The School IT Administrator

Analysing the profile, role and training needs of network administrators in Europe's schools

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Foreword

Across Europe, and for many years now, governments, regions and schools have been making significant investments in ICT connectivity, equipment and services in order to make digital age teaching and learning a reality for young people, and to equip them with the competences needed to thrive in the 21st century. The people in schools who are responsible for maintaining and upgrading the technological infrastructure occupy an increasingly vital role in ensuring that this investment pays dividends, and deserve support to fulfill this mission. That is why European Schoolnet has worked in partnership with Cisco – with its experience in the Cisco Networking Academy Program – to explore the context, duties, challenges and training needs of IT Administrators in schools.

This report presents the findings from what is believed to be the first such survey, and the picture that emerges contains positive elements – for example 60 per cent of respondents have a post-school qualification in computer studies – some major concerns are exposed that need to be addressed by decision-makes at all levels, in particular the need for training and support. Unless they are tackled with some urgency, digital age learning is at risk of remaining an aspiration not a reality. For its part, European Schoolnet aims to increase its support for IT Administrators through the European Schoolnet Academy, in collaboration with its education partners in the public sector and a wide range of small and large companies in the private sector.

The study is part of a wider programme of activities under the banner of the Future Classroom Lab – demonstration classrooms, projects, toolkits and courses, both face to face and online, to help teachers, school leaders, policy-makers and, in the future, IT administrators make future schooling a reality.

I commend this report to all who are working to bring about new ways of teaching and learning.

Giovanni Biondi, European Schoolnet Chair

Building tomorrow's workforce is a major Corporate Social Responsibility focus for Cisco. Unemployment is high in many countries, especially among young people. Yet, companies are desperate to find people with the technical know-how, the creativity, and the problem-solving skills they need to fuel innovation and grow. For example, according to a 2013 global Accenture survey, 35% of responding companies reported difficulty filling positions due to a lack of suitable candidates.

As more people, process, data, and things connect to the Internet, the lack of people with the right skills to manage these connections will become more pronounced. Cisco works to address this challenge through IT skills development programs that help prepare students for jobs and meet the needs of employers.

In recent years we have witnessed a great dynamic in Europe in which government agencies, educational institutions, businesses, and nonprofits are joining forces to close the e-skills gap. We are proud to participate in this common effort with the Cisco Networking Academy program. The program delivers classroom instruction, online teaching materials, interactive tools, and hands-on learning to students all over the world, providing greater economic opportunities for individuals and building a pipeline of talent for the future workforce. In Europe each year, 270,000 students from every socioeconomic background participate in Cisco Networking Academy, developing the knowledge and skills required to succeed in a technology-driven market.

We believe that education technology managers hold a crucial role in this dynamic. Not only do they manage a school's IT infrastructure, but they also enable a positive and impactful technological experience for young Europeans. This report is intended to raise awareness of the challenges and needs of this community of school IT Administrators, and to initiate a dialogue amongst public and private sector organizations to find solutions.

Laura Quintana, Senior Director, Corporate Affairs, Cisco Systems

Executive summary

European Schoolnet and its network of ministries of education, in partnership with Cisco Systems, launched a survey in autumn 2014 to find out more about a crucial but overlooked link in the digital learning chain: the school IT Administrator. An IT Administrator – in some countries known as the network manager, systems coordinator or IT manager – is the person in the school who oversees the technical development and implementation of IT, for example administering the network, managing devices in the school, addressing security issues and providing technical support to teachers. It is distinct from the ICT coordinator or e-learning manager who has a more pedagogical role.

The online survey, in 25 languages, comprised 23 open and closed questions and aimed to find out more about the background, duties, challenges and training needs of school IT Administrators across Europe. It was publicised by ministries of education in the European Schoolnet consortium and a range of other channels.

The response rate in 20 languages was considered sufficient to draw meaningful conclusions from the data.

The key findings from an analysis of more than 3,600 responses received by the close of the survey in April 2015 are:

Schools

The typical IT Administrator works in a medium-sized secondary school with between 200 and 1,000 teenage students in 11 to 50 classrooms. A minority work in primary schools, in small schools with fewer than