INTRODUCING AI AS A SUBJECT IN SWEDISH EDUCATION

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ABSTRACT

The increasing presence of AI across social domains has stirred interest in the importance of individuals possessing AI-related skills and knowledge, often referred to as AI literacy. This literacy is commonly defined as competencies allowing individuals to critically evaluate and engage with AI technologies (Long & Magerko, 2020; Ng, 2021). Consequently, AI as a subject matter is being introduced in educational contexts worldwide, for example in existing subjects or separate AI school subjects (UNESCO, 2022). In Sweden, the empirical context of this paper, AI became an elective subject in upper-secondary STEM programs in 2024, including both theoretical and practical approaches to AI, with an expansion to all programs in 2025. As such, the new AI subject must be compatible with a range of program goals and content. Our paper focuses on how AI and the associated AI literacy are conceptualized in the national curriculum and relevant guiding materials.

To date, AI education research has often focused on the theoretical dimensions of AI education e.g., AI definitions, practical applications of AI in everyday life, identification and recognition of AI systems, data structures, propositional logic, Python programming, natural language processing, computer vision, and machine learning (Sperling et al., 2024). This aligns with a functional literacy perspective, where AI literacy translates into a generic set of cognitive skills and includes competencies and skills for using AI in work and life, with a tendency toward instrumental understandings of AI (Velander et al., 2024). Therefore, calls for more critical literacy perspectives have been made (Merchant, 2021; Leander & Burris, 2020) to include, for example, questioning issues of power and control that underpin AI integration in society (Lankshear & Knobel, 1998; Merchant, 2021).

Acknowledging the discussions above and the conceptual ambiguity of AI literacy, we examine how AI is conceptualized, including associated AI literacy perspectives, in AI-related steering documents for the AI subject in Swedish upper secondary school. Our paper contributes knowledge on the opportunities for upper-secondary school students to develop AI literacy and what being AI literate means. The following

research question guides our study: How are AI and AI literacy conceptualized in current policy, guiding documents, and support materials for the AI subject in Swedish upper secondary school?

To this end, we performed a document analysis (DA) on data related to the AI subject, comprising the national curriculum for upper secondary school, syllabi, and supplementary documents like commentaries and professional development texts, developed by the Swedish National Agency for Education, to guide and support teachers. As an analytical lens, we use Lankshear and Knoble's (1998) literacy framework, which takes a sociocultural perspective on literacies to examine the presence (or absence) of any of three equally important and interrelated literacy perspectives: operational (competency/mastery, to use AI in a range of contexts in an appropriate manner); cultural (being literate in regards to something, i.e. understanding AI as situated in different contexts); and critical (understanding the socially constructed and context-sensitive nature of human practices used for meaning-making, as well as the ability to take active part in the transformation of such practices (Lemke, 1998). Following Bowen's (2009) three-step approach to DA, our analysis first focused deductively on identifying and coding relevant text passages using Lankshear and Knoble's framework. Close reading with inductive coding followed, focusing on content in the previously identified passages from each perspective on AI literacy. The final step included condensation and a write-up of the results.

Early results indicate a dominant operational literacy perspective on AI in the course syllabi. While operational competencies such as the ability to use AI in different contexts are important for engaging with AI from cultural and critical literacy perspectives, this presupposes relating and embedding operational competences in sociocultural contexts. Moreover, the results indicate that AI is conceptualized as a technology that we need to understand to use it responsibly, be able to evaluate its outcomes, and discuss its possible implications. A more critical perspective is absent, however, like identifying, questioning, re-imagining and actively contributing to transforming AI practices. In contrast, supplementary documents and support materials available to teachers reflect a more holistic approach in our analysis, where operational literacy is often linked to cultural and critical perspectives. For example, support materials on teaching about information search and retrieval and search algorithms (e.g., Sundin & Haider, 2016) are informed not only by technological constraints and abilities, but also cultural values, norms and commercial interests. Investigating these aspects of search and information retrieval includes inspecting algorithms and data as well as their outcomes and implications. From a critical perspective, these can be questioned and re-constructed to reflect on the values represented (or absent) in AI contexts. In conclusion, the analyzed documents represent AI literacy in different ways which, when translated into teachers' practice, may shape students' opportunities to develop AI literacy with implications for e.g., equity and students' life and work in a rapidly changing world with AI. This extends to teacher education, which must consider relevant steering and support documents when preparing the next generation of AI teachers (cf. Örtegren & Olofsson, 2024).

Keywords: AI literacy, teacher education, document analysis, upper secondary school, Sweden

REFERENCES

Bowen, G. A. (2009). Document Analysis as a Qualitative Research Method. *Qualitative Research Journal*, *9*(2), 27–40. https://doi.org/10.3316/QRJ0902027

Lankshear, C., & Knobel, M. (1998). *Critical Literacy and New Technologies*. http://www.https://eric.ed.gov/?id=ED444169

Leander, K. M., & Burriss, S. K. (2020). Critical literacy for a posthuman world: When people read, and become, with machines. *British Journal of Educational Technology*, *51*(4), 1262–1276. https://doi.org/10.1111/bjet.12924

Lemke, J. (1998). Multiplying meaning. *Reading science: Critical and functional perspectives on discourses of science*, *87*.

Long, D., & Magerko, B. (2020). What is AI Literacy? Competencies and Design Considerations. *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems*, 1–16. https://doi.org/10.1145/3313831.3376727