

## Cyberethics in Education

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The basic idea of the “Theory of digital learning“ (Köhler 2021) is that interaction in educational settings is taking place on the basis of data, with both real persons and their digital representations. Furthermore, it is about how the theory of digital learning and its main focus on data, do include both learners and teachers. The Theory suggests that on the first level of digitization there will be data-based representations of the actors in education, i.e. teachers and learners. In the second level, only the data of both learner and teacher interact, i.e. there is no physical awareness in real life. Finally, in some cases, a third level may occur where even physical configurations (machines) interact with the learner or teacher or with each other. In every case the data is the source of the interaction, whether it is a human or a robot as a computer-based machine.

Type of Digital Student	Description	Type of Digital Teacher	Description	Representation
Online Student I	Real student synchronous online	tele-teacher / online-tutor (synchronous)	‘real’ teacher but online	physical person
Online Student II	media representation of the students to be interacted with (perhaps asynchronously)	media representation of teacher / tutor to be interacted with (perhaps asynchronously)	peer 2 peer	mediated person
Virtual Student	student’s data to be interacted with	virtual teacher	avatar or AI	data representation of the person
Learning Robot	learning machine	teaching robot	machine teaching	Physical engine

Taking into account this manifold interrelation between humans and computers, a number of psychological, societal and ethical aspects become highly relevant to any practice. Cyberethics is the philosophic study of ethics pertaining to computers, encompassing user behaviour and what computers are programmed to do, and how this affects individuals and society (Tavani et al., 2013; Marquet & Köhler, 2017). Any didactic modelling of digitally processed perception, construction and evaluation in education, has to consider ethical perspectives, especially when it comes to the implementation of Artificial Intelligence (AI). In any educational technology (ed tech) system, ethics are nowadays considered as highly relevant. This orientation may focus

on ethical, anthropological, legal (to a lesser extent) and social aspects of socio-technical arrangements. In consequence, educationalists should be prepared with comprehensive (media-) didactic expertise. Ideally, any educational expectation should be built on a (media-) didactic model. As well, it is recommended to follow a generic orientation as a key approach for ethically, legally and socially sensitive and responsible development of complex IT environments. For example, one may apply the principles of the PAPA Model (Ng, 2020) as it meets the interests of teachers or other educators in a fine way:

- Privacy: The right to keep or release certain information about a person.
- Accuracy: This is about the integrity and truth of a piece of information.
- Ownership: This dimension includes the ownership of a piece of information as well as the property rights.
- Accessibility: Meaning the possibility for a person or a company to obtain information.

The PAPA model has been modified for adolescents to meet their cyber education needs.

From 10-19 years old, this age group is trying to find their own identity. They are associated with risky behaviour, especially in the online world. To protect them from harm, they need their own education on cyberethics.

Technically, such reflection may be summarized in any digital tool, becoming easily accessible to educators and learners. This may include any direction of a multimedia, interactive web application, whereby the media design and the media implementation should be derived from the (media-) didactic modelling (Köhler, 2021). Subsequently, options for media didactic framing may be developed, focusing first on recent trends of digital didactics and second on the meaning of the respective subject for the digital learning.

In order to have a practical showcase for a cyber-ethical approach, a practical application may be visited. For example, such has been developed by the Complex Ethics project, which delivers an easy-to-use tool.<sup>1</sup> By using this tool for example, AI-related ethical issues may be modelled and understood in their meaning for the construction, perception and evaluation of educational practice in ed tech based worlds.

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<sup>1</sup> <https://www.complexethics.de>

Literature:

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