. While this trend is not explicitly stated, and there is no available data to support it, everyday experience clearly indicates a reduction in respondent willingness. The longstanding desire for conformity, which has been described using various terms, have become commonplace (Bernreuter, 1933; Goffman, 1956). Different academic fields offer varying responses to these challenges, resulting in the emergence of new research methods (for example, netnography, videography – see Horváth & Mitev, 2015), the return of previously known but not widely used methods in new roles, or the adaptation of methods from one field to another, either in the same form or with slight modifications to their function.

In education research focusing on adults – particularly in studies involving teachers, students, and parents, as well as leadership and staff – there is a particular need for research methods that are indirect and, to the greatest extent, respect the personalities of those involved in the research. In such methods, the research situation itself significantly influences the respondent's sense of security, supports the establishment of a trust-based environment in personal data collection, and, in parallel, encourages the communication of data that is as close as possible to reality, thereby increasing the reliability of the research. The lifestyle changes of the past decade have prompted a shift toward research techniques that encourage younger respondents, in particular, to move from the passive-receptive role to a more active-engaged one. Expanding verbal communication with practical activities (such as drawing or using visual stimuli) can result in non-typical situations that provoke an increased intention to communicate.

The methods presented in this study have been applied in research into the thinking of teacher trainees and teachers, but they can also be used across a broad spectrum of educational research, both in institutional and personal contexts.

The *ego-network-centred cards* method explores how individuals conceptualize and structure the relationships shaping a specific phenomenon, such as identity or professional development. Participants visually map key actors or concepts on cards or within circles according to perceived importance. Originating from social network analysis in sociology, it is now widely used in qualitative research to examine personal networks, identity formation, and professional relations (Hollstein et al., 2020; Prell, 2011).

The *storyline* method is a narrative-based qualitative research approach that investigates how participants construct and interpret their experiences over time, particularly in relation to teaching and professional identity. In research on teacher thinking, it is used to elicit educators' reflections on their

practices, beliefs, and role perceptions through collaboratively developed or individually recounted storylines. While originally designed as a teaching and learning approach in education, its narrative structure has been effectively adapted for exploring meaning-making and cognitive processes in professional contexts (Birks et al., 2009; McNaughton & Mitchell, 2016).

The goal of this study is for the reader to be able to adapt the methods presented here to their own research after reading the study. Due to the practice-oriented approach and space limitations, the two methods are organized into parallel chapters, in which the issue of reproducibility of the methods is emphasized, rather than an in-depth discussion of the theoretical framework found in traditional academic literature. The two main chapters are structured as follows: the method's story of origin and its use in research on teachers' thinking, the method's advantages and challenges, a detailed application of the method, and finally, sample study.

Ego-Network-Centred Cards

In this chapter, we present the fundamental principles necessary for using the ego-network-centred cards method. Understanding how teachers conceptualize their professional identity and development requires tools that capture the complexity of their social and cognitive environments. The ego-centred network card method offers a visual and narrative approach to mapping these relationships, making it a valuable asset in educational research.

Origin and Research Roots

The ego-network-centred card (hereinafter referred to as network card) method derives from the larger field of egocentric network analysis, focusing on the individual's personal network, known as the "ego". This methodology rose to prominence with Antonucci (1986) hierarchical mapping technique, which utilised concentric circles to depict different levels of emotional closeness. Over time, researchers adapted this visual model into more versatile and narrative-oriented tools, such as network cards, sociograms, and digital mapping platforms like VennMaker and EgoNet.QF (Hollstein & Pfeffer, 2010).

A network card, alternatively referred to as a network map (Herz et al., 2015) or an ego-centred analysis tool (Sántha, 2017, 2023), is predominantly employed in qualitative and mixed-methods research. This method of data collection is vital for scrutinising the behaviours and attributes of individuals engaged in routine educational practices and social events (Sántha & Malomsoki-Sántha, 2023). As Castells (2010) notes, understanding the interaction between society and the economy can be achieved by delving into complex networks, which he elaborates on through his concept of a network society. In the disciplines of sociology and psychology, it is crucial to

deeply investigate the processes that affect interpersonal relationships and individual characteristics, as these studies provide significant insights for the educational sciences. Furthermore, network research examines the links between various relationships within a network, such as the development of clusters or cliques, and investigates how the structural features of networks and social connections impact social integration (Hollstein, 2014).

