DIGITAL AUTOBIOGRPHY. THE CONTRIBUTION OF TECHNOLOGY AND AI IN INITIAL TEACHER TRAINING COURSES

DIGITAL AUTOBIOGRPHY. IL CONTRIBUTO DELLE TECNOLOGIE E DELL'AI NEI PERCORSI DI FORMAZIONE INIZIALE DEGLI INSEGNANTI

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ABSTRACT
Within the international debate in the field of AIED research, aimed at investigating the role of new technologies in education, teaching, and learning processes, this contribution aims to delve into the reflective and self-reflective potential of the Digital Autobiography, seen as an original opportunity to enrich the experience of traditional autobiographical narration through the use of an AI chatbot. Specifically, a case study involving a group of future primary school teachers will be presented.

All'interno del dibattito internazionale nell'ambito di ricerca dell'AIED, volto ad indagare il ruolo delle nuove tecnologie nei processi di educazione, insegnamento e apprendimento, il presente contributo intende approfondire le potenzialità riflessive ed autoriflessive della Digital Autobiography considerata una originale opportunità per arricchire l'esperienza della tradizionale narrazione autobiografica, attraverso l'utilizzo di un AI chat boot. Nello specifico, sarà presentato uno studio di caso, che ha coinvolto un gruppo di futuri insegnanti di scuola primaria.

KEYWORDS
Educational autobiographies, AI chat-bots, reflexivity, emotions, teacher training
Autobiografie educative, AI chat-bot, riflessività, emozioni, formazione docenti

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Introduction

It is now widely recognized that the initial and in-service training of teachers at all levels of schooling represents, today more than ever, the primary engine for achieving high-quality educational paths that truly meet the educational needs, not only of individual students but of the entire society.
Therefore, a multi-perspective reflection is necessary, requiring the consideration, on one side, of the new pedagogical identity assumed by schools, the emphasis placed on educational and learning paths, innovative teaching methods, new criteria for programming and evaluating knowledge and skills, and on the other side, the need to offer training paths that are in line with the demands for development and change posed by society. As emphasized by Mariani,

> «teaching professionalism has entered a new dimension, more problematic and complex, therefore, both initial and in-service teacher training will have to be based on a formative awareness that focuses on a deconstruction of prejudices (that condition pedagogical discourses) and an understanding of implicit notions (that govern didactic devices) and refine a dual technique: critical and hermeneutic at the same time. The first one considers personal educational history, activity roles, relationship models and didactic models by deploying the self-analytical route (One thinks of the training clinic developed by Riccardo Massa, based on the importance of the critical-reflexive elaboration of training experiences). The second rethinks training, rereads experiences, grasps the hidden dimensions of school life brings out unexpected aspects, uses the autobiographical method (think of the paradigm of self-narrative studied by Demetrio)» (2014, p. XIII).

Presently, in addition to the mass of studies, in-depth studies, experiments and research on the subject of the skills needed by teachers in schools in today's complex society, the inescapability of the technological ones emerges in terms of added value for a more inclusive and innovative didactics. Not only that, but a new challenge for the school world and for the definition of teachers' professional skills also arises: the potential of the use of artificial intelligence in didactic practice and, in particular, in the initial and in itinere training of teachers in an inclusive perspective. In this regard, see the important document, "The Future of Education and Skills: Education 2030[1]". produced by the OECD.

[1]https://www.oecd.org/education/2030/E2030%20Position%20Paper%20(05.04.2018).pdf

1. Self-narration and reflective skills for competent teaching professionalism

Since the late 1990s, following ShÖn's studies, teachers have been referred to as "reflective professionals," so much so that in teacher training, not only methodological-didactic skills but also reflective and relational skills have become particularly important for developing effective professional actions.

