

Teacher Training and Data Literacy

EXECUTIVE SUMMARY

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Context and implementation

In an educational context shaped by increasing digitisation, the importance of data literacy has never been greater. Portugal's national Digital Transition Action Plan has driven systemic change across the education sector, leading to a large-scale teacher training under the Teachers' Digital Empowerment programme. This Learning Story illustrates how certified trainers are embedding data literacy into teacher training practices. Their experiences show that beyond using digital tools, teachers must develop analytical and ethical competencies to interpret, apply, and safeguard data in pedagogically meaningful ways. Training is delivered through a national framework led by the Directorate-General for Education (DGE) and supported by Schools Association Training Centres (CFAE). While data literacy was not initially a formal component of these sessions, it has emerged organically as a response to teacher needs and digital challenges in schools. In this Learning Story, the teacher trainers have adopted hands-on and context-specific strategies to develop teachers' capacities. Their training includes:

- Simulations using fictitious datasets to make pedagogical decisions;
- Ethical reflection on data protection, ownership, and GDPR compliance;
- Critical comparison between AI-generated recommendations and professional judgement.

They also emphasise the need to understand the ecosystem in which educational data is produced and managed, raising awareness of issues such as third-party platform risks and adaptive learning algorithms.

Lessons learned

1. Data literacy is an important domain of digital proficiency

While digital competencies are a necessary foundation, data literacy is also an important domain of digital proficiency. Teachers know how to use educational tools, but sometimes they don't fully develop all the potential of the analytical mindset to interpret the outputs for pedagogical purposes. Data literacy training should emphasize critical thinking, ethical considerations, and contextual and pedagogical interpretation over technical proficiency alone.

2. Hands-on and contextualized learning works best

Data literacy is best developed in teacher training sessions through hands-on and case-based learning. Simulations using fictitious datasets, analysis of real classroom scenarios, and collaborative group work allow teachers to see the immediate relevance of data analysis. Contextualized activities—like tracking student progress using digital platforms or analysing formative assessment results—make the abstract concept of “data” more tangible and meaningful.

3. Ethical and legal dimensions are central

It is important to embed discussions on data privacy, ownership, and GDPR compliance into training modules. These ethical and legal considerations should not be treated as an add-on but as an integral part of every data-related practice in schools. Teachers should learn to navigate the tension between personalization and privacy.

4. AI and data literacy: promise and caution

AI introduces powerful tools for adaptive learning and educational planning, but it also raises important concerns. This duality—embracing AI's benefits while acknowledging its risks—should be a recurring theme in data literacy training.

5. Toward a culture of data-informed teaching

Data literacy should not be treated as a one-off training goal. It is a cultural shift. Teacher education programmes—both initial and continuous—must embed data literacy as a cross-cutting competency. Building this culture means equipping teachers not only with the skills to handle data, but with the values and mindsets to use it responsibly and effectively.

Conclusion

In this Learning Story, teacher trainers' practices demonstrate that developing teachers' data literacy is both possible and important. Their work illustrates how teacher training can go beyond tool mastery to embrace critical reflection, ethical use, and pedagogical application of data. As student data continues to grow in scope and complexity, teacher training must evolve to foster data.

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