

The TEACH-AI project: Co-designing Practices for Socio-Educational Services

Matteo Adamoli ^{1*}, Federica Emanuel ¹

¹ eCampus University; matteo.adamoli@uniecampus.it; federica.emanuel@uniecampus.it

* Correspondence: matteo.adamoli@uniecampus.it

Abstract: This paper provides an overview of the TEACH-AI (Transformative Educational Approaches for Civic and Human-centered AI) research project, which focuses on the co-design of practices and policies related to the use of Generative Artificial Intelligence in Italian socio-educational services. The study uses an action research approach to investigate AI literacy and co-develop shared guidelines for its adoption. The research examines the integration of AI through three key theoretical concepts – professional capability, affordance-in-practice, and sentiment – which together frame the implications of AI for professionals. Initial results, obtained through the PAIR questionnaire administered to 467 workers from 19 social cooperatives in Italy, revealed an uneven and selective use of AI and a high level of expectation for its future application in both strategic and operational functions. The aim of the research is to formulate strategies that improve the effectiveness of services while maintaining AI as a support tool and safeguarding the human and relational dimension at the heart of socio-educational work.

Keywords: Artificial Intelligence; AI Literacy; Professional Capability; affordance-in-practice; Human-centered AI.



Copyright: © 2025 by the authors. Submitted for possible open access publication under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

1. Introduction

From a governance perspective, the European Union has developed the AI Act and the Digital Services Act (DSA) with the aim of creating a safe space where the fundamental rights of all users of digital services are protected while promoting innovation and competitiveness in the European single market (European Commission, 2022a). This regulatory process has sparked a growing debate on how to extend participation in the system of auditing and monitoring the trends and social impacts of major platforms and search engines to civil society and the third sector, including universities (European Commission, 2022b). This process should provide academia and civil society with access to the data and systems used by these platforms to create an ecosystem that can contribute to mitigating risks related to transparency, reliability and ethical implications (Hartmann et al., 2025).

* The paper represents the result of a collaborative effort by the authors; specifically, FE is the author of the paragraphs 1 and 2; MA is the author of the paragraphs 3 and 4. The conclusions were written together.

In terms of practices, the literature is highlighting the effects of digitalisation in social work, emphasising the efficiency aspects of production processes, such as the reduction of administrative burdens related, for example, to the processing of minutes, reports and the formatting of bureaucratic documentation (Tan et al., 2025). AI tools are also proving to be partially reliable in helping practitioners make decisions related to the choice of intervention strategies as well as planning personalised and inclusive interventions (Adamoli et al., 2024). One promising application concerns the supervision and evaluation of educational processes, as AI is able to analyse large amounts of data in a short time, accelerating the possibility of recalibrating interventions where necessary (Noakes et al., 2024).

Despite this potential, the adoption of AI has brought to light risks and challenges that directly involve organisations, practitioners and users of socio-educational services. At the organisational level, many sources point out that AI models have technical limitations related to the processing of consistent outputs, putting at risk social decisions and interventions that require specific knowledge and skills. One of the major concerns is that AI systems may reproduce existing biases and stereotypes within databases, contributing to amplifying them with the risk of increasing stigma towards vulnerable population groups. Added to this is the issue of privacy and personal data protection, especially in the performance of educational activities that, from an ontological and legal point of view, safeguard the interpersonal dimension (Lin et al., 2024). This tendency towards misalignment between the technological dimension and the educational-relational dimension requires experimentation with an approach based on the co-design of interventions that integrate AI in order to develop practices that are capable of responding to the authentic needs of end users while bringing together the complexity of these dimensions.

The TEACH-AI (Transformative Educational Approaches for Civic and Human-centered AI) project developed by the CREDDI research group at eCampus University¹ responds to this goal of co-design between universities and local organisations. The project uses a research-action approach to investigate AI literacy and develop guidelines for its adoption in socio-educational services. In close collaboration with the participating associations and cooperatives, the aim is to jointly design strategies, skill frameworks and recommendations for the sustainable use of AI while maintaining the centrality of the human dimension. This contribution reports the results of the first phase of the research, which involved 467 workers from 19 Italian social cooperatives, concerning the level and habits of use of AI tools among professionals; prevailing educational attitudes; the emotional state associated with the adoption of AI; and the presence or absence of formal organisational strategies and policies. These data are the result of a validated self-assessment questionnaire (PAIR - Participatory AI for Inclusive Relationships) designed to identify three key dimensions instrumental to the development of analysis and measurement of the impact of AI in socio-educational contexts. Capability, i.e. competence in the use of AI in both personal and professional contexts (Nussbaum, 2011); affordance-in-practice, i.e. the analysis of the frequency of AI application in the workplace (Costa, 2018); sentiment,

¹ The working group is composed of Federica Emanuel, Marco Rondonotti, Matteo Adamoli, Michele Marangi, and Paolo Raviolo.

understood as the recording of positive or negative emotions towards AI from a socio-cultural perspective (Bing, 2012).