> Reflectivity concerns human knowledge, which is not only about cognition, rationality, and mind, but also and above all about feelings, emotions, sensations, perceptions, memories, and soul. (Boffo, 2012, p.64)

Based on these statements, it is possible to identify autobiographical-narrative approach as a pedagogical device that can offer teachers and future teachers spaces for authentic training and self-training. By analyzing their personal training and professional paths, individuals can adopt a reflective and self-reflective attitude towards their actions and professional knowledge, retracing the events that have marked them, the recurring feelings that have emerged in the educational practice, and the attitudes taken within the various relational dynamics experienced, in relation to themselves, colleagues, and students, effectively combining theoretical assumptions with practical applications.
This allows for a kind of assessment of what has been done, what could have been done, but above all, what is still possible to do, focusing attention on the following objectives:
- acquire awareness of one's personal problem posing and problem solving methods, by analysing those aspects of one's professional life that are considered fundamental with respect to others;
- understand that one's professional life is an integral part of one's personal life and vice versa;
- discover and rediscover the deepest motivations of one's own life in order to more consciously plan future actions;
- identify and affirm one's own professional epistemology;
- use the principles and tools of biographical self-reflection to sharpen one's listening skills, communication styles and consolidate one's personal self-reflective abilities (cf. Anzaldi and Ghedini, in Sirignano, 2012).
During initial teacher training, practical traineeship, in particular, can be an important path not only to put into practice the knowledge learnt from the theoretical point of view, but also to learn to critically reflect on educational

practices, analysing the various segments of the teaching action, the relationships established with pupils and colleagues, the comparison with tutors, gradually consolidating the reflective attitude that represents the fundamental pivot for professional growth.
Each training course based on the autobiographical-narrative method, is always an experience of self-training insofar as it allows one to become increasingly aware of those skills, competences and knowledge that have already been consolidated and of those that it is still possible to learn, not only from oneself, but also from others (pupils and colleagues first and foremost) and from the socio-cultural environment in which one is immersed (Ibid).
In this regard, Baldacci points out,

> «While it is true that the teacher also learns from his or her professional practice, it is equally true that the quality of that learning depends on how he or she has learned to learn from experience: whether mechanically or in a reflective and intelligent manner». (2020, p. 33)

This second way allows the teacher to approach personal professional practice with a critical spirit, asking questions, making hypotheses and verifying them in the field, making teaching an effective and lasting research-action practice and laying the foundations for quality continuing education (cf. Baldacci, 2020).

> «This is where the role of the reflective teacher also hinges, which comes from Deweyan theorising which, since the early twentieth century, has emphasised the centrality of the use of reflexivity as the right metre between thought, action and teaching practice in schools. Knowledge, in fact, is not only disciplinary and related knowledge to be conveyed to pupils. Knowledge is that which is useful for the construction of the good teacher, a teacher who has the ability to build on the knowledge of doing». (Boffo, 2012, p.49)

Through critical and narrative thinking, reflecting on personal training practices leads teachers to seek and identify the meaning, the profound meaning of their professional experience, enabling them to become the creators of their own skills and not mere, albeit valid, executors. Only the knowledge that stems from experience, that is, the knowledge gained in the field, thanks to in-depth and non-episodic reflection on the present, enables the teacher to effectively plan and implement future interventions, also making a substantial contribution so that the school will be able to,

> «connect with life, to become the child's home, where he learns by living, instead of being reduced to a place where lessons are learnt, which have an abstract and remote relation to some possible life that he will live in the future. It has the possibility of becoming a community in miniature, an embryonic society». (Dewey, 1899/1993, p.10).

In the light of these reflections, we thought that Artificial Intelligence could represent a challenge that the world of education should also take up in order to find new solutions and seize the extraordinary opportunities it offers. Among the many documents produced in recent years, interesting food for thought can be found in the 'White Paper for Artificial Intelligence at the Service of the Citizen' edited by the Digital Italy Agency [2].