Adaptation and Usage of the Ego-Network-Centred Cards

This approach enables researchers to investigate teachers' perceptions of their social contexts and professional support networks. Sántha (2020), Hizli Alkan (2021) and Zank (2024) utilized it to investigate the networks of teacher trainees and the process of curricular decision-making.

The cards are implemented in four formats (Hollstein et al., 2020, pp. 226–228):

1. Unstructured maps: Free-style drawings with minimal instruction.
2. Structured standardized maps: Concentric circles representing emotional closeness.
3. Structured unstandardized maps: Sector-based maps with evolving content.
4. Partly standardized maps: Mixed elements for flexible yet comparable data.

These formats facilitate the accumulation of comprehensive data, but they present difficulties in terms of interpretation and consistency. They are participant-driven, adaptable, and well-suited for mixed-methods research. Table 1 shows the benefits and challenges of the network card method (based on Farley-Ripple et al., 2021; Hollstein, 2014; Hizli Alkan, 2021).

Table 1

Benefits and Challenges of Applying Network Cards

Benefits	Challenges
Illustrates individual networks	Subjective and prone to recall bias
Enhances participant autonomy	Challenging for cross-study comparison
Suitable for mixed-methods	Intensive works for large-scale studies

Sample Study

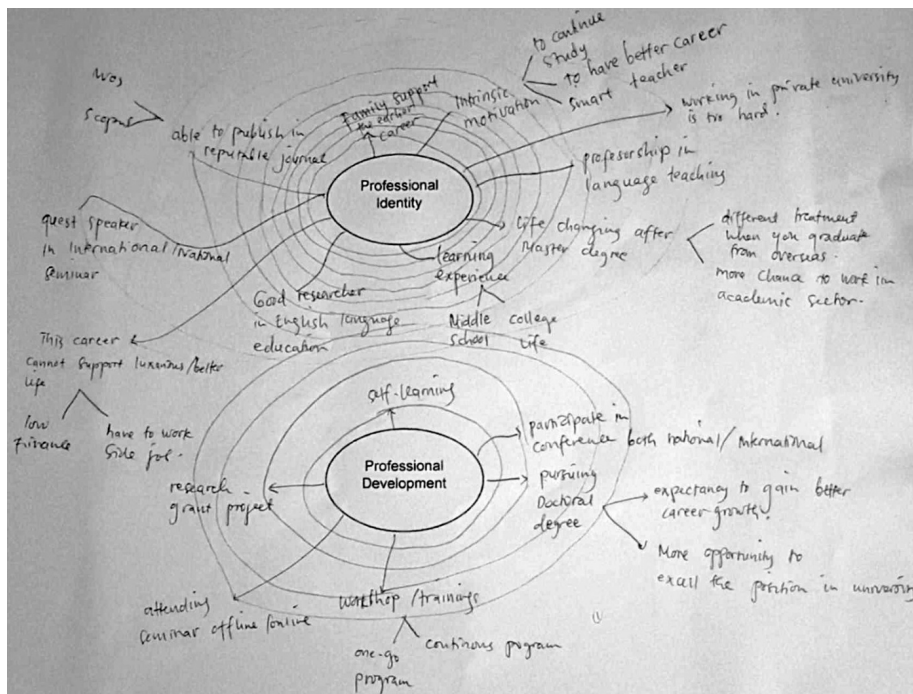
We conducted a study involving 11 English as a Foreign Language (EFL) instructors from five Indonesian universities as part of the second author's doctoral research. All of the participants had master's degrees in Teaching English to Speakers of Other Languages (TESOL) and English education and

at least seven years of teaching experience. We used convenience sampling and invited them over WhatsApp to fill out ego-network cards and participate in reflective interviews. We modified the structured unstandardized format to examine the “professional identity” and “professional development” of EFL instructors. The data collection was carried out by the second author in accordance with a procedure agreed upon with an expert (Qamariah & Hercz, 2025).