2. Materials and Methods

The data collection was carried out through the PAIR questionnaire (Adamoli et al., 2025), a tool specifically designed to investigate how professionals relate to AI. The instrument integrates questions on knowledge, use, and working practices with the theoretical dimensions presented in the conceptual framework. The structure of the questionnaire consists of five sections: the first is dedicated to personal and professional details, while the following three focus respectively on affordance in practice, capability, and sentiment. The final section addresses the cognitive dimension, aiming to assess the level of familiarity with and basic understanding of AI. The psychometric properties of the instrument were verified through a series of analyses, performed using IBM SPSS Statistics 29. The Kaiser-Meyer-Olkin test indicated excellent sampling adequacy ($KMO=.903$), while Bartlett's test of sphericity ($\chi^2=7241,682$; $df=465$; $p<.001$) confirmed the significance of correlations between variables. Exploratory factor analysis with Maximum Likelihood extraction and Varimax rotation identified a five-factor solution explaining 51% of the total variance. The internal consistency of the factors showed satisfactory reliability, with Cronbach's alpha values of .891 for Affordance (12 items), .872 for Capability (6 items), .748 for Deprivation (4 items), .898 for Positive Emotions (5 items), and .788 for Negative Emotions (4 items).

The PAIR questionnaire was administered online via the QuestionPro platform. The link to the survey was distributed through institutional mailing lists and professional networks. Participants were informed about the purpose of the study, the voluntary nature of participation, and the procedures for data processing. Informed consent was obtained before completing the questionnaire. No personal or sensitive information was collected, and all responses were anonymised and analysed in aggregate, in accordance with international ethical standards.

Data analysis was conducted using IBM SPSS Statistics 29 and included the following: descriptive statistics (frequencies, means, standard deviations); t-tests for independent samples and one-way ANOVA to assess statistically significant differences between groups.

The sample comprised 467 practitioners employed in 19 social cooperatives operating across Italy. The geographical distribution of respondents shows a predominance of participants working in Northern Italy (64.7%), followed by those from Southern Italy and the Islands (21.6%), and from the Central regions (13.5%). Women represented the vast majority of respondents (83.3%), with men accounting for 15.6%. The average age of participants is 43 years with a high standard deviation ($SD = 9.62$, $min = 20$, $max = 61$). The overall educational level of participants was relatively high: the largest proportion held a Bachelor's degree in the pedagogical field (32.7%) or in other field (7.3%), followed by respondents with a Master's degree in pedagogy (11.1%) or in other disciplinary fields (21%). A further 14.8% had obtained a high school diploma, 6.6% held professional qualifications in education, care, or animation, and a small minority reported a doctoral degree (0.6%). From a professional perspective, 70% of respondents were employed in operational and ed-

educational roles, 25% worked in coordination roles, and 5% held administrative positions. In terms of the services in which operators are employed, the largest group works in early childhood services for children aged 0-3 years (19%), followed by services for adolescents aged 15-19 years (15.8%) and pre-adolescents aged 12-14 years (14.6%). Services for pre-school children (aged 4-6, 9.3%) and school-age children (aged 7-11, 12.7%) are also represented. Additionally, 9.5% of participants work with young adults (20-30 years old), 13.3% work with older age groups (over 30 years old), and 3% work in services covering all age groups.

3. Results

The questionnaire facilitated an analysis of the relationship between socio-educational professionals and AI. A particular inquiry yielded insights into the utilisation of AI in everyday life, revealing that this practice remains at a rudimentary stage ($M=3.26$, $SD=2.60$; scale 0-10). While almost a fifth of the sample (19.1%) stated that they did not use it at all, there were more advanced groups who used it regularly. This data suggests that AI has not yet been extensively and systematically integrated into personal practices.