2. The Research Design and Chatbot Structure

A broad area of reflection concerns the pedagogical implications and operational scenarios opened up by affective computing, complex technological systems capable of recognising, interpreting and responding to human emotions.
If happiness, sadness, anger, fear and wonder can be identified and interpreted by means of sensors, cameras and elaborated forms of language, in what terms is it conceivable that this resource could have a bearing on the acquisition of the skills needed to recognise and manage emotions, establish positive social relationships, understand different points of view and deal appropriately with interpersonal relationships?
And again, how can we make the socio-emotional component of our lives interact effectively with artificial intelligence? Can we imagine that narrative skills, structured on a background of knowledge inherent to creative and autobiographical writing, could be complemented by the added value of AI-supported technological and media production skills?
These have been the main questions we started from for the realisation of the case study, which involved a non-probabilistic sample of 51 students, 35 females and 16 males, aged between 22 and 34, attending the fifth year of the course of study in Primary Education Sciences (for 15% of them it was a second degree), resident in Campania, Lazio, Abruzzo and Tuscany, recruited through the main social media (Facebook and Instagram).
Starting from the objective of bringing out personal school and educational experiences and understanding how they might have conditioned subsequent

[2] For more details: https://nexa.polito.it/nexacenterfiles/librobianco_AI.pdf

professional and/or study choices, we used Mizou, programming a real virtual dialogue, supported by AI, with the pages of one's diary. Once one has registered for the free version of Mizou, one accesses the Dashboard where one can explore, search and, eventually, reuse a large number of chatbots published and made available by other users, or select specific ones according to school level and disciplinary content (as in the picture below).

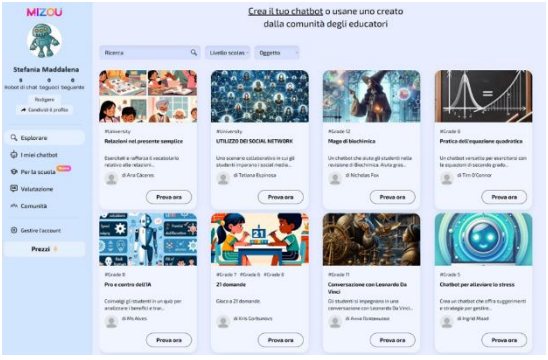

Fig. 1 (Mizou's Dashboard)

The application is very simple and intuitive, but in our case, in order for the degree of interaction of the chatbot to be the appropriate one to bring out the participants' emotional memories as much as possible, it was necessary to set correctly and clearly the training objective we intended to pursue and the level of education of reference. The application is in English and the automatic translation into Italian, although quite correct, suffers from some linguistic imperfections.
During setting up, we set the following operating instructions:

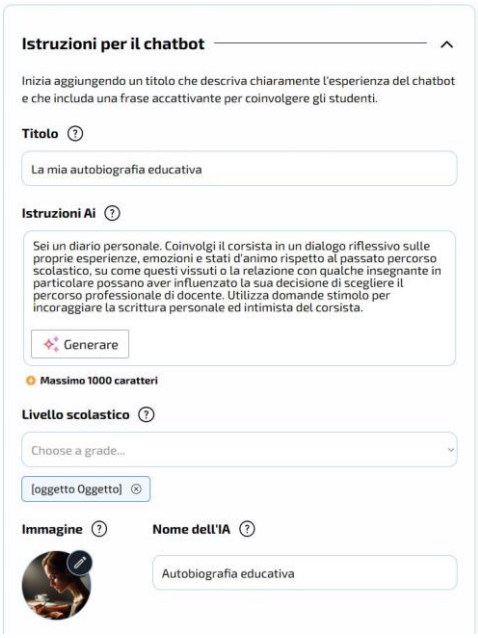

Fig. 2 (outline operating instructions)

Additional options were then defined, such as:

- the welcome message that the chatbot will use to start the dialogue;
- the netiquette norms or rules to which both the chatbot and the user must adhere;
- the male or female gender of the voice assistant if you prefer to use audio to listen to and respond to the dialogue (the choice is only possible in the premium version);
- a thumbnail image characterising the chatbot together with a short and concise information on the main purpose of the dialogue that users will engage in.

