



WHICH ARE THE INNOVATIVE TECHNOLOGIES THAT CAN IMPACT LEARNING? MANY TEACHERS ARE HAVING PROBLEMS IN DETERMINING WHAT CAN WORK FOR THEM IN THE CLASSROOM.

# INNOVATIVE TECHNOLOGIES IN CLASSROOMS

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THE USE OF INNOVATIVE TECHNOLOGIES IN CLASSROOMS AND SCHOOLS IS ONE OF THE BIGGEST FUTURE CHALLENGES FOR TEACHERS AND THE EDUCATIONAL SYSTEM IN GENERAL. DESPITE THE RAPID DEVELOPMENT OF TECHNOLOGIES, THE EDUCATIONAL SYSTEM SHOULD TAKE ITS TIME TO ADAPT TO THE NEW WAYS OF TEACHING.

BY STEVEN MCKEE

Each year I go to shows and see new and different things and you actually wonder about the impact it has on education. Earlier this year, a company claimed at a trade show that 3D TV increases student learning by 40 percent apparently in all subjects! So what is real and what is hype? Which are the innovative technologies that can impact learning and how do we assess those? Also which ones are right for you to use? Many teachers are having problems in determining what can work for them in the classroom. The issue is how to determine what is effective both in terms of teaching and learning and is available at an affordable price. In fact, the field is moving so fast that there are few meaningful studies on the latest topics and technologies.

## THE FAST RATE OF CHANGE IS CHALLENGE

Many people talk about the speed at which educational technology innovation is moving and say we cannot hope to keep up with the rate of change. The basic problem is the educational support systems which implement change were designed for another era, one that moved at a much slower pace. We woefully lack good on-the-job teacher training and support systems which can deal with the changes in the landscape around us. Educational administrators at all levels need to see their role in a new light, of one that assists in guiding and setting up the learning environment that supports teachers in their continued development and use of new technologies.

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### **HOW CAN WE DEAL WITH THE FAST RATE OF CHANGE?**

In the last article in the 2013 e-journal (download, Worlddidac e-journal), I wrote about the concept of the Technology Adoption Curve and how it can be used to target trainings to specific groups that are ready and willing to embrace technology and target them in a specific sequence. We can use this concept coupled with the principle of Technology Diffusion, which is the process by which information and skills pass through society. The problem is that we don't have the time or the resources to retrain each teacher individually using the traditional face-to-face method. So how do we do this and do it effectively, quickly and sustainably?

Diffusion of technology has its own dynamics and is most often used in marketing of tech goods but unfortunately it's not often applied to education. Diffusion can happen through formal training programs but in the tech setting it is more likely to occur from personal interaction with the people around us. We all have persons that we turn to when it comes to new things and gadgets. The concept of Technology diffusion

gives us a framework to understand this process and utilize it for the rapid and sustainable spreading of new technologies and teaching techniques.

### **COMMUNITIES OF PRACTICE (COP) ARE IMPORTANT FOR TECHNOLOGY DIFFUSION**

In the educational world this is starting to happen on the internet through the establishment of Communities of Practice (COP). For the most part these are ad hoc groups established by teachers themselves or by vendors for the support of their equipment. However it has yet to spread widely to the teaching community and is especially slow to take off in the international arena and in developing countries. This area has even greater potential if it is systematically supported by the educational sector to create a sustainable community for each country in its own language. A good COP would enable teachers and administrators to put into practice Life Long Learning Skills and apply them for the benefit of the students. At Labtech, we are developing new models for COPs and seeing how they can be applied to technology diffusion.

### **WHAT IS THE AMOUNT OF TEACHERS TO MAKE TECHNOLOGY DIFFUSION SUSTAINABLE?**

An issue related to Technology Diffusion is how do you determine the right amount of teachers and classrooms that should employ educational technology? The answer is variable because we should realize that not all teachers are willing or able to learn and use this technology; nor do all need to. We need to ensure there are enough teachers utilizing these technologies in each school so that it can become self-sustaining and have a sufficient impact on each student to develop their Life Long Learning (and working) skills utilizing technology. A target point can be set to create a sustainable 21st century learning culture in the school which should be around a minimum level of 15 to 25 percent of the teachers in each school and then growing over time. Around 10 percent is about the

absolute minimum amount for sustainability otherwise hard to develop skills risk being lost through staff changes.

All this will help in the infusion of technology into the learning process and contribute to understanding and employing new and evolving pedagogies that surround the use of educational technology. Some say the concept of teaching is moving away from pedagogy to andragogy. Pedagogy is how children learn, andragogy is how adults learn and there certainly something to this shift. We can see that new learning styles are shifting to learner centric models that include differentiated learning and it adjusted to taking into account previously acquired knowledge. That is not a bad definition of andragogy. However are our teachers prepared for this shift when they were mostly trained in only pedagogy?



HOWEVER ARE OUR TEACHERS PREPARED FOR THIS SHIFT WHEN THEY WERE MOSTLY TRAINED IN ONLY PEDAGOGY?

## FRAMEWORKS FOR THIS TRANSITION

A couple of good ones that I have found are **TPACK** ([WIKIPEDIA](#), [VIDEO](#)) and **SAMR** ([BLOG](#), [VIDEO](#), [OVERVIEW](#)). TPACK gives you a nice theoretical framework and SMAR helps you apply it in a logical sequence. The first step in SAMR is Substitution; this is where you substitute new technology to do the same things you were doing before. This is a good first step for teachers as it gets them utilizing the new tech in ways they are comfortable with. The second step is Augmentation; this is where the teacher is able to add a twist to the old ways and do some new things. You can think of this a beginning to experiment with the new capabilities that are now opening up. The third step is Modification; now the teacher is able to significantly modify how he is teaching

and new techniques and possibilities can emerge. The forth step is Redefinition; this allows the teacher to refine his teaching practices in new ways that were unimaginable or not possible before. This final step holds the promise of changing the way that learning is done and fully utilizes the potential inherent in these new technologies. So now that we have implementation frameworks, then what tools and technologies should we use? Here is a good video from the ISTE conference last year that covers 101 free tech tools for teachers ([PDF](#), [VIDEO](#)). There are also a number of educational platforms emerging that are worthy to look at such as Edmodo which is free to use. Also some decent Classroom Management and Learning Management Systems are being made available at little or no cost (free beta signup).

Earlier this year I participated in moderating two panel discussions groups at the conference session for the Digital Education Show Asia. One panel was: What makes investing in education technology worth it? The other was Planning next-generation schools for the digital generation. One of my special guests was a leading figure in educational transformation in the USA, Mr. Marc Prenzky. During these panels we had some very engaging discussions about many of these issues and how schools and teachers are struggling with the ever-changing landscapes. At events like this as well as at Worlddidac events, you can get a sense of the globalization of education and common concerns for the inclusion of 21st century skills into the teaching and learning process for both academic and vocational schools. This is where you can see new things but keep in mind some of the above criteria which may help you to

assess what is real and useful verses what is hype and a quickly passing flash or fad. Hopefully you will be able to find some new and useful tools that are just right for you and be able to envision how they may be applied at school or districts. ■

## THE AUTHOR

Steven McKee has been working in international education for over 35 years in developing and newly developed countries. He is the President of Labtech International Ltd. ([www.labtech.org](http://www.labtech.org)) which he founded about 25 years ago and is based in S.E. Asia, he also serves on the Executive board of Worlddidac and is actively involved in designing 21st century learning solutions. For more information and full article download click [HERE](#).