The questionnaire also investigated knowledge and use of chatbots and applications. The utilisation of these tools is indicative of a highly asymmetrical adoption pattern. ChatGPT is the most prominent application in this field, with a familiarity rate of 6% and an average usage of 2.88 (scale 1-6), surpassing all other tools in this category. AI integrated into social networks ($M=2.70$) and collaborative work platforms such as Padlet or Canva ($M=2.67$) are also relatively more familiar, with low percentages of unfamiliarity (10.9% and 2.1%). In contrast, the awareness rates for other chatbots are comparatively low, with Claude (47.1%, $M=1.21$), DALL-E (48.4%, $M=1.16$), MidJourney (49.3%, $M=1.20$) and Perplexity (47.3%, $M=1.17$) demonstrating similarly marginal levels of recognition. This observation is further supported by the limited popularity of less prominent tools such as Gamma, Napkin and Quizalize.

The existence of internal guidelines on the use of AI within organisations is very limited: only 16.9% of participants report the existence of specific policies, while more than half (55.5%) say they do not know.

In relation to affordance-in-practice, the findings indicate that cooperative operators primarily employ AI to access and revise information. This is evidenced by activities such as searching for information ($M=2.93$, scale 1-6), identifying ideas ($M=2.69$), producing original texts ($M=2.39$), and translating texts ($M=2.24$). Conversely, the dimensions pertaining to creativity and specialised production (narratives, images, music, programming) exhibit low values, frequently approximating 1.5.

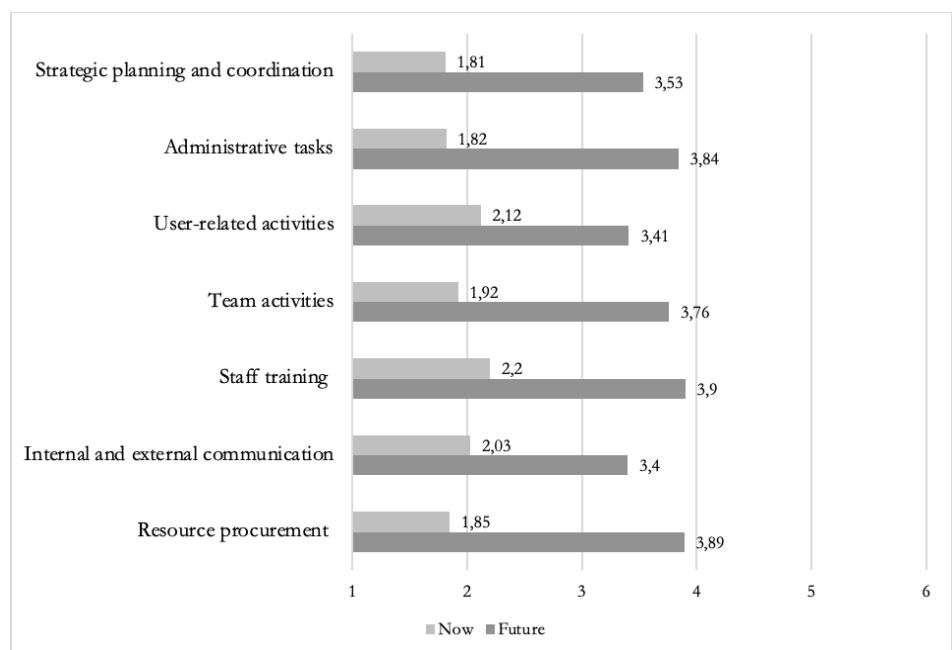
In terms of capability, a tension appears between opportunities and risks. The most widely recognised benefits are the capacity to access information and resources ($M=3.96$), followed by time savings ($M=3.66$) and support for problem solving ($M=3.40$). Consequently, AI emerges as a potential ally in the streamlining of activities and the optimisation of decision-making processes. Conversely, other dimensions exhibit lower average values. The capacity to foster collaboration with others ($M=2.33$) and the ability to provide timely assessments through immediate feedback ($M=2.72$) are perceived to a lesser extent. In addition to the positive aspects, there

are significant concerns: AI is perceived as a factor that impoverishes expressive richness ($M=3.92$), poses a risk to privacy and data management ($M=3.88$) and reduces interpersonal interaction ($M=3.80$). Additionally, it is regarded as having the capacity to impede creativity ($M=3.76$).

The emotional states towards AI appear to be complex and multifaceted. The strongest feelings were identified as curiosity ($M=3.78$) and fascination ($M=3.22$), which demonstrate a positive exploratory orientation. However, these attitudes are accompanied by distrust ($M=3.37$), fear ($M=2.80$) and scepticism ($M=2.86$), indicating that openness is constantly tempered by caution and resistance. The levels of enthusiasm and trust ($M=2.90$) remain moderate, while indifference ($M=2.07$) and frustration ($M=2.19$) appear marginal. It is noteworthy that hope ($M=3.00$) also occupies a median position, indicating a discord between optimistic expectations and latent fears.

