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Project Snapshot

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**Data Skills Literacy for Educators**

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# Project Overview

The LITE fellowship project “Data Skills Literacy for Educators” aimed to explore how educators can better learn and incorporate data science (DS) and artificial intelligence (AI) skills into their teaching to improve students' data literacy. Motivated by the increasing demand for data-literate graduates and professionals across sectors, the project sought to understand the perspectives of DS and AI professionals and students, identifying gaps and opportunities for effective teaching practices. The beneficiaries include educators, students, and policymakers, with a focus on fostering a workforce prepared for a data-driven world. This research is particularly timely given the accelerating adoption of DS and AI technologies in education and industry. This project has been financed by the Leeds Institute for Data Analytics (LIDA). Sponsor: Paul Baxter.

# Project Objectives

* To identify current gaps in DS and AI education by consulting professionals and students.
* To develop actionable strategies for educators to enhance their data literacy and embed it in their teaching.
* To establish a collaborative community for DS and AI knowledge sharing.

# Methods

The project employed mixed research methodologies:

* Surveys were conducted among DS and AI professionals and students to gather quantitative and qualitative insights into their experiences and needs.
* Focus groups were organized to facilitate in-depth discussions and contextualize survey findings.
* Regular meetings and workshops were held with the local DS and AI interest group, and in collaboration with the Alan Turing Institute, to refine research questions and disseminate findings to wider communities.
* A combination of thematic analysis and statistical methods will be used to further analyze data and derive actionable recommendations.

# Key findings

* Students often perceive DS and AI as highly technical and inaccessible, highlighting the need for approachable teaching methods.
* Professionals emphasize the importance of foundational data literacy skills over advanced technical expertise.
* There is a disconnect between current educational offerings and real-world industry needs.
* Collaborative, hands-on learning experiences are highly effective for teaching DS and AI.
* Educators need tailored resources and training to integrate DS and AI into their curricula confidently.

# Implications for practice

* Educators can adopt foundational, real-world examples to demystify DS and AI concepts for students.
* Institutions should prioritize professional development for educators in DS and AI.
* Curriculum development must align more closely with industry requirements.
* Creating interdisciplinary projects can foster practical applications of DS and AI skills.
* Policymakers can use these findings to advocate for systemic support in integrating DS and AI into education.

# Outputs

* An interactive presentation summarizing findings and strategies for educators ([link to slides](https://slides.com/luisacutillo/dataskillsliteracyforeducators)).
* A toolkit for educators to incorporate DS and AI concepts into various disciplines. This is in development and based also on the resources collected on our local DS&AI interest group shared area on MS Teams
* A white paper outlining policy recommendations for enhancing DS and AI education. This is in progress
* Workshop templates and resources for professional development sessions. Part of this is already available via our public and private GitHub repository: https://github.com/luisacutillo78/DS-and-AI-education-UoL/

# Challenges

Challenges included difficulties in engaging a diverse group of professionals and students, particularly from underrepresented communities in DS and AI. To address this, targeted outreach strategies were employed, including collaborations with local organizations. Limited educator familiarity with DS and AI required iterative refinements of proposed strategies to ensure practicality. On reflection, a larger-scale pilot of recommended practices might have yielded deeper insights. Prospective researchers should prioritize early engagement with stakeholders to co-develop their research focus.

# Next steps

Future plans include:

* Expanding the scope to investigate DS and AI literacy across other disciplines.
* Developing open-access resources and MOOCs for global accessibility.
* Establishing an online community for educators to share practices and collaborate.
* Exploring the integration of generative AI tools into teaching to enhance engagement.
* Seeking collaborations with industry partners to bridge educational and professional gaps.

# Bibliography

* " Data-Driven Artificial Intelligence in Education", IEEE Transactions on Learning Technologies.
* "A systematic literature review of data literacy education", Journal of Business & Finance Librarianship.
* Local DS and AI community group meeting notes and reports.