The steps of data collection with network cards were as follows:

1. **Preparation and Framing:** Participants were first guided to draw a series of concentric circles on an A4 sheet of paper. In the innermost circle, they wrote the key phrases “professional development” and “professional identity.” Unlike the original form of the ego-network technique, this adaptation centred on the research topics rather than the self (“I”) as the primary node. Nevertheless, the participants themselves remained the focal actors in constructing their networks.
2. **Identification of Core Elements:** Next, participants were asked to list all points, factors, or experiences directly related to the formation of their professional identity and their participation in professional development activities or programmes. Elements perceived as highly influential were placed closest to the central topic in the inner circles, while those with lesser perceived impact were positioned toward the outer circles. Each participant’s arrangement thus reflected their personal understanding of the factors shaping their identity and development processes.
3. **Structuring and Visual Mapping:** Within these circles, participants recorded concepts and associations they considered meaningful. To further organise their representations, they could divide the map into sectors, each corresponding to a major domain of professional life (for example, family responsibilities, workplace environment, education, or peer relations). There was no prescribed number of sectors; instead, participants determined their own structure. The researcher documented each configuration to ensure a detailed basis for later analysis. The combination of concentric circles and optional sectors allowed for nuanced comparisons among participants and across themes. This flexible, visual approach encouraged deep reflection and enabled participants to externalise complex internal processes in a tangible form. (A sample network card is shown in Figure 1.)
4. **Reflective Interview:** After the mapping activity, the researcher conducted a reflective interview with each participant. During these interviews, participants were invited to elaborate on their choices, explain relationships among elements, and discuss the meanings behind their visual representations. These narratives provided valuable contextual information and enriched the interpretive depth of the ego-network-centred data.

Figure 1
Sample Network Map



Analysis

The collected data were analysed according to the general principles of qualitative content analysis (Krippendorff, 2004; Sántha, 2022). Coding was performed in two stages: initially by the second author, and subsequently by the same author with the involvement of an expert. Both the network cards and the interview transcripts reflecting on them were coded in order to answer the question of how the interviewees interpret their own professional identity and professional development. For the sake of clarity, this article presents only the analysis of the network cards dealing with professional identity, followed by selected excerpts from the interviews.

From the professional identity network cards, the highest number of circles identified was nine, with a maximum of eight sectors, while the smallest number of circles was one, and the fewest sectors were three. As the first step of the analysis, the results were organised into tables; several participants (referred to as “cases”) are presented in Table 2 for illustrative purposes. Taking Case 1 as an example, eight sectors can be distinguished within nine circles. The thematic groups are underlined in the table, and the related concepts are shown in parentheses.

Table 2*Some Examples of Content Nodes of Professional Identity of the Sample Study*

Case	Sectors	Circles	Content Nodes
1	8	9	family support; learning experience (middle school, college, master's degree); intrinsic motivation (continue study, having a career, smart teacher); good researcher in ELT; professorship in language teaching; publishing article in reputable journals (Scopus-WOS); working at a private university (career cannot support a better life); guest speaker in international/national seminar
2	6	6	opportunity; personal bias; random anomaly; experience in seminar field (encouragement from supervisor/professor); need for stable income; need for self-motivation
5	6	6	passion for teaching; research interest; parental expectation; spiritual career benefit; professional networking; lifelong learning experience

The diversity of content nodes indicates that educators with a higher number of sectors often express a wider array of influences and ambitions, embodying a multifaceted professional identity. Intrinsic motivation, spiritual benefits, and financial stability were key in shaping professional self-concept in several cases (for example, Case 2 and Case 5). Network cards showed identity as dynamic, influenced by personal and professional events. For example, Case 1's journey moved from foundational learning to academic and global aspirations.

The reflection interview suggests that EFL teachers continuously strive to enhance the best versions of themselves according to their respective roles:

“We are as an EFL instructor, we have to compete more with other institution, to be a professional instructor, especially in EFL context, to do so, we have to catch up what is left from other, from other professionals instructor, especially from the area of English, particularly in digital devices, we have to be more accessible to digital devices, sine this is digital era, so have to be adaptable with technology.” (Case 2)

“Through teaching, I am also learning at the same time, and based on my religious values, we cannot stop learning.” (Case 5)

Storylines

This chapter introduces the key aspects of applying the storyline method in educational research. It outlines the conceptual foundations and procedural steps that support its effective use in exploring participants' experiences and perspectives. The section also highlights how storyline can serve as a qualitative research technique.

