# The Role of Educational Technologist in Implementing New Technologies at School

Birgy Lorenz, Kaido Kikkas, Mart Laanpere

[1]Institute of Informatics, Tallinn University, Narva Road 25, 10120 Tallinn, Estonia
[2] Estonian Information Technology College, Raja St 4C, 12616 Tallinn, Estonia
{Birgy.Lorenz, Kaido.Kikkas, Mart.Laanpere}@tlu.ee

**Abstract.** In 2005, a new profession called "educational technologist" was introduced in Estonian schools. At first, the idea was confusing for many school principals, because of the seeming overlap with the job descriptions of existing ICT support specialists or ICT managers. Other principals interpreted the role of the educational technologist as a technology-savvy teacher who could take responsibility for teaching with technology in some subject domains so that the rest of teachers would not have to bother them with constantly changing landscape of technology. According to the data from the Tiger Leap Foundation (2012), almost 7% of Estonian schools had hired an educational technologist by 2012 – in most of the cases by re-allocating the salary fund of IT support specialists. The position is usually funded by local municipalities, not from the state budget. This paper is reflecting upon the case study data collected from 13 Estonian schools where educational technologists had been employed, the focus group interviews were conducted with 29 persons working in the field of educational technology. The study gives an overview of the current situation by defining the emerging profession of educational technologist on the level of professional practice. We also describe the arguments for establishing such a new position in school and the main challenges of a new specialist starting his/her career in this dynamic field.

**Keywords:** educational technologist roles, implementing new technologies, learning environments, assessing teachers, training methods and principles, mixed expectations

## 1 Background

The latest report from the European Commission reveals that some EU countries do better than others with integrating new technologies in teaching and learning. For example, in Ireland, Finland, Norway, Estonia, Czech Republic, Denmark, Malta, teachers and students seem to apply technology more often [23]. The change has been fast, as only 10 years ago Estonian teachers were struggling to have even minimal access to computers and internet [17]. The aforementioned EC report gives good input

adfa, p. 1, 2011.

to change the Tiger Leap[1] programs and rewriting the Estonian Information Society Strategy 2006 that focused in the near future [6]. To share best practices is also important as teachers can learn from each other [21] and also see the change not only to support education change in order to use technology, but see it as a countrywide innovation effort to reach information society [7].

The value and role of the educational technologist has usually been discussed in the context of school reforms [2]. The problems with technology are not for those who have not grown up with it [12]. At the same time there is a bigger need than ever to teach more people at the same time (distance learning, e-learning etc.). Educational technologists are needed to push teachers to find ways to reach the pupils and students in a meaningful way using technology. Attempts to change learning have given mixed results, some might even say that nothing has really changed in higher education, except the amount of technology being used [18]. However, technology-enhanced learning is still powerful driving force in education to raise interest and find patterns of learning and try to automate processes where teacher is not needed to help the student [10].

When we looked at the technology-related roles at school we saw a lot of positions that had overlapping job descriptions: ICT manager [3], administrator, ICT support, computer teacher, educational technologist and sometimes others too. Some companies training ICT personnel and principals have tried to propose solutions by dividing the process tasks between them, e.g. the principal deals with strategy, core teachers with education leadership, ICT managers with technology and educational technologists with e-learning [19]. Investigating different educational technologist job instructions developed in Estonia we also saw common lines about supporting e-learning [15] and skills that overlap also with common teachers' knowledge [24]. Teachers' professional development should also include mastering technology used in their field, this should not be left to someone else [11]. Teachers should differentiate learning process [25], use inquiry-based teaching [4], flipped classroom [20] and mobile learning [22] as well as other opportunities that arise. However, help is needed as most of the teachers are not still ready to face that challenge by themselves [9].

The Estonian national curriculum is in an implementing phase – the old one is gone, the new one is still taking off. A group of educational technologists led by Ingrid Maadvere (a leading educational technologist in Estonia) has analyzed the information from the curricula that involves use of ICT. Various ICT skills and knowledge of new methodology are needed by teachers on all levels [16].

