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Education problems that technology can solve

The pandemic has been a great test case for fully understanding the advantages and disadvantages of education technology. What are these problems and what are the possible solutions?

While advances in technology make it possible to distribute any kind of content anywhere we want, they have also given rise to new challenges for the field of education. This article analyses these problems and explores how technology itself can solve them.

Problems in the world of education

In the following we present the four most discussed problems in the world of training today:

1. the lack of motivation
2. the reduced attention span,
3. the impossibility of creating personalised training,
4. the little attention given to practical learning.

1. Lack of motivation

When it comes to e-Learning, one of the biggest problems is the lack of motivation. A study conducted in 2021 indicates that lack of **motivation** is the biggest obstacle to learning for 76% of university students and 56% of university graduates. This problem has become particularly evident due to the pandemic, which has normalised e-learning and made it a reality for most students worldwide. Many studies show that school performance, especially for students with low self-esteem, has deteriorated. These students put a lot of effort into completing challenging tasks but at the same time are consumed by negative thinking because they are not motivated. This leads them to be more likely to give up at the first difficulties. Motivation has always been a central issue in learning, even before e-learning became central to learning; therefore, many experts are hopeful that technology will finally solve this major problem at its root.

2. Reduced attention span

One of the biggest problems highlighted by neuroscience is that our **attention span**, the amount of time a person can stay focused without getting distracted, has reduced from 12 to 8 seconds between 2000 and today. If that doesn't say much, think of the fact that goldfish have an attention span of 9 seconds, which is longer than ours.
This problem is due to the spread of technology which leads users to consume a lot of information in ever shorter periods of time. In addition, the massive use of social media has made the rapid consumption of content the preferred and most widespread.
This results in a generation of learners who have problems concentrating for long periods of time. Educational tools should therefore adapt to these needs by including more and more engaging content to deal with ever shorter attention spans.

3. Training is not personalised

Each person has a different way of learning: we do not all learn at the same speed and with the same methods. This realisation is not recent, it has been talked about since the late 1960s and the concept of 'personalised learning' began to circulate. However, it has always been practically impossible to create a model capable of providing personalised learning for each individual learner. The field of entertainment has faced similar problems. Today, however, thanks to the existence of streaming platforms, algorithms and cookies, it is possible to find entertainment content easily, since in most cases it is suggested by the platforms themselves thanks to these technologies. The application of the same technologies in the world of education could finally make personalised learning a reality.

4. Training is not practical

Today's training models are still based on theoretical learning. Students are overwhelmed by the enormous amount of information they have to learn in a relatively short period of time. If this information is not put into practice, it is very difficult for it to be imprinted in the students' memory in the long term and thus to be remembered. This problem was also clear before the pandemic. The Italian government introduced the so-called alternance-school-work scheme to overcome this problem. The point is that if students do not find what they are learning useful, it is natural that over time they become less and less interested and motivated in studying. This often results in dropping out of school. In other words, theoretical learning offers the possibility of structuring the students' minds, but this loses its value if it is not accompanied by practical learning.

Technologies can solve these problems

We have identified the main problems for the learning world, now let's see how recent technological advances can mitigate, and in some cases solve, these problems.

1. Virtual reality

Virtual reality offers the possibility for students to learn by practising what they have learned and by interacting with their environment. The philosopher John Dewey, one of the most distinguished modern educational theorists, believed that students should interact with their environment in order to adapt to it and have effective learning experiences. This hands-on approach allows them to learn faster and retain information longer than a text-based approach. Indeed, our brain has the possibility to live an experience, thus remembering actions and contexts, instead of written words. In addition, virtual reality offers the advantage of being able to learn from one's mistakes, without having to deal with the negative consequences of those mistakes.
Virtual reality is already widespread in corporate training because it allows the creation of different scenarios that enable employees to be trained faster, more comprehensively and saving a lot of money compared to traditional training.
Virtual reality is also increasingly used in school training. Schools use them to replace laboratory experiences, to take virtual field trips and to teach languages.

2. Learning when and how you want

It is becoming increasingly clear to educators that making students or employees attend two-hour lectures and courses is asking a lot, especially considering the reduction of our attention span. One of the emerging theories to solve this problem has developed from the studies of psychologist Hermann Ebbinghaus. The psychologist is the theorist of the **forgetting curve**, according to which students forget 50% of what they have learnt within 24 hours of the lesson and 90% within a month. A recent study shows that the solution to this problem can be **micro-learning**, i.e. learning in small doses. Instead of forcing students and employees to attend courses lasting hours and hours, it is more efficient to divide the material into many small lessons. In this way, our brain receives 'the right amount of information' and is then able to store it and transfer it from short-term to long-term memory. This makes it easier for learners to remember what they have learnt. Micro-learning is also becoming more and more popular due to the fact that we have electronic devices connected to the Internet that we carry around with us all the time. This means that if we have five free minutes we can use them to learn something new.
Micro-learning is becoming very interesting for the world of corporate training. This type of learning would allow employees to have access to information useful for their work whenever and wherever they want, making corporate training much more agile and useful.

3. Adaptive Learning

Artificial intelligence is being introduced into many sectors, including education. The pandemic has contributed greatly to increasing the relevance of this technology as educators have had to rely on distance learning. The integration of this technology into the world of learning is responsible for one of the most significant changes in the world of education in recent years: adaptive learning. Thanks to artificial intelligence, it would be possible to create learning platforms capable of personalising the learning experience of students. If until now it has not been possible to create training systems based on the individual needs of each student, technology can finally do it.

Learning based on artificial intelligence adapts to each student's individual needs, educational goals and learning speed. This technology is able to create profiles for each student, thanks to which it can identify strengths and weaknesses. On the basis of this information it can offer customised materials and content, help them identify their weaknesses and emphasise materials that

need revision. For a more complete explanation of personalised learning I recommend reading the article **Adaptive Learning: the revolution of the learning world**.

4. Gamification

Gamification is one of the hot topics in the world of e-Learning. It consists of the use of game theories and techniques in non-game contexts. In other words, it is a strategy to make learning more engaging, making it as similar as possible to a game. There are many studies showing that this technique can even double the performance of students. Students are more likely to learn and engage if the activities are fun and have clear objectives. The big change brought about by gamification, however, is not better performance, but an exponential increase in student motivation. Participating in a game in which we are pursuing a goal causes our bodies to release dopamine. This hormone creates a feeling of reward and satisfaction, exactly the same feeling you get after playing sport. Dopamine is therefore a powerful source of motivation that creates a kind of healthy addiction to learning.

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