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Education Committee

The use of Artificial Intelligence and EdTech in Education

Introduction

1. I submit this evidence in a personal capacity, drawing on experience across multiple stages of education: primary education as a chair of governors, secondary education as a governor, 16-18 education as a vice-chair of governors, and higher education as an academic.
2. I am a Professor of Digital Computation at Imperial College London. My research includes the design of low-energy artificial intelligence systems, including techniques that can make AI more efficient, more local, and less dependent on very large centralised computing platforms.
3. I also direct Imperial College London's Early Career Researcher Institute (ECRI), which gives me a cross-cutting view of how new technologies affect researchers, teaching staff, and learners at the point where education and research meet.
4. This submission addresses the Committee's interest in opportunities and risks, digital infrastructure, staff capability and continuing professional development, assessment, curriculum, inequalities, and regulation.

Summary of my view

5. AI should be welcomed as a major human productivity enhancer in education. Used well, it can support learning, reduce routine workload, widen access to powerful tools, and help both staff and learners focus on higher-value activity.
6. However, the impact of AI will in practice be realised within particular economic power structures. Due to the current nature of the technology on which AI is implemented, much educational and research AI is delivered through large, remote, proprietary platforms. This risks concentrating power, control, and data in the hands of a small number of firms which already hold substantial power elsewhere in the digital economy.
7. Public policy should therefore distinguish between two different questions: first, whether AI can improve education; second, how the UK can shape the technical, institutional, and economic basis on which AI enters education.
8. In my view, government should be forward looking to support the development of forms of AI that are educationally useful, environmentally responsible, and less dependent on concentration of compute, data, and control. This is where research and development in low-energy, local AI becomes important.

Low-energy and local AI as an education policy issue

9. In my experience, AI policy in education is often discussed as if the only realistic route is access based on current technological forms. Today, this means presupposing increasingly large cloud-based systems owned by a very small number of providers. That assumption is too narrow.
10. There is significant scope for a complementary strategy based on lower-energy and more local AI systems: systems that can run on modest hardware, be tailored to specific tasks, offer stronger privacy properties, and reduce dependence on constant access to large external platforms. This matters for at least four reasons:

11. First, it matters for resilience and public capability. If the education system becomes dependent on a small number of external providers for core teaching, assessment, and support functions, public institutions lose bargaining power and strategic autonomy.
12. Second, it matters for equality of access. Highly centralised models can create new divides between institutions that can afford the best tools and those that cannot. More efficient and deployable systems can help reduce this problem.
13. Third, it matters for privacy and data governance. Where appropriate, local or more tightly controlled systems can reduce unnecessary sharing of educational data and make governance more understandable to institutions, individuals, and families.
14. Fourth, it matters for environmental sustainability. The UK should not pursue AI adoption in education on the implicit assumption that ever-increasing compute intensity is costless. Efficient AI is not only a research challenge but also an education policy concern.
15. I therefore encourage the Committee to treat low-energy, local, and privacy-conscious AI not as a niche technical interest but as part of the answer to questions of infrastructure, regulation, market concentration, and educational equity.

Assessment

16. AI is fundamentally changing the nature of assessment in many parts of the education system, especially where work is done outside controlled settings. This should be seen not only as a threat to existing methods, but also as a useful pressure for reform.
17. For too long, some assessment practices have persisted because they are familiar, administratively convenient, or cheap to scale, rather than because they are the best available measures of what learners know and can do in given circumstances and for a given purpose.
18. The availability of AI now makes that complacency harder to sustain. In many cases, educators will need to move away from assessments that can be too easily outsourced to a tool and towards assessments that better test understanding, judgement, problem framing, critique, oral defence, practical performance, and the ability to work responsibly with AI.
19. This change should be welcomed. It creates an opportunity to assess what we genuinely value, rather than what was easiest to assess using older methods.
20. However, better assessment is rarely cheaper assessment. More authentic and inclusive forms of assessment often require more staff time, better training, new moderation practices, and investment in redesign. Given the current financial circumstances of UK education, there is therefore a risk that institutions respond to AI by retreating to older forms of assessment simply because they remain the least expensive option.
21. Government should recognise that assessment reform in the age of AI will require substantial investment. Without that investment, the system may default to approaches that are efficient administratively but educationally weaker.