Some people have started to talk about a new age of learning (learning 3.0 or social learning) that increases student participation, blurs the teacher-student relationship, changes the environment and time [13]. This brings along a lot of new issues as teachers abandon teacher-centered learning styles and focus on pushing students to learn actively [1]. A good example of this is Kathy Schrock (a popular American

[1] The Tiger Leap Foundation is an Estonian government initiative to distribute resources and knowledge about how to use technology at schools.

educational technologist) who has published a lot of information on her website "Kathy Schrock's Guide to Everything"[2].

## 2 Methods

The methods used to investigate the role and challenges of the educational technologist are data analysis, focus group interview and survey among experts. We used grounded theory [5]:

- stage 1: analysis of the job description (ET). Different job descriptions are used at different schools; they are also different in secondary and higher education. As these have been discussed at some courses training ETs at Tallinn University, we used the course transcript as well as web search (as some descriptions are put up to school websites). . We coded the main ideas and used them in stages 3 and 4 to analyze priorities;
- stage 2: analysis of blog posts about school environment and challenges of 13 working and studying ETs that have participated in 2011-2012 at the Infrastructure course at Tallinn University (http://taristuseminar.blogspot.com/). We collected tips, tricks and challenges that we used also in stage 3 and 4 to conduct the survey and interview;
- stage 3: focus group interview and discussion – "what is the most important and why in the tasks of educational technologists?" (18 ICT specialists, educational technologists or computer teachers from different Tallinn schools participated);
- stage 4: a survey among the experts (11) was carried out and the results discussed with ETs trainers (3). The questionnaire consisted of background information; job description, everyday tasks and priorities; how to motivate colleagues, management of ICT; and exemplary cases (e.g. about choosing a cloud system for the school and implementing it).

These four stages gave us information about the tasks that should be solved in a school environment by ETs as well as best practices how to implement new things and some tricks that are used to motivate others to use technology.

## 3 Results and discussion

### 3.1 Overall ideas of the position

The technology-driven changes in Estonian society have produced good results, bringing the country to the top ten in overall freedom [14] and according to Freedom House[3] Estonia ranks among the most wired and technologically-advanced countries in the world [8]. Schools have also taken part in that innovation and have implement-

[2] Kathy Schrock's Guide to Everything http://www.schrockguide.net/index.html

[3] Freedom House is an independent watchdog organization dedicated to the expansion of freedom around the world.

ed a lot of changes over the last 10 years. At the same time, the occupation of educational technologist is not very old and only 7% of Estonians schools have got the position. Schools that have special support to teachers have shown more interest towards using technology and sharing best practices.

Looking at the big picture, it seems that educational technologist is still a "side" job with its description being different in every school. On the one hand, it is useful for the schools as they have someone providing help where it is needed. On the other hand, for the others it is often unclear who "the educational technologists" are and what should they do? The most popular task seems to be to participate everywhere to pick up knowledge (e.g. to be aware of the current trends); support teachers through training activities and participate in extracurricular projects with students. At the same time, according to their official job descriptions their main goal is to emphasize e-learning practices, consult not only teachers but also board, as well as analyze the results of local studies and find out the school's standing in them. For now, these seem to be not so important in the minds of the focus group. Addressing the challenge, we found out that the main problem is in the mixed signals and needs of the school board and teachers as well as the sheer extent of the problems that should be dealt with at the same time.

Competency-related problems can be solved with additional training, but also clarifying the job descriptions (ICT manager, environments administrator, website manager, ICT help, educational technologist, computer teacher). Training for educational technologists is provided by Tallinn University (a separate master's program), BSC Koolitus (a short program of 80 hours), Estonian e-Learning Development Centre (supporting seminars and training activities) as well as other web-based e-learning courses from abroad. New people usually come from the fields of pedagogy, andragogy, informatics or other similar backgrounds featuring customer support in some form.

Other challenges faced by schools include overworked teachers, not enough resources in any level and no clear vision for the future as there are also some educational reforms going on – e.g. to separate primary and secondary schools from gymnasiums. There are also issues with employing extra help (psychologists, special needs teachers, social pedagogues) that is regulated by the law. So school leaders have to make decisions whether to repair the roof, get more qualified help or purchase equipment. All are needed, but which one is the most important?