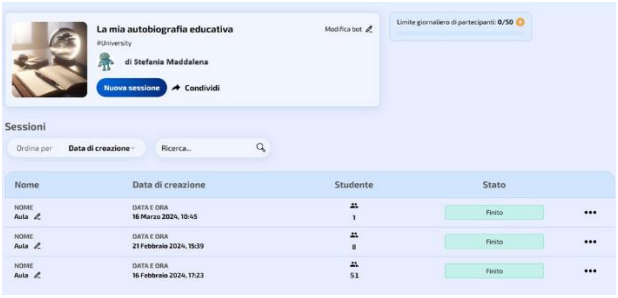

Fig. 3. (Schema della sessione di lavoro)

The free version of the programme allows you to upload a text file with the specific content you would like to bring up during the conversation a limited number of times, in which case the chatbot will automatically decide when to retrieve it.
A simulation of the conversation is immediately available in the chat preview, which is useful to check the appropriateness of the settings provided before making the chatbot public and sharing the access link with users.
It is also possible at any time to set up several work sessions in case the same task is to be assigned to different groups of students, and each session shows the date and time of creation, the number of users who have logged in via the share link and the activity status of the individual chat.
Within each work session, it can be viewed on a participant-by-participant basis (fig.4):

- the user name
- a kind of automatic vote concerning the relevance and depth of the dialogue undertaken
- the duration of the conversion
- days elapsed since last access
- the activity status

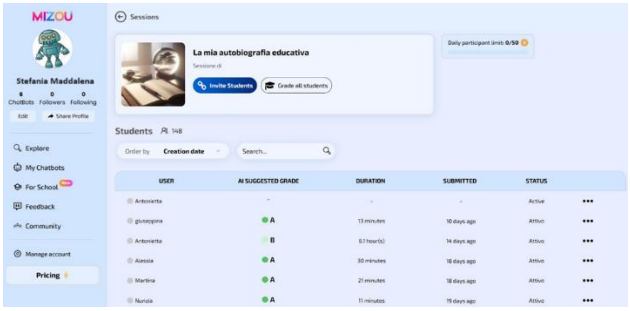

Fig. 4 (Example of summary assessment given by the AI)

By clicking on the callsign of a participant, in addition to viewing the entire dialogue, we can read a summary evaluation attributed by the AI to the degree of interaction and activation of the user's reflective thinking. Apart from the minor linguistic inconsistencies related to the translation from english, highlighted above, the accuracy of the automatic evaluation and the ability to grasp the degree of compliance with the set objective in the conversation is striking (fig. 5).

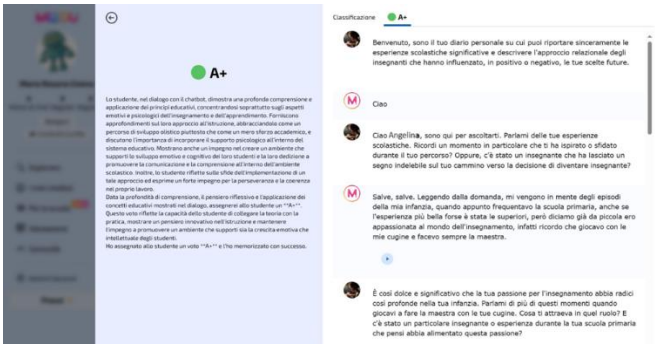

Fig. 5 (Example of interaction between Mizou and an interviewee)

Unfortunately, Mizou, like the majority of online learning resources, is also projected to widen the gap, in terms of services and functionalities, between the free version and the paid version. At present, although its free profile ensures up to a maximum of 50 student sessions per day, only has female voice synthesis and does not allow uploading of the knowledge file to direct the exchange to specific content, the programme is spreading widely among teachers and trainers due to its high level of interaction, its versatility and adaptability to multiple teaching purposes.

