Learning for Today:

The Interaction between Pedagogy, Learning Spaces and Technology

By Dr. Michelle Selinger

A new pedagogy is emerging, placing students at the centre of the learning process and encouraging teachers to draw from a larger repertoire of strategies and skills to lead interdisciplinary and project-based work. The best learning is authentic – engaging students in their own learning in practical and real-life contexts that demonstrate the value and validity of the skills and knowledge they gain.

The introduction of technology has helped to fuel this new pedagogy and it has not only transformed the ways in which learners and teachers interact, it has also caused a rethink in the way that learning spaces are designed. A vision of technology-enabled education is grounded first and foremost in an education model that articulates clear objectives to prepare learners effectively for life, learning and work in the 21st century. That vision will be well articulated and developed before decisions are made about the components that will support this model and ensure learner success.

Figure 1 shows the education model as the focal point aligning a set of interrelated components with learners and teachers at the centre. These components include:

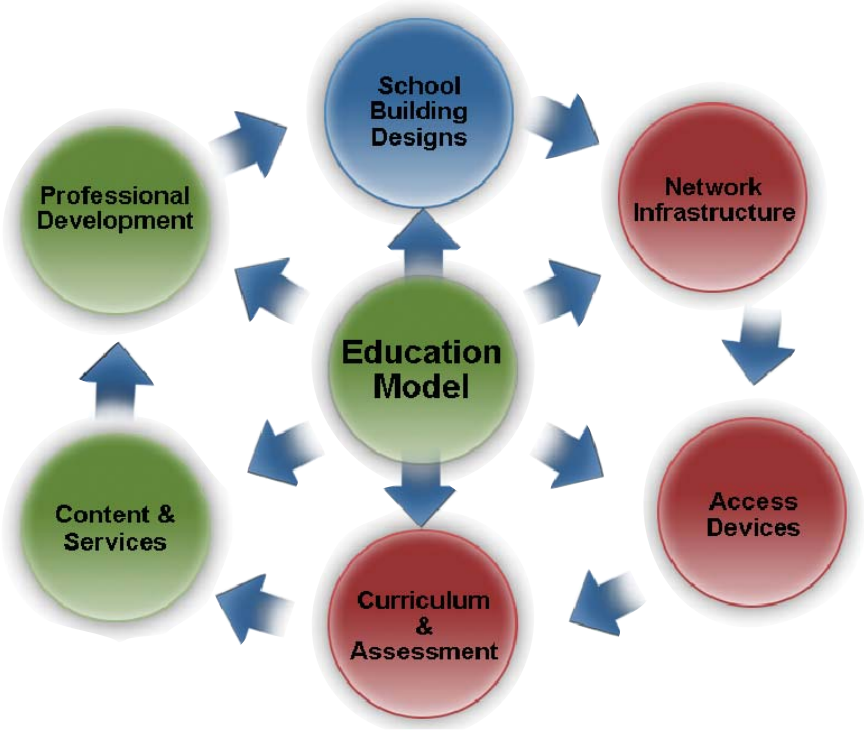

Figure 1: The education model at the centre

- school building and learning environment design
- curriculum and assessment systems
- professional development of teachers and school leaders
- content and related services including the management and administration of schools
- network infrastructure
- technology access devices

These components are equal players in the school reform and renewal process, none of them able

to unlock the full value of their distinct contribution to improving school performance without interacting with the others.

To be effective, the components of the education model in Figure 1 have to be locked together in a holistic approach. This implies that:

- The curriculum is relevant and up to date, with assessment structures that measure not simply recall but also reflect mastery of the 21st century skills and knowledge needed for the social and cultural context of learners and for the workplace.
- Professional development of teachers for adopting teaching methods meets the demands of a new educational model and gives confidence in using technology and other tools to improve the quality of student learning.
- Leadership development and change management strategies are in place.
- Administrative processes for efficiency and transparency, and for improved productivity are implemented.
- Infrastructure such as buildings, technology, and security systems provide a welcoming and safe and secure environment conducive to learning.
- Schools are no longer built as education factories, reflecting architectural specifications derived from the 19th century. They create an attractive and relevant learning environment, with more flexible learning spaces and places that support all that is known about collaborative, self-directed learning. They will actively encourage involvement and engagement of the community and the family.

Putting Collaboration at the Heart of Learning

In an effort to inculcate 21st century skills in students such as those identified by the Alliance for 21st Century Skills (www.p21.org), there is a need to focus more on collaboration: collaboration between peers, on content, around content and in the development of content.

Very few students come to school with no experience of technology. At the very least, they have mobile phones and research shows that they are natural collaborators. Don Tapscott (1999, 2009), Wim Veen (2007) and others have written extensively about this 'digital generation'. They use social networks to communicate every aspect of their lives and they plan their day through instant messaging and SMS. These are learners for whom technology is second nature, and they do not want, nor expect, to 'power down' when they come to school. They assume that the technology is readily available so they can move seamlessly from home to the

A classroom at Silverton Primary School, Melbourne, Australia

classroom and be able to use any of the tools whenever and however they see fit to support their learning.