A particularly salient aspect emerges from the comparison between current use and projections for the future (Figure 1).

Figure 1. Use of AI in organisation - now and in the future



At present, AI plays a marginal role in organisations. The most frequently cited areas are staff training and user-related activities, while strategic planning and coordination, administrative and monitoring tasks, resources procurement, team activities and internal and external communication still attract little interest. However, when future expectations are considered, a radical shift emerges: all dimensions exceed the average value, with peaks in professional training, resource procurement and administrative and monitoring tasks. The analysis further indicates that team activities and strategic planning and coordination are also projected as areas of signifi-

cant use. This discrepancy reveals a structural gap: while AI is not yet truly integrated into educational and organisational practices, there are strong expectations for development, which could translate into profound innovations provided that adequate policies, tools and skills are provided.

The analysis of differences highlights how socio-demographic and professional variables affect some of the dimensions surveyed (affordance, capability, sentiment, use of AI) in a statistically significant way ($p < .05$). Examining gender differences, the independent samples t-test reveals that males, in comparison to females, ascribe greater significance to AI in terms of time savings ($M=4.08$ vs 3.59 ; $t(460)=2.57$) and its role in problem-solving assistance ($M=3.73$ vs 3.34 ; $t(460)=2.08$). In relation to sentiment, male respondents reported higher levels of hope ($M=3.36$ vs 2.94 ; $t(460)=2.41$), fascination ($M=3.49$ vs 3.17 ; $t(460)=1.79$), and curiosity ($M=4.04$ vs 3.73 ; $t(460)=1.70$) concerning AI in comparison to female respondents. Conversely, women expressed significantly higher levels of scepticism ($M=2.90$ vs 2.52 ; $t(460)=-2.08$).

An investigation into variations in role has been undertaken, and the results of the analysis have been highlighted by the analysis of variance (ANOVA). Statistically significant differences ($p < .05$) have been identified in capability ($F(2,464)=3.39$) and negative sentiment ($F(2,464)=3.66$). In multiple comparisons, those in a coordination role report a higher average score for capability than those in an operational role ($M=3.40$ vs 3.08), while operators express greater negative emotions related to AI than coordinators ($M=2.90$ vs 2.06). When the individual items constituting the dimensions are analysed, those in a coordination role recognise AI more as a time-saving tool ($M=4.03$ vs 3.53 ; $F(2,464)=4.70$) and for supporting problem solving ($M=3.69$ vs 3.27 ; $F(2,464)=4.00$). Furthermore, a more significant role is attributed to AI in timely assessment through immediate feedback ($M=2.98$ vs 2.65 ; $F(2,464)=3.22$). Conversely, those in operational roles exhibited significantly higher levels of scepticism ($M=2.98$ vs 2.60 ; $F(2,464)=4.02$).

Educational qualifications appear to be a discriminating variable. The utilisation of AI varies considerably between groups ($F(2,464)=2.07$). The lowest values are observed among four-year graduates in the field of education ($M=2.13$), while higher values emerge for those with educational qualifications outside the field of education, both bachelor's ($M=3.95$) and master's degrees ($M=3.76$). Furthermore, the perception of privacy risks associated with the use of AI varies significantly according to educational qualification ($F(2,464)=2.38$), with higher values recorded in the higher academic categories (specialisations and single cycle).

4. Discussion

The data collected provides insights into the intricate and multifaceted relationship between social and educational professionals and artificial intelligence. The analysis highlights perceptions of the functions of AI (affordance), assessments of professional and personal capabilities, emotional representations (sentiment), knowledge of the most widely used chatbots and, finally, a comparison between current use and future potential in organisational contexts. The sample base is not representative of the entire sector, but it does offer a significant cross-section of educational and socio-educational figures working in third sector organisations.