3. Methodological Approach, Data Collection, and Analysis

Approaching the topic of educational research, the evidence to be taken into account is that it is not only a matter of an epistemological nature, even though it is an important aspect of the theory of scientific knowledge and therefore also fundamental in educational practice. If we consider educational practice as a set of problems to be solved, it becomes evident that the quality of the solutions is linked to the adoption of a research attitude: analysis of the situation, definition of the problem, formulation of hypotheses, translation into an action plan, implementation of the plan, data collection, reflection on the results and correction of the hypotheses (Baldacci, Frabboni, 2013).

The main methodological approaches, suitable for the epistemological framework of our study, have proven to be those of phenomenological and hermeneutic nature, combined with other approaches such as narrative inquiry and Grounded Theory. This is because within qualitative research, it is challenging to employ rigid procedures that are defined once and for all (Tacconi G., 2011).

In the start-up phase of the case study, we administered to our target sample, a questionnaire structured through Google forms and shared through social media.

The aim was to investigate the knowledge and opinions of future teachers, with reference to Artificial Intelligence (AI) and its potential role in education. The questions asked are shown in the table below.

ARTIFICIAL INTELLIGENCE AND EDUCATIONAL PATHWAYS TEACHING
Section 1 - Artificial Intelligence Knowledge
1. Do you think you know about Artificial Intelligence (AI)...
2. Have you participated in AI training courses?
3. Can you provide a brief definition of Artificial Intelligence according to your understanding?
Section 2 - Using Artificial Intelligence for Educational Purposes
4. Have you ever used or implemented AI-based solutions in your teaching practice?
5. What, in your opinion, could be the areas in which Artificial Intelligence could be most useful for education?
6. Based on your experience, do you think that artificial intelligence can offer more effective learning opportunities than traditional didactics? Give examples, both positive and negative.
7. What could be the ethical concerns related to the use of Artificial Intelligence in schools, and how do you think these could be addressed?
Section 3 - Personal perceptions and skills needed on the use of Artificial Intelligence in educational contexts
8. Which words would you use to define artificial intelligence? (5 to 10 words). Enclose them in a 'cloud' of words, also choose the image and justify your choice (You can use WordArt or similar programmes).
9. What skills do you think teachers need to acquire in order to make the most of the potential of Artificial Intelligence in their teaching practice?
Section 4 - Digital applications, narrative thinking and emotional experiences
10. Do you think that the use of digital applications from an autobiographical point of view (such as Padlet, Mizou with AI,...) can also help to bring out the affective/emotional states of one's experiences? Argue your answer by comparing, with respect to the specific objective, the effectiveness of digital resources with that of the traditional 'pen and paper' tool.

Tab. 1 (Artificial Intelligence Questionnaire and Educational Pathways Teaching)

By employing narrative inquiry (Clandinin & Connelly, 2000) in both the collection and interpretation of information on the knowledge of the potential of AI in its application in education and the critical issues related to its applications, a very accurate interpretative picture emerged, and interesting insights for future research and investigation.

To analyse the 'narrative corpus' of each question, we adopted a hermeneutic methodological approach. This approach started with the analysis of frequencies

and lexical correspondences, followed by the elaboration of semantic maps and a Sentiment Analysis conducted with the T LAB software. Thanks to this approach, we were able to identify the main variables that emerged from the text corpus, which oriented our thematic investigation on the reflections of the future teachers involved in the case study.

Section 1. The responding survey sample declares a low (38%) and medium (32%) level of knowledge of AI, only 22% claim to have a good level of knowledge. Even with regard to their use in their own educational and teaching practices, a less than encouraging picture emerges, with only 27% of the sample using them. However, through the elaboration of the semantic maps, structured from the words with the highest frequencies, a positive attitude towards artificial intelligence (AI) emerges, describing its ability to learn, perform complex tasks and simulate aspects of human intelligence. However, there is also a critical reflection on the fact that AI cannot fully replicate the emotional aspects of human intelligence.