Curriculum and the purpose of education

22. AI also challenges the education system to think more clearly about the purpose of education.
23. In my view, education should not be framed merely as preparation for a future “real world” that exists elsewhere. Education is already part of the real world. Learners should therefore encounter contemporary tools, methods, and forms of knowledge creation during education itself.
24. That points towards closer engagement between education, industry, and civil society, including exposure to current tools and practices. But this must be done carefully. Education should not become a subsidised and narrowed version of private sector job training.

25. The aim should be to enable learners to understand, question, and use AI effectively, not merely to become passive consumers of whichever tools happen to dominate the market at a particular moment.
26. AI also exposes the weakness of presenting curriculum design as a choice between knowledge and skills. The more useful view is that durable skills are built on foundational knowledge.
27. Learners need substantive knowledge in order to question AI outputs, detect error, exercise judgement, and use tools responsibly. AI should therefore prompt a reconsideration of curriculum design around skills grounded in knowledge, not a swing to either extreme.

Higher education, research, and early career researchers

28. There needs to be significant investment in the UK higher education sector if students and researchers are not to fall behind their peers.
29. In technical disciplines in particular, graduates are increasingly encountering state-of-the-art AI tools only once they enter employment. That is a serious weakness. It means universities may be educating students for a world they themselves cannot afford to provide access to.
30. Such investment would prioritise infrastructure, licensing, staff development, governance, and the capacity to experiment responsibly with new tools across teaching and research environments.
31. In my own research area, AI is already delivering very large productivity improvements. One example is the growing use of AI to assist with formal reasoning and the auto-formalisation of mathematics and proofs. These developments are highly welcome.
32. But they also create a clear competitiveness issue. If UK universities cannot expose students, researchers, and early career researchers to such tools in a timely and well-governed way, we risk placing UK students and researchers at a structural disadvantage.
33. This is particularly important for early career researchers, who often sit at the frontier of both research and teaching while having the least spare financial resource and the least institutional slack. Support for this group is therefore especially important.

Recommendations

34. Government should support AI adoption in education, but it should do so in ways that avoid unnecessary dependence on a small number of proprietary providers.
35. Government should invest in research, development, and demonstrator programmes for low-energy, local, and privacy-conscious AI systems, taking the long-term view that it is these systems that should become the long-term mainstay in educational settings.
36. Government should treat digital infrastructure for AI in education as a whole-system issue spanning schools, colleges, and universities, rather than assuming the problem is limited to one phase.
37. Government should support institutions through shared procurement, licensing, and guidance so that access to high-quality AI tools does not depend too heavily on local budgets or negotiating power.
38. Government should fund staff development, including continuing professional development, so that teachers, lecturers, and other practitioners understand both the uses and the limitations of AI.
39. Government should support assessment redesign rather than relying mainly on defensive responses to AI use. This will require significant investment across the education sector.
40. Government should ensure that regulation and procurement take account not only of functionality and safety, but also of data governance, market concentration, environmental cost, and long-term public capability.

Conclusion

41. AI offers real opportunities to improve education, research and productivity. The key policy question is what kind of AI ecosystem the UK wishes to build around education in the long term. A strategy that combines educational ambition with investment in research to develop efficient, locally deployable, and publicly accountable AI would better serve learners, educators, and the wider public interest than one that deepens dependence on a small number of remote platforms.

Acknowledgement
In preparing this submission, I used ChatGPT as a drafting aid to enhance my productivity. The views expressed, and responsibility for the final text, are entirely my own.

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