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Grand Challenges for Pervasive Technology to Transform Pervasive Education

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The first part of the presentation regards an introduction of technological changes. In 2030, technology will be integrated into all aspects of a person's life, including their education and professional development. Digital learning companions, such as Athena and Sophia, will be used to provide personalized education and guidance in various domains, including language learning and medical education. Technology will also be used in group settings, such as in craft groups and classrooms, to enhance data visualization and collaboration. Additionally, technology will assist individuals in tracking their own progress and setting learning goals. Overall, technology will play a central role in transforming education to be more personalized and effective.

Lifelong, life-wide education across diverse contexts

Lifelong, life-wide education is a type of education that is continuous and covers a wide range of contexts and domains. It is driven by goals such as personal development and career advancement, and it involves a variety of stakeholders including individual learners, teachers, mentors, and experts. Contexts in which lifelong, life-wide learning takes place can include classrooms, homes, workplaces, and museums, among others. Pervasive education technologies, such as artificial intelligence and computer-supported collaborative learning, can facilitate learning in these diverse contexts. These technologies can be used to create personalized teaching tools, learning companions, and interactive exhibits, among other applications. The development of metacognitive skills, such as self-regulation and self-reflection, is also an important aspect of lifelong, life-wide learning.

Technical and intellectual foundations for pervasive education

Very important is the use of technology in education, particularly the use of devices and infrastructures that can facilitate learning in various contexts. The concept of a "learner model" is introduced, which refers to

a representation of a learner's knowledge, goals, preferences, emotions, and other attributes that can be used to personalize their learning experience. The article also mentions "OLM" interfaces, which allow learners to see and interact with their learner model, and discusses the use of data and tools from various disciplines such as AI education and educational data mining to inform the design of technology for education.

The six grand challenges for pervasive education

In the second part of the presentation, we looked at the central focus of the entire paper, which is the six major challenges facing the discipline of pervasive education.
This six challenges are:

- **Safeness, trustiness and controllability**: A system of pervasive education, in order to be able to carry out its task correctly, must first of all arouse in users a feeling of confidence and security, able to put them at ease and in favor of learning. The addition of scrutinity elements gives the user the feeling of having total control of the entire system.
- **Data exploitation**: It's important to identify a learning model that can better exploit the knowledge gained from learning data.
- **Learning companion**: Another important feature of pervasive education is the correct choice of learning companion, a comprehensive learning tool that provides a foundation for all learners.
- **Pervasive technology awareness and memory**: Pervasive education devices must be equipped with an effective context awareness system and a good amount of memory for data storage.
- **Adaptation into *teacher and learning* context**: Pervasive education devices must simultaneously be effective teachers as well as learners.

- **Metaresearch for performance analysis**: The installation of an effective meta search system capable of giving feedback on the performance of the system is necessary.

References

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