The impact of such collaboration on enhancing learning has long been recognized and the use of technology is most effective when it is used for more than accessing resources. Collaboration in formal education settings can take place in many ways and provides a motivational and authentic learning experience. This could be students collaborating on a project or assignment, or supporting each other's learning; it might be teachers co-teaching a topic; or it could be an expert from a museum, a gallery, a hospital or a business working alongside a teacher. These interactions replace the dated view for providing students with 'real life' problems to solve – which are only ever real for some – with authentic learning experiences that are personally, culturally, socially and environmentally relevant.

With the internet, collaboration does not have to take place in the same physical location; it can be 'virtual' through some form of video conferencing or virtual classroom tool. These technologies have to be accessible, sometimes by the whole class and at other times by small groups, and educators have to consider how to make the most effective use of space in order to bring remote experts and learners into the classroom in various scenarios. Examples range from a museum curator showing a whole class some dinosaur bones and engaging in a video conference; a Telepresence dialogue with one or two students discussing and comparing life in a US city with students in the UK; to a university professor engaging a small group of high flyers in a dialogue about quantum physics using a whiteboard in a virtual classroom session and explaining some key principles to a group of students working collaboratively using screen sharing technology with a student who is at home with a broken leg.

Placing the Technology

In too many schools we still see the technology either at the edges of the room or buried away in computer labs. No teacher worth their salt would put all the books in the library and take their students there once a week, so why shouldn't this same philosophy be applied to technology? Now with wireless access points, ultra-mobile devices, e-readers and streaming video, the information students need to access is available in multimodal formats and ought to be readily available, accessible and ubiquitous at all times. At Silverton Primary School in Melbourne Australia, learners from the age of five have access to a multitude of devices, from digital image and video cameras, digital microscopes, laptops, desktop PCs, i-pods, MP3 players, i-pads, interac-

tive whiteboards placed at child-friendly height, probes, scanners to their own TV studio and radio station. They use these technologies seamlessly with other non-technology tools, making their own choices about what to use, with whom and when to use them, to support their learning. Teachers are around to help structure and focus the learning and to set tasks and problems to solve based on curriculum requirements.

Role of the Teacher

The role of the teacher is changing to be one of a facilitator of the learning process rather than the font of all knowledge. Long gone are the days when all the information a student needs to learn is in the heads of the teachers, or the occasional TV or radio program, or in the library. The information found on the internet is varied both in form and quality and it is a teacher's role to help learners make sense of what they find, to guide them to question each resource they access, and to ask questions that help them to assimilate new information to turn it into robust knowledge. This new form of learning requires students not just to consult with the teacher but to consult with each other and with experts other than their classroom teacher, beyond the classroom walls – with guided supervision where necessary.

Students no longer need to be seated in rows facing the teacher in the new order. As at Silverton, students in any classroom need space to move freely around the room in order to interact with each other and with different technology artifacts. The technology has to be readily available and ubiquitous which implies accessibility and it has to suit different learning needs which will vary according to task. To this end, the technology has to be mobile, where possible, and not fixed in any one location.

Summary

If technology is to be a catalyst for learning it cannot be isolated: other factors such as learning spaces, curriculum, assessment, and teacher professional development are important ingredients in getting it right and planning for technology in all its forms should be considered in the early stages of learning space design.

When designing new learning spaces some of the questions that need to be asked when planning for technology implementation include:

1. How will students interact with the different technology available in the school and the classroom?

2. Do students always need to be seated at desks when using a handheld or laptop device or can they sit on comfy chairs, on the stairs, or on the floor?

3. Is there sufficient space for students to have both technology and non-technology artifacts accessible on a desk or table?

4. Is the furniture built for ease of collaboration around a single desktop screen or LCD display?

5. Are there tools for collaboration such as interactive whiteboards, video screens or LCD displays for plugging in laptops so that students can share a laptop screen and if so, are they strategically placed either for whole class or small group use?

6. Is there a need for moveable walls to make video conferencing and virtual classrooms for small groups less disruptive for the rest of the class?

7. Are there sufficient power points for students to charge up their devices? ■

References

Tapscott, D. (1999) *Growing Up Digital: The Rise of the Net Generation.* New York, McGraw Hill

Tapscott, D. (2009) *Grown up digital: How the net generation is changing your world.* New York, McGraw Hill

Veen, W & Vrakking, B. (2007) Homo Zappiens: *Growing up in a digital age,* London: Continuum

Dr. Michelle Selinger

Dr. Michelle Selinger is a director of the Education Practice in Cisco's Internet Business Solutions Group. Her career has spanned all sectors of education and she has implemented several innovative technology solutions in both virtual and physical spaces. Prior to joining Cisco, Michelle was the director of the Centre for New Technologies in Education at the University of Warwick, UK. She has published widely on technology in education and is regularly invited to give keynote addresses. Her interest in learning spaces spans many years: she has recently worked with architects and designers on the design of technology-rich learning environments that provide the environment for an education relevant to life and work in the 21st century.