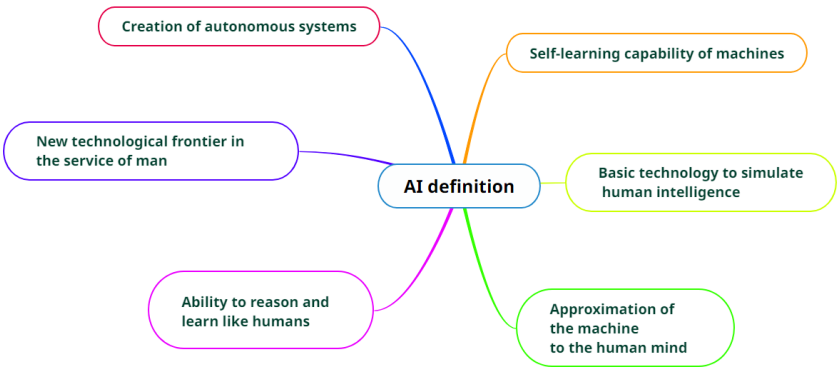

Fig. 6 (Semantic map - AI definition)

At the same time, through the Sentiment Analysis of the narrative corpus, a variety of sentiments emerged, including positive, neutral and critical ones, regarding a machine's ability to self-learn and artificial intelligence (AI) in general. Among the positive sentiments, we find that AI is seen as a technology capable of performing processes similar to human intelligence, such as reasoning, learning and problem-solving, with the aim of simulating the processes of human intelligence. Whereas, as far as critical sentiments are concerned, what emerges through the most frequent words used by our sample refers to a certain caution regarding the possibility of AI to fully simulate human intelligence, particularly in imitating the emotional aspects of human thinking. Overall, the resulting reflections highlight a range of opinions and perspectives on AI, with some positive views on the

effectiveness and potential of this technology, but also an awareness of the challenges and risks associated with its use.

Section 2. With regard to the considerations concerning the use of artificial intelligence in education, through the semantic map elaborated from the most recurrent words in the textual corpus of the answers provided by the interviewees, the different facets are highlighted, highlighting both the positive and negative aspects and offering a complete overview of the opinions and reflections expressed on the subject under investigation

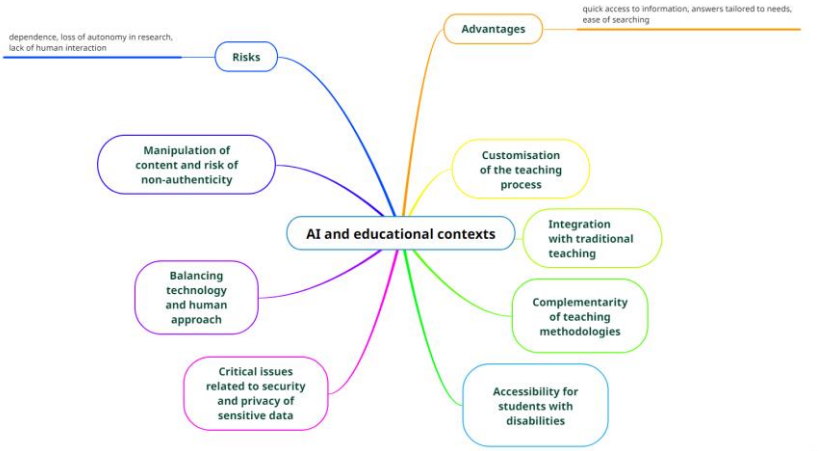

Fig. 7 (Semantic map - AI and educational contexts)