Origin and Research Roots

The storyline method, originally developed in the 1960s at Jordanhill College of Education in Scotland, began as an innovative pedagogical approach known as the Scottish Storyline Method, designed to promote holistic and cross-curricular learning through narrative structures (Bell & Harkness, 2006). In contemporary research contexts, particularly within teacher education, storyline denotes a visual elicitation technique could be suitable for investigating teachers' professional identities, beliefs, and developmental trajectories; however, its application remains rather fragmented. Qualitative research methodology is characterised by the use of multiple and diverse data sources (Clandinin & Connelly, 2000), which presupposes the integration of verbal and visual channels of communication in order to uncover personal narratives, thus suggesting storyline method to be a specific way of narrative inquiry. The use of this method is most commonly found in teacher research, particularly in the field of teacher education (for example, Orland, 2010; Sonu, 2022) and in studies addressing teacher well-being (for example, Mulholland & Wallace, 2013).

Adaptation and Usage of the Storylines

When preparing the adaptation of the method, we considered three key aspects.

First, the adaptation should promote the democratization of the research process, meaning that it should not only favour participants with a high level of communicative intent but also support those who may require a reduction of hierarchical distance in the interview situation. The sense of partnership is further reinforced by the fact that it is ultimately the participant who decides the form and amount of visual output they provide.

Second, the method should serve a compensatory function, as traditional, voice-based interviews inevitably entail certain losses – typically the limited capture of metacommunicative cues. In this respect, the storyline curve offers an opportunity for deeper or secondary analysis, enriching the interpretive process.

Third, it is essential to ensure the trustworthiness of qualitative research (Sántha, 2015). The storyline method contributes to this goal by providing an alternative channel of data expression and communication, complementing and strengthening the reliability of the collected material.

In order to determine the applicability of the storyline method in a given research context, it is essential to weigh its advantages against the potential challenges that need to be addressed. Table 3 provides a summary of the most relevant considerations in this regard (based on Birks et al., 2009; Riessman, 2008).

Table 3*Benefits and Challenges of Applying Storylines in Narrative Research*

Benefits	Challenges
Narrative coherence and temporal structuring	Interpretative ambiguity and researcher bias
Integration of visual and verbal data	Methodological standardisation
Participant reflection and empowerment	Balancing openness with structure

For the sample study presented below, the adaptation of the method was developed based on Gergen and Gergen (1988), whose approach emphasizes that self-characterization is expressed in a graphic form, which is organically connected to the individual's self-narrative. During the planning phase, preparations were made for both online and face-to-face interviews, and due to the novelty of the method, a pilot interview was conducted. Based on the pilot results, the wording of the participant instructions was subsequently revised. In an effort to standardize the measurement procedure, a detailed script was created to guide both the drawing of the storyline and the researcher's facilitation of the narrative. This was supplemented with a series of checklists (covering equipment and interviewer behaviour) and a concise ethical guideline to ensure consistency and methodological transparency.

Sample Study

Grounded in the qualitative research paradigm, the first author's dissertation examines the well-being of lower-primary teacher education students with a primary goal of establishing the nature of the students' experiences. In conceptualizing this study, we explored alternative techniques that could contribute effectively to investigating the topic. In selecting an appropriate procedure, it was an essential criterion that it should be easily adaptable to the "conventional" semi-structured pedagogical interview – serving, on the one hand, as an icebreaker to introduce it, and on the other, as a means of directing the interviewer's attention to the distinctive features, critical and turning points in the development of interviewees' university student well-being in the context of post-pandemic recovery. These requirements were satisfactorily met by the storyline method. As our aim is to provide a detailed presentation of the method, the circumstances of the study are discussed only in outline due to limitations of space.

The storyline method was applied during both the individual and focus group interview phases of the dissertation research, resulting in 20 storylines and their corresponding narratives. Four interviews were conducted in person, while the others took place online, using either audio-only or video recording between 2022 and 2024, after a combination of convenience and

snowball sampling. Assuming their higher level of metacognitive awareness and more holistic perspective on teacher training, final-year or recently graduated students were primarily invited. Although representativeness was not an objective, demographic diversity and atypicality were emphasized. The twenty participants, aged between 21 and 47, were students from different lower-primary teacher training institutions in two of the three major statistical regions of Hungary; fourteen were women, and ten were enrolled in full-time study.