### 3.2 Educational technologist tasks and power

The focus group interviews about the tasks of educational technologists revealed the top priorities that schools are struggling with right now - they strive to employ an ET that a) has all the necessary skills and knowledge; b) is able to train less knowledgeable teachers in the ICT area; c) can participate in international projects and d) support students. And even if all this is achieved, the ET does not have resources left to investigate the school to find actual problems and difficulties, or to advise the school board at important decisions (see Table 1).

**Table 1.** Priorities of the tasks of ETs

| nr | Opportunity, Task | Im-portance | Remarks |
|---|---|---|---|
| 1 | **Participate in different courses (online, real life, seminars) to be aware of the current trends** | **highest** | More skilled ET-s can share knowledge |
| 2 | Write projects for the school to get more funding for new technologies | low | Even if the school needs more resources and the ET has the skills to get them, usually it is not their task |
| 3 | **Participate as a supporting person in various projects with students (eTwinning, Comenius)** | **high** | An ET task is to train teachers. Sometimes they end up as project managers |
| 4 | **Train teachers inside your schools (in groups to individual)** | **high** | Skilled colleagues mean better results in using ICT |
| 5 | Advise the school board in technology-related decisions | low | Skilled management means better leadership |
| 6 | Perform research at schools (teachers-students skill level, feedback to services, innovation) | lowest | To make informed decision one needs data to support it |
| 7 | Train community: students, parents, teachers from other schools, partners | low | This promotes the school. Better reputation means better students and teachers will apply to study or work |
| 8 | Help teachers when they use technology in their classrooms (co-teaching) | average | A typical ET task. The only threat seen is to 'hijack' the lesson from the actual teacher |
| 9 | Create learning materials for others | average | Create materials for other teachers to learn, not for students. Still an unclear area. |
| 10 | Manage different e-learning sites/environments or networks for the school | low | Some schools also employ an ICT-administrator. Mixed results here, depending on personal interests and skills of people |
| 11 | Update a personal blog and link repository for others to use | average | One of the ET tools for sharing knowledge. To promote e-learning there must be a personal example |

The experts (actual education technologists working at schools) stated that their job is to influence people to use technology, but without any power given to them. Their job is like that of a servant - to provide information, tools and have a lot of patience

and good mood. Only 2 of 11 experts interviewed were members of school board. Also, only 42% of them work full time. This means that they have second job somewhere else or have extra tasks to do. At least all of them had official instructions and goals from the management about what they were expected to achieve and do.

A typical ET is thus expected to develop and support e-learning (share knowledge, train people); help others to develop their skills on ICT and support them, they must keep up with the new trends and environments; maintain and administer online learning environments; and also create new media learning materials. As if the ET is supposed to attend all kinds on seminars to learn the trade of all other teachers and then do their work as well (by creating their study materials and even giving their lessons) - it is a little similar to the 'teacher-oriented' learning style with students supposed to use technology but in reality, the teacher is doing the entire task with students being a passive audience. Thus, the ET's should be careful not to cultivate learned helplessness (especially among older teachers who would passively use the technology but refuse to learn from it) - to make things worse, many ET's are evaluated by the count of learning objects and courses they create, tempting them to 'score all the goals' by themselves.

### 3.3 Suggestions how to grasp the nettle

When starting to work as educational technologist, the first goal was suggested to be to get an idea what is going on at the school. Suggestions to get the basic knowledge of other teachers ICT skills were usually a) make a survey or interview, b) let them write a self-evaluation essay, c) observation, d) communicating and asking for evidence of ICT usage, e) doing something together. At the same time the subject (specialty) skill is not measured and it is a problem. While the teacher can master the content of her/his topic, they probably do not know the newest teaching methods. When ICT methods are presented the technologist relies on teachers' skills to recognize valuable tools for the content. As ICT seems difficult for teachers, it is really hard to determine how it would help the lesson when the teacher sees only the trouble with using technology. The solution is to push ordinary teachers to get involved in teacher support communities and also in some extent receive training in the national curricula goals for different subjects.