In overall terms, again, the reflections that emerged from the text reflect a variety of views on the use of AI in education, with some seeing primarily its potential benefits while others express concerns about its risks and negative effects. Also from the Sentiment analysis data, AI is seen as an opportunity to improve the effectiveness of teaching and learning. However, concern also emerges that AI could lead to inauthenticity of content and manipulation, making learning misleading and counterproductive, as well as the risk of replacing the role of the teacher, leading to an impoverishment of students' critical thinking and reasoning, and an impoverishment of human interaction at the heart of the educational process, which has always been fundamental to emotionally supporting students. Ultimately, AI can offer more effective learning opportunities, complementing the work done with traditional teaching without completely replacing it, it is therefore necessary to balance the use of technology to avoid misuse and dependenc

Section 3. By analysing the answers provided about personal perceptions and skills required for the use of Artificial Intelligence in education, as can be clearly seen from the semantic map below, it emerges that the different skills required for

effective digital education, require the integration of Artificial Intelligence with traditional methodologies and the need for teachers for continuous training, development of digital skills and attention to ethics and privacy.

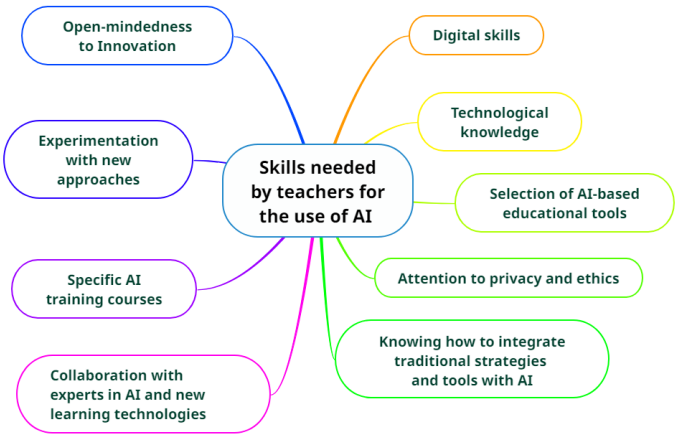

Fig. 8 (Skills needed by teachers for the use of AI)

From the sentences in the text corpus of the responses, highlighted through sentiment analysis, no strongly negative thematic nuclei emerge, however, some sentences suggest that teachers may have deficiencies in basic digital skills, which could be interpreted as an area for improvement. In general, the responses reflect a balanced view on digital education, highlighting an awareness of the opportunities offered by AI and the challenges related to its implementation[3]. The focus on continuous training and adaptability of teachers indicates a positive attitude towards technological innovation in school education.

Section 4. Analysing the corpus text referring to the section on comparative reflection between the effectiveness of digital resources and that of the traditional 'pen and paper' tool, it emerged that participants believe that digital applications can be useful tools for expressing and reflecting on one's moods and autobiographical experiences. They cited examples of applications such as Padlet and Mizou, which allow people to share thoughts, emotions and memories in a visual and interactive way, facilitating awareness of themselves and their feelings, adding that digital applications, if used in a school context, can gratify and encourage children's emotional state, allowing them to integrate multimedia

[3] For further details, please refer to the document drawn up by the European Parliament available at the link:
https://www.europarl.europa.eu/topics/it/article/20200918STO87404/quali-sono-i-rischi-e-i-vantaggi-dell-intelligenza-artificiale

resources in remembering and recounting their experiences and facilitating the expression of emotions, thanks to the feedback that some of these tools (including Mizou) also provide in guiding the recognition of emotional states.

