Opening remarks: Introduction – who are you and what is your background?

I am professor Rose Luckin from UCL Knowledge Lab. I teach and conduct research into the way in which we can best benefit from using AI to support teaching and learning, and how the prevalence of AI in our future means that we need to revise what and how we teach and learn now. I have a degree in Computer science and AI and a PhD in Cognitive Science. I have built and evaluated AI technology for use in education. I have also taught in schools, FE and HE. I am also Director of EDUCATE: a London hub for Educational Technology StartUps, researchers and educators to work together on the development of evidence-informed Educational Technology. In addition, I am currently Specialist Adviser to the UK House of Commons EducationSelect Committee for their inquiry into the Fourth Industrial Revolution, Co-founder of the Institute for Ethical AI in Education. In June 2018, I published 2018 book: Machine Learning and Human Intelligence: The Future of Education for the 21st Century
Main objective: Main evidence, concise and short.

1. How can AI be used as a ‘tool’ in different learning environments and across diverse subjects?

There are many ways in which AI can be used in education, from the provision of differentiated individual instruction that is tailored to meet the needs of each learner in specific subject areas, to intelligent interfaces that use natural language processing or ARVR to help learners with SEN interact and learn in new ways.

Perhaps the most powerful way to think about AI in education is as the tool that can help humans become more intelligent. We need to consider AI in terms of its ability to provide an intelligent infrastructure through the judicious and carefully designed analysis of large-scale multimodal data collected as learners interact in the world. This intelligent infrastructure can inform teachers and learners about the specific details of their learning PROCESSES across and within subject areas in a way that can support both teachers and learners. This type of intelligent infrastructure can help us all to be better at learning: a key skill for the future.

2. What is the effect on the student experience? What is the effect on a teacher? What is the effect on learning environments?

The impact of well-designed and judiciously used artificial intelligence on the student experience is that students will are better prepared for learning and better informed about their own learning needs and progress. NB THIS IS FUNDAMENTALLY IMPORTANT AS WE WENTER A WORLD WHERE HUMAN HACKING WILL BE WIDESPREAD – WE WILL NEED TO KNOW OURSELVES REALLY WELL TO STAY AHEAD.

If we get the use of artificial intelligence right, students can expect to spend more time interacting with each other and with their teachers and less time with their technology.

The effect on teachers will be profound. With a move away from the current emphasis on a knowledge-based approach to teaching to an intelligence-based approach. Teachers will need to gain Advanced Data literacy skills in order to interpret the analysis of the large datasets that will be available about their students’ progress. Teachers will need to MENTOR students understand what this data is revealing about their learning. Teachers can also expect to spend more time on CPD to ensure that their expertise is constantly refined.

Learning environments will also change as more emphasis is placed on collaborative activities. Interdisciplinary problem-solving activities will require teachers to work as teams to ensure that each problem is tackled from the perspective of multiple disciplines. Environments will need to be conducive to increased social interaction with teams of teachers working with larger groups of students on fewer but much more complex problems.
3. How can it impact assessment? How can it help identify what students are good at and help them excel in that? How can it help identify what skills are no so good at and help them improve?

AI enabled continuous formative assessment should free us from unnecessary high-stakes testing and, although we may choose to maintain some testing if it is targeted at the most valuable aspects of what students achieve through their studies. The most important aspect of assessment is the decision about what to assess and this is where significant change is needed. We need to decide what is valuable as the outputs of education for the modern world - then we can redesign our assessments so that we identify how best to support students in excelling at what we value. The means of assessing student progress can then be a blend of continuous formative assessment, portfolio production and self-presentation of the evidence each student values from the data that has been analysed while their learning has progressed.

4. Concluding remarks: What should the government do? What is your recommendation to Parliamentarians and what they should do?

3 Recommendations:

• Change the way we value our educational systems to focus on learners. At the moment our assessment focuses on schools, who compete in fairly pointless ways through league tables. We need to shift the focus of attention to learners and we need to move to an assessment system that values the Human Intelligence that we cannot automate. If we change what and how we assess learners, then the other changes that need to take place will follow.

• Accept that change is inevitable, and I mean significant change. Change is stressful. Therefore, we must build cognitive fitness and resilience into the curriculum and into ITT and CPD and we must ensure that educators are prepared through increased CPD. Teachers are learners too.

• Address the enormous and specifically educational ethical implications before it’s too late. In particular, parliamentarians must recognise the implications of the digital gangsters that are the Big technology Companies: The Intelligent infrastructure I have referred to already exists but not in support of learning. Surveillance and behavioural data harvesting are pervasive and often invisible. The big tech companies are already highly integrated into education in terms of hardware and infrastructure.