In accordance with the above-mentioned principles of adaptation and application, the storyline method was administered through the following steps:

1. Introduction: Welcoming the participant, presenting the aims and structure of the research and the interview, providing information about research ethics, and obtaining informed consent.
2. Drawing the well-being curve:
 - a) In the case of in-person interviews: Participant was given a photocopied A4 sheet depicting the first and fourth quadrants of a two-dimensional coordinate system. Instruction: "Please write the academic years of your university studies along the x-axis. Now, using a single curve, represent how you felt during your university years. The band of the x-axis represents the neutral level; use the positive and negative sections of the y-axis accordingly. Please take a global perspective on your well-being."
 - b) In the case of online interviews: Participant was asked to use a blank sheet of paper available to them or a simple drawing application on their computer to record their well-being curve. Instruction: "Please take a blank sheet of paper or open an easily accessible graphic program and draw a coordinate system. It is sufficient if the positive range of the x-axis and both the positive and negative ranges of the y-axis are visible. Now, scale the x-axis to represent the academic years of your studies. Please draw a curve showing how you felt during your university years. The band of the x-axis represents the neutral level; use the positive and negative sides of the y-axis as appropriate. Please take a global perspective on your well-being."
3. Narrative construction: The interviewer examined the well-being curve, paying particular attention to its trajectory, peaks, and troughs, and then invited the participant to summarize their student experience from the perspective of well-being using the graph as a reference. In cases where the narrative was brief or lacking in detail, the interviewer prompted elaboration through guiding questions, such as discussing notably positive or negative events, the relationship between fluctuations and academic or personal experiences, feelings at the high points, possible causes of stagnation in a flat curve, and reflections on how these experiences contributed to the transition into the induction phase of their teaching career.

The overall experience of data collection indicated that the storyline method effectively served as an icebreaker, and participants generally enjoyed the drawing process. Several expressed gratitude, noting that the task offered a form of closure for their university years. During the interpretive monolog, or at later points in the interview, some participants chose to modify their original curve, which was always permitted. While the storyline consistently elicited a narrative, the depth of engagement varied between participants, including whether the curve was actively used as a visual aid.

Notably, the storyline curves produced during online interviews were often less detailed, and in some cases the academic years were not marked on the x-axis. This limitation is attributable to the device-dependent nature of metacommunicative cues, which are difficult to compensate for remotely: even when the interviewer requested scaling of the curve, direct influence over its execution was limited. Another challenge arose from the digitalized work environment, as most participants did not have access to larger sheets of paper, and curves drawn on classic sticky notes had limited resolution. Such issues could be alleviated by providing participants with suitable materials, such as a pre-printed coordinate system with both axes pre-scaled to enhance usability and facilitate subsequent quantification.

Analysis

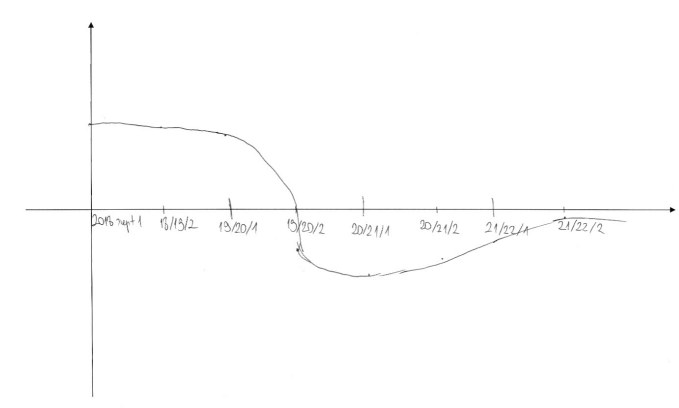
The application of the storyline method produces two types of data addressing the same topic: the curve, as a retrospective visual representation, and the accompanying commentary, as a textual narrative. These two forms were treated conceptually as complementary, though analysed using distinct methods.

The curve essentially provides an intensity scale, whose primary function is to guide the subsequent course of the interview. However, it can also be digitized and analysed using function-analysis methods, allowing for comparison across participants, and even representation on a single composite diagram. Since no specific scaling was provided for the y-axis, it is unclear what numerical value participants might have associated with the curve's peak; therefore, no attempts at numeration were made. Nevertheless, the overall trajectory of the curve, including its minima and maxima, was examined to identify trends. Figures 2 and 3 present two curves to illustrate typical and atypical patterns in student well-being for the participants included in the sample.

The curve in Figure 2 can be considered typical: lower-primary teacher training students begin their university studies with positive emotions, which gradually decline following the completion of the initial transitional phase. For most participants, the pandemic-related lockdown in spring 2020 represents a clear turning point, followed by a steeply declining phase. This is subsequently alleviated as professional internships and social activities resume in parallel with the lifting of restrictions. Students conclude their studies with relatively low level of well-being, which they attribute primarily to the accumulation of tasks in the final semester.