The second step would be to get people motivated. One way for an ET is to know the subject of the teacher and then smuggle in ICT skills (usually by personal example of either by the ET him/herself or some 'success stories' of others). Efforts by teachers should be noted and complimented. For some people, the whole process must be divided into small steps, doing them first together and then letting them try on their own. On the contrary, some others would like to study on their own - they only need the starting impulse (starting a blog would be a good example of a possible way) and perhaps some support (sending interesting web links etc). Some advanced ones can be asked to join the educational technologist training or made to present something to the colleagues. Some people worry constantly about their workload - they must be convinced that the new technology will decrease it (it is a slippery road to go, as this cannot always be guaranteed). Some kind of point system (to measure progress) can

also help, as can direct benefits (added salary, free time etc) - but the latter are very difficult to do at schools due to a serious financial plight.

The management must be informed as well, usually by monthly to yearly meetings where goals and results are reported. Some ET's use private blogs to record their progress, others use mailing lists.

At the same time the support of management was the biggest issue reported from the ETs. Some leaders are not open to hear suggestions or even don't like technology (an example: a school leader states that "our school has no e-learning option", at the same time the ET reports that there are over 100 e-learning courses at that school"), the management is often not participating in training events, reports are asked, but nobody discusses them or even share them with others ("ET: I don't know why I even report, when nothing changes").

Measures to increase ICT usage includes:

- mandatory courses;
- optional courses with strong suggestion from the management;
- continuity ("repeat until they get it");
- dividing tasks/learning skills into smaller units ("I train only 15 minutes and teach 1-3 new tricks during that time");
- arguments of "old" and "new" ("Times has changed, we will never get the old times back");
- compliments;
- reliance on personal example until others start to follow;
- teaching only those that are interested ("I can't reach everybody");;
- sharing the resources only when the teacher writes a motivational letter and agrees to do more than just to use the device on her/his classes ("I ask them to train others, share materials etc);
- including questions about using ICT and innovative teaching to the work evaluation interview; when they want to get the "points" they must use technology and change;
- bottom up pressure (teach students to help teachers or ask them to complain about lack of interest when teachers use traditional methods);
- threatening teachers and management that other schools are already using all this technology and the school will lose good teachers, students and reputation.

So there are different approaches to achieve the goal – from the balanced and supporting approaches to the aggressive fear tactics. Different schools are used to different management styles to get the results. When calm and positive ET is recruited to a somewhat edgy environment then in the starting years the goal should only be to make oneself visible using the same means. Likewise, it is not advisable to make rapid or eclectic changes in a peaceful, slow-moving environment. The first year tasks should be also to build relations and work with those who are open to it. From the second year on when people already know the ET it is advised to push people to achieve more and widen the circle involved. The most important advice was never to try to reach more than 3 big goals in one year as that would be the optimum.

## 4 Conclusion

The most important step to start with is to clarify different positions and job descriptions. When school leaders expect to employ “whatever” to solve all the ICT challenges nothing will change. Different jobs need different people and personalities. Facilities that involve ET's (the Educational Technologist Society, universities, companies and other trainer/employers of ET's) should strive to promote the exact nature of the profession - most of all among school management but also future ET's.

Educational technologists are a key factor in how the technology is implemented at a school. When she/he has the support and power from management then the work succeeds, otherwise it is almost impossible. The ET tasks are to know what is going on (at school but also in the area of using ICT in an educational setting), find the ways to motivate people to use ICT and inform the management about the results. To do that, he/she must be as important as management themselves or have the unlimited support. Tools to achieve that vary from praise to scare. For a starting ET the most important goal is to make one visible, the second is to gather people that are interested at using ICT in classes. To change the school culture the ET must be patient - to change old habits and spread new values is a marathon rather than a sprint.

In the longer run, the other supporting systems also must change rapidly. Use of technology in the classes is written to the national curriculum, but there are no sanctions when it is not used at the learning environment. The Ministry of Education should raise the level of expectations to use ICT and present evidence of that during the teacher training process at universities as well as professional development, but also when teachers apply to raise their qualification to senior or mentor teacher.

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