The questionnaire provides a composite reading of socio-educational operators' perceptions of the integration of Artificial Intelligence, starting from their knowledge of the tools. In this sense, knowledge varies greatly, but the use of generalist chatbots such as ChatGPT prevails, which is by far the best known with the highest average knowledge (2.88) and with only 6% of respondents stating that they are not familiar with it. This is confirmed by the fact that the use of platforms (e.g. Padlet, Canva) and social networks (e.g. WhatsApp) that integrate AI has a higher average than platforms that perform more specific activities (e.g. Perplexity, Claude), which half of the respondents say they are not familiar with. This highlights how familiarity with these tools in professional practice is linked to their easy availability, without operators having to search for applications or features that meet specific operational or strategic objectives (Tuomi, 2022). This aspect also emerges in the responses to the specific question on affordance-in-practice, where respondents state that they mainly use AI to perform basic tasks that support their workflow (e.g. searching for information; finding ideas; producing original texts). These three main affordances-in-practice suggest that the primary use of AI is as an advanced search engine, a brainstorming tool and a support for writing content. AI is less frequently applied to activities that require specific technical skills such as analysing data (textual, numerical and economic) and creating code. There is also significant room for growth in terms of less frequently used features (formula creation, programming) or features that are potentially significant for educational design activities (e.g., project development and evaluation, call for proposals compilation, decision-making support).

Operators have a tendency to regard AI as a mere adjunct, useful for the optimisation of specific quotidian activities. However, it is seldom acknowledged as a resource for pedagogical, creative or design innovation. It can thus be concluded that affordance is indeed functional but limited in scope. This is indicative of both untapped potential and a cautious attitude towards the use of AI in educational contexts (Garkisch & Goldkind, 2025).

Furthermore, women predominate in these operational areas, which is indicative of a broader structural trend within the education and care sectors in Italy, which have traditionally been characterised by a predominantly female workforce.

In terms of professional capabilities, AI is perceived as a tool for efficiency and access to information, but at the same time it is associated with significant risks related to quality, sociality and ethics. The capabilities perceived as strongest are those that help save time and support problem solving, while the main limitation is related to the risk of impoverishing expressive richness and flattening creativity. There is also a very high level of concern about security and confidentiality in the management of personal data. The results describe AI as a double-edged sword, with very clear operational advantages (e.g. an accelerator of access to knowledge) and equally high risks (e.g. flattening of expressive quality). This ambivalence is also reflected in the emotional attitude of the respondents to the questionnaire, which reveals a picture of strong interest and curiosity balanced by a strong dose of caution and suspicion. Emotions related to frustration and disinterest are the least expressed, highlighting a strong polarisation that indicates that AI, even in the socio-educational field, is a topic that generates strong and contrasting reactions.

This mix of fascination and caution, typical of the introductory steps of a new technology, necessarily implies the activation of specific training courses related to AI Literacy that provide not only technical knowledge but also skills and competences for conscious and critical thinking-oriented use (OECD, 2025). In this regard, the promotion of AI competency should be carried out on the basis of the guidelines available in the socio-educational system and the policies in place in the various contexts and organisations in order to integrate AI in a flexible manner appropriate to the type of users and services provided (UNESCO, 2025). The sample data show that most operators say they do not know whether there is an AI policy in their organisation or say that there is no such policy. Only a small number of the organisations involved have formalised guidelines. The data indicate that for more than half of the respondents, the development of policies on the use of AI within social cooperatives is still in its infancy or is poorly communicated. This lack of governance at the local level leaves room for experimentation linked to the expertise and resources available in that specific district, but also exposes it to the risk of territorial inequalities linked to digital educational poverty, which are already present in the Italian education system (Marangi, Pasta & Rivoltella, 2022). The development of shared institutional and organisational frameworks that support the informed and pedagogically sound use of AI, particularly in contexts of educational inclusion, remains a strategic objective that can influence the attitudes and adoption practices of social workers.

Another interesting aspect that emerges from the data collected is the gap between the current use of AI tools and their potential future use in organisational contexts, with a clear trend towards expanding their use in all areas of application. Currently, AI is mainly used for professional training and user activities, while in the future it is expected to play a crucial role in the development of both internal and external communication activities and in the performance of administrative tasks (e.g. report compilation). The activities that show the greatest perceived potential are resource procurement and administrative and reporting tasks. Operators seem to expect that AI tools will be able to automate and simplify back-office activities and strategic functions such as fundraising and participation in calls for proposals.

In summary, the operators interviewed see AI as a tool with enormous untapped potential in terms of key operational functions, but its adoption in everyday practices seems to be held back by strong fears about the loss of certain professional skills and privacy risks.

5. Conclusions

The data show an ambiguous and dynamic relationship. Operators recognise the useful functions of AI, particularly in information management and time optimisation, but at the same time perceive it as a threat to the expressive, creative and relational dimensions of the teaching profession. At present, its use remains limited and selective, being employed only by a limited number of tools (ChatGPT in particular). However, there is a high level of expectation for its future application in both strategic and operational functions. The prevailing emotional disposition, characterised by curiosity and interest but permeated by mistrust and caution, reflects the current period of transition in which AI is perceived as both a promise and a po-

tential threat. In order to evolve from an exploratory phase to a co-design phase (Kong et al., 2024), AI literacy programmes are needed that directly involve the various stakeholders in the field of education and focus on the development of the agency and skills of operators.

