ELEARNINGNEWS ARTICLE

Year 8 - number 284 Wednesday 10 april 2024

Cognitive load and eLearning: tips to avoid overloading users

How to design an eLearning course to avoid students' cognitive overload.

A learning course has as its main objective to ensure that the information offered to students is understood and retained over time. To make this happen, the designers and creators of the course must implement a series of measures, without neglecting any of the aspects of the course, from the contents to the methods of use, up to the method of involving the user.

Furthermore, to prevent the person from being overwhelmed by excessive information and stimulation, a thorough knowledge of the **theory of cognitive load** is required. Adequately balancing the cognitive load to which the student of an eLearning course is subjected is not an immediate act and requires a lot of attention on the part of designers and trainers. This short guide will help you understand how to orient yourself in designing the cognitive load of an eLearning course and how to avoid overloading the student who is preparing to participate in the lessons of your training program.

The right cognitive load

The human mind is not designed to absorb any type of information continuously. On the contrary, if it is bombarded with concepts with the aim of achieving intensive and rapid learning, the effect obtained is the opposite. In fact, every person has **limits** in their capacity for attention, memory and information processing. Respecting these limits determines the effectiveness of learning.

The theory of **cognitive load** is based precisely on respect for these limits, because it supports the effectiveness of training only provided that the information and teaching concepts are provided in such a way as not to overload the mental capacity of the students, without therefore pushing the minds of the students. users beyond their limits. In fact, people learn better when they are placed in conditions that are optimal for them, with learning tasks suited to their abilities and providing a quantity of concepts that their mind can take in, understand and retain.

In fact, each student's memory can only retain a limited amount of information at the same time. For this reason, it is essential to avoid bombarding the minds of users of an eLearning course with infinite concepts, provided one after the other in a sort of learning race. In fact, the more information is generated at the same time or very close together, the more likely it is that students will not actually learn what the course intended to teach them and that they will then fail to recall the main concepts and learning objectives.

Three types of cognitive load

There are **three types of cognitive load**, which directly concern eLearning scenarios:

1. **Intrinsic**: it is the cognitive load determined by the natural complexity of the information that must be understood and assimilated by the user. In general, for each person there are some activities that are more difficult to learn and memorize than others. This involves a cognitive overload for the user, which is therefore intrinsic to the activity and the information itself.
2. **Extraneous**: it is the cognitive load caused by incorrect design of the eLearning course, in particular in relation to the way in which the information is presented. These are elements and activities that are not necessary for learning, but which force students to use their cognitive abilities and various mental processes to process information not strictly related to learning. In this case, the overload is unrelated to the training.
3. **Relevant**: is associated with processes that are directly relevant to learning, such as the construction of schemas and mental representations of learned information. In this case, the student's cognitive resources are used directly for the learning process.

Educational planning

But what can you do, in the educational planning phase, to avoid cognitive overload of your future students?

1. **Avoid dividing attention**: in educational planning it is good to keep in mind that students learn more effectively when their attention is not divided between different sources of information that refer to the same content. For this reason, it is best to avoid the separation between a text and the image to which it refers or between the text and the corresponding notes. The integration of different sources of information can therefore help to avoid cognitive overload.
2. **Use different modes**: students are led to better store information that refers to each other, but which is presented using two different modalities, for example using the visual channel and the auditory channel. In fact, using auditory and visual teaching techniques at the same time can help increase students' short-term memory capacity and allows them not to overload the same mental processes at the same time. Part of the cognitive load is transferred from the visual to the auditory channel, so that the cognitive channels used are different and the mental processes involved in learning are not the same.
3. **Simplicity**: keep the course organization simple and clear and remove all content that is not necessary for the learning process you have designed for your course. Focus only on what is important for the student's training and eliminate or reduce everything that is not needed, starting from the non-functional graphic part. The risk would be to unnecessarily involve the cognitive processes, which the student should focus only on learning, creating an overload.
4. **Division**: don't think about long and complex content, but focus on fragmented information packages. Smaller content encourages users to take the lesson and continue with the course, even when understanding the material is not immediate. Furthermore, learning small packets of information one at a time ensures an adequate and effective workload for learning.