New technology can cause more harm than good in schools and hospitals if teachers and nurses don’t fully know how to use it.

Dirty telescopes were frequently inserted into the patients’ intestines in a Danish regional hospital. Only after three months did a nurse notice that the cleaning device for the medical equipment wasn’t functioning as it should.

The nurse had automatically assumed that the telescopes were clean because the display on the cleaning device said they were.

“This is a classic example of staff not being trained to use technology. Had they understood the technology properly, they would know it’s not always right to put all your trust in what the computer tells you,” says Professor Cathrine Hasse, of Aarhus University’s Department of Education (DPU).

“In schools as well as in hospitals there have been many examples of staff taking a passive stance when the technology malfunctions. And that can have fatal consequences.”

Staff don’t understand new technology

At the hospital where the nurses inserted dirty telescopes into patients for three months because they reacted passively to the new technological device, all affected patients were tested for HIV. Fortunately, none had been infected, but it could have ended in a disaster.

“When staff members haven’t been trained to use the technological equipment required in their daily work, it can have fatal consequences,” says Hasse.

“If they get a better grasp of the technology, they’ll be better at tackling unforeseen situations and they will realise that technology isn’t always to be trusted.”

Although most nurses are accustomed to using new technology such as computers and mobile phones, they lack a basic understanding of how to optimise the interaction between their professional skills and the technical equipment.

They simply lack technological literacy, concludes a new research-based book titled ‘Teknologiforståelse på skoler og hospitaler’ (in Danish only) (‘Technological literacy in schools and hospitals’), edited by Cathrine Hasse and Katia Dupret Søndergaard, a lecturer at DPU.
Nurses aren’t the only ones who are overwhelmed by technological advances. School teachers also lack an understanding of how best to use devices such as iPads and interactive whiteboards to improve the quality of their daily teaching.

“Some local authorities buy interactive whiteboards and others buy iPads, with no prior professional discussions with the teachers about how this affects the standard of teaching in the classes,” says Hasse. “Nobody has really decided on how the kids should use these devices.”

**Teachers use interactive whiteboards for entertainment**

Through extensive interviews and field work, the researchers found that many vocationally-trained people who use hi-tech equipment in their work on a daily basis have not reflected on how best to combine their professional skills with the opportunities offered by new technologies.

The result is that they don’t know how to use the equipment or react passively when it breaks down.

Interactive whiteboards can be an excellent tool in a classroom, for instance, but the boards do not achieve their full potential unless the teacher has considered how to use them optimally as part of the learning experience, she says.

“The boards are for instance great for group projects, but it often ends with the teacher just making some kind of show that’s more a display of electronic data processing than a learning experience.”

**iPads can be a distraction**

iPads are now common in Danish schools. But the electronic screen can cause disquiet and concentration problems in the classroom if they’re not used appropriately.

“The iPad is full of opportunities for the individual user, but some teachers fail to realise that the students can sit and do all sort of other things with it, e.g. go on Facebook, while it’s being used in teaching.”

Most of the teachers and nurses in the study knew how to use new technology. But many of them lacked an understanding of how it’s used best to supplement their teaching skills. This is because they’re not taught this in vocational schools.

For this reason, many experience a technology shock when they graduate:

“In vocational schools they are trained to work with people, but when they come out into the real world, they’re surprised to see that technology is a fully integrated part of everyday life. Working with technology isn’t an option. You just have to use it,” says Hasse.

**Interplay between technology and professional skills**

The problem is that some teaching and nursing students are not taught technological literacy at the vocational schools.

In the project ‘Technucation’, headed by Catherine Hasse, a group of researchers are therefore trying to figure out how to incorporate technological literacy into the curriculum in vocational schools.

They are developing methods that can help vocational students master the technological devices they will inevitably be using in their working lives.
The team’s hypothesis is that the development of new technology must not occur on its own but rather in concert with the professional skills of the teachers and nurses.

The project is funded by the Danish Council for Strategic Research and is scheduled to be completed in 2015.

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Read the Danish version of this article at videnskab.dk [9]

Fact box

The new anthology ‘Teknologiforståelse på skoler og hospitaler’ (‘Technological literacy in schools and hospitals’) is written by researchers who have studied how nurses and teachers relate to the new hi-tech devices that are becoming an increasing part of their working lives.

By analysing interviews and extensive observational studies in hospitals and schools, the researchers conclude that nurses and teachers do not lack knowledge of new technology; however, they do lack an understanding of how they can use the new technological aids to supplement their professional skills.

All the authors in the anthology are taking part in the research project 'Technucation', which aims to develop methods for vocational schools that will help them to prepare future nurses and teachers to use new technology in their careers.

Smarter prostheses using iPhone technology [12]
Søndergaard and Hasse: Teknologiforståelse på skoler og hospitaler [8]

Anne Ringgaard [16]
Dann Vinther

December 19, 2012 - 06:39
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