References

- Adamoli, M., Emanuel, F., Marangi, M., Rondonotti, M., & Raviolo, P. (2025). TEACH-AI: Transformative Educational Approaches for Civic and Human-centered AI. In AA.VV. (Eds.), *HELMeTO 2025 International Conference, Higher Education Learning Methodologies and Technologies Online - Book of Abstracts*, (pp. 105-107). Studium Edizioni.
- Adamoli, M., Messina, S., Panciroli, C. & Rivoltella, P.C. (2024). Le IA generative per il decision making. Attribuità degli LLMs a supporto di decisioni di natura didattica ed educativa. *Scholè*, 2/2024, 23-44.
- Bing, L. (2012). *Sentiment Analysis and Opinion Mining*. Morgan & Claypool Publishers.
- Costa, E. (2018). Affordances-in-practice. An ethnographic critique of social media logic and context collapse, *New Media & Society*, 20(10), 3641-3656.
- European Commission (2022a). *Regulation (EU) 2022/2065 of the European Parliament and of the Council of 19 October 2022 on a Single Market For Digital Services and amending Directive 2000/31/EC* (Digital Services Act). <http://data.europa.eu/eli/reg/2022/2065/oj>
- European Commission (2022b). *DSA: Very Large On-line Platforms and Search Engines*. https://ec.europa.eu/commission/presscorner/detail/en/IP_23_2413
- Garkisch, M., & Goldkind, L. (2025). Considering a Unified Model of Artificial Intelligence Enhanced Social Work: A Systematic Review. *Journal of Human Rights and Social Work*, 10(1), 23-42.
- Hartmann, D., De Pereira, J. R. L., Streitbürger, C., & Berendt, B. (2025). Addressing the regulatory gap: moving towards an EU AI audit ecosystem beyond the AI Act by including civil society. *AI and Ethics*, 5(4), 3617-3638. [arXiv:2403.07904](https://arxiv.org/abs/2403.07904)
- Kong, S. C., Korte, S. M., Burton, S., Keskitalo, P., Turunen, T., Smith, D., Wang, L., Chi-Kin Lee, J., & Beaton, M. C. (2024). Artificial Intelligence (AI) literacy - an argument for AI literacy in education. *Innovations in Education and Teaching International*, <https://doi.org/10.1080/14703297.2024.2332744>
- Lin, H., Karusala, N., Okolo, C. T., D'Ignazio, C., & Gajos, K. Z. (2024). "Come to us first": Centering Community Organizations in Artificial Intelligence for Social Good Partnerships. *Proceedings of the ACM on Human-Computer Interaction*, 8(CSCW2), 1-28. <https://doi.org/10.1145/3687009>
- Marangi, M., Pasta, S. & Rivoltella, P.C. (2022). Digital educational poverty: construct, tools to detect it, results. *QTimes. Journal of Education, Technology and Social Studies*, XIV(4), 236-252.
- Noakes, S., Shell, A., Murillo, A. M., Van Nostrand, P., Ruiz, P., Cornick, S., & Karim, S. (2024). An Ethical and Equitable Vision of AI in Education: Learning across 28 Exploratory Projects. *Digital Promise*. <https://eric.ed.gov/?id=ED671302>
- Nussbaum, M. (2011). *Creating capabilities: The human development approach*. Harvard University Press.
- OECD (2025). *Empowering learners for the age of AI: An AI literacy framework for primary and secondary education (Review draft)*. OECD.
- Tan, Y., Soh, K. X., Zhang, R., Lee, J., Meng, H., Sen, B., & Lee, Y. C. (2025). Empowering Social Service with AI: Insights from a Participatory Design Study with Practitioners. In *Proceedings of the Extended Abstracts of the CHI Conference on Human Factors in Computing Systems* 1-10. <https://doi.org/10.1145/3706599.3719736>
- Tuomi, I. (2022). Artificial intelligence, 21st century competences, and socio-emotional learning in education: More than high-risk?. *European Journal of Education*, 57(4), 601-619. <https://doi.org/10.1111/ejed.12531>
- UNESCO (2025). *AI and the future of education. Disruptions, dilemmas and directions*. Unesco.