Figure 2

A Typical Storyline Curve Representing Student Well-Being

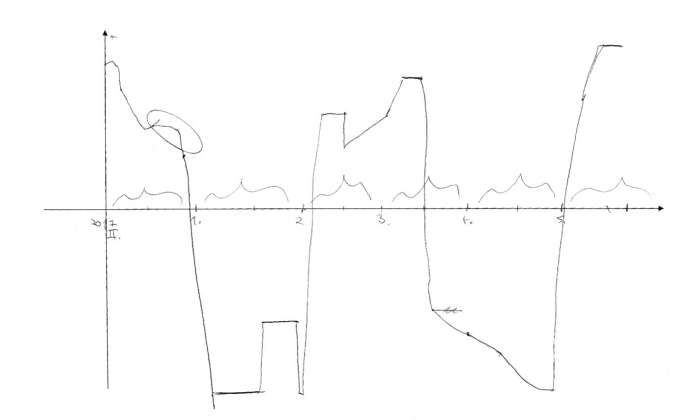


Note. The curve was drawn by Interviewee 2.

The atypical storyline curve in Figure 3 initially exhibits similar features, but the decline in well-being occurs already in the first semester, due to dissatisfaction with education and the pressures of the examination period. In this storyline, private life plays a prominent role: the first deep-end experiences and subsequent attempts at recovery interfere with academic life. Later, the COVID-19 lockdown in the second semester of the participant's third year generates a similar prolonged crisis, from which recovery is only achieved after the pandemic crisis eases and the participant enrolls in a new program.

Figure 3

An Atypical Storyline Curve Representing Student Well-Being



Note. The curve was drawn by Interviewee 6.

The narratives were coded using a hybrid logic in line with the principles of qualitative content analysis (Krippendorff, 2004; Sántha, 2022). Based on the trends observed in the storylines, we deductively established categories reflecting some characteristic events in the students' university life trajectories, under which codes were then generated using an inductive approach. Table 4 illustrates a selection of cases for several participants.

Table 4

Key Events of Student Life: Some Categories and Codes

	Transitional phase	Pandemic experience	Internship	Last semester
Interviewee 5	very positive	relief	reality shock	tiresome
Interviewee 6	reality shock	fatalistic – non-affected	senseful	N/A
Interviewee 16	high-school-like	fatalistic – affected	inspiring	stressful

Retrospective accounts of student well-being reveal considerable subjectivity and diversity, providing nuance to general assumptions. This is particularly evident in the three pandemic-related cases mentioned in Table 4. Interviewee 16's narrative describes the emotional rollercoaster experienced during months of hospital treatment: "I was taken [to hospital] with fifty-eight percent oxygen saturation. Seventy-five percent of my lungs were inflamed, and I had to go through all of that at the age of twenty. I was incredibly angry because all I needed was for someone to understand me." Interviewee 6, who was not infected, reported that "when [the lockdown] was announced, I felt that my life was over" due to social isolation; and Interviewee 5, by contrast, benefited from the lockdowns, as the suspension of commuting between home and university allowed them to catch up on academic obligations.

Final Thoughts

Our study demonstrated how the ego-network-centred cards and storyline methods can be adapted for research in teacher education. Both methods share the characteristic of being interview-based supplementary techniques, which themselves possess an interview-like nature and can be effectively applied at various stages of qualitative research. Functionally, they may serve as independent data collection tools, as pre-interview instruments for induction, or as post-interview techniques aimed at clarification.

Although our cases illustrated their use in educational research, these methods are equally applicable in other fields of the humanities where interviews are conducted and where the research topic and/or participant sensitivity call for a solution capable of reducing the negative feelings often

associated with the hierarchical dynamics inherent in traditional interview settings – a factor that may be particularly relevant in the post-COVID period. Our experiences have been favourable in this regard: in the case of the storyline method, the primary goal was to reduce interview-related anxiety and facilitate reflection, whereas the network cards complemented interview by helping to clarify key concepts that had not been sufficiently explored in depth. In both instances, participants provided authentic and personal responses.

It should be noted that these methods require careful preparation in terms of both the materials used and the standardisation of procedures. Despite prior efforts to build rapport and reduce tension, technical or interpersonal difficulties may still arise during data collection, requiring the interviewer to respond promptly and appropriately.

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