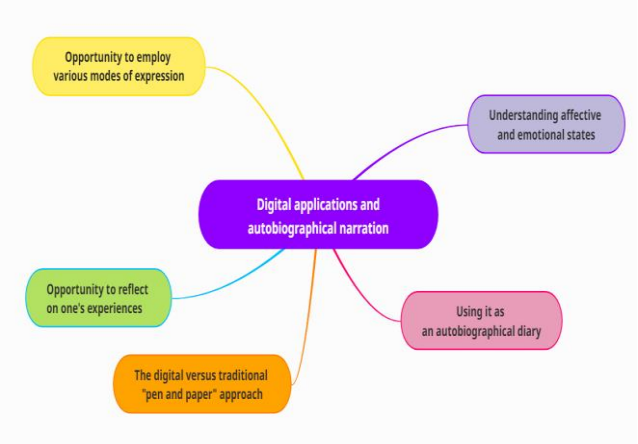

Fig. 9 (Semantic map - Digital applications and autobiographical narration)

However, some not very favourable points of view also emerge, through the analysis of some textual strings, it is in fact highlighted that, although digital applications offer advantages such as ease of use and the possibility of personalisation, traditional writing on paper can promote greater intimacy and depth in the expression of emotions, something that could be compromised by the use of digital applications as they eliminate direct contact with the physical support and the tactile sensation of handwriting.
It is also pointed out that handwriting can promote greater concentration and reflection without the distractions that could arise from digital applications, however, it is clear that the traditional pen and paper method should not be replaced, but rather supplemented by AI as an added value.

Conclusions

Without prejudice to the awareness that it is necessary to promote critical reflection by the school world on the social, ethical and relational aspects that these issues raise, the results obtained through our case study, albeit with some perplexity, can be considered positive.
The responses provided by our sample reflect a variety of perspectives on the use of digital applications in autobiography and the emergence of affective and

emotional states. Some of the participants see digital applications as useful and effective tools, others express concerns about the loss of intimacy and depth in the use of such tools. From the overall discussion, it highlights the importance of considering both the advantages and disadvantages of digital technologies in emotional expression and self-reflection.

The potential of using Digital Autobiography, which emerged from the reflections on the narrative experience, of educational autobiography, realised through digital tools, seems particularly interesting from this point of view. From the textual corpus of answers collected through question no. 10 (Do you think that the use of digital applications from an autobiographical point of view (such as Padlet, Mizou with AI, etc.) can also contribute to bringing out the affective/emotional states of one's own experiences? Argue your answer by comparing, with respect to the specific objective, the effectiveness of digital resources with that of the traditional 'pen and paper' tool) it has emerged that, both in the school career and in the professional development of teachers, Digital Autobiography can provide a valid support for the critical re-elaboration of one's learning experiences, for collaboration and interpersonal comparison, thus contributing to the creation of a learning community in constant interaction.

On the basis of these reflections, we can draw further insights from what McNeill (2022) pointed out regarding autobiography studies. Since the first decade of the 2000s, there has been a blossoming of studies that have undertaken a deep exploration of its intersections with theories of posthumanism, leading to a conceptual revolution, questioning the fundamental pillars of autobiography and humanism, destabilising concepts such as identity, ethics and relationality, as well as traditional expectations of autobiographical narrative. In contrast to focusing on the subjectivities of individuals, typical of the humanist approach, posthumanism proposes a new way of conceiving the autobiographical subject, characterised by a distributed and relativised capacity for action. The posthuman subject develops within a complex and interconnected network in which humans and non-humans collaborate in non-hierarchical relationships.

Posthuman theories of autobiography are thus concerned with examining how these networks of relationships alter the production and reception of the autobiographical text and the autobiographer himself. In this context, autobiographical narrative is no longer focused on individual subjects, but rather expands to include a multiplicity of voices and perspectives, highlighting the complexity and interchangeability of the boundaries between human and non-human, inviting critical reflection on traditional conceptions of subjectivity, and

offering new perspectives on the nature of being and narrative in an increasingly interconnected and interrelated world.
In conclusion, we can assert that the use of Artificial Intelligence in the world of education and continuous teacher training represents a crucial challenge, but also an unprecedented opportunity. It is essential for the education sector to be prepared to tackle this challenge proactively, developing new solutions to regulate the risks and maximize the benefits derived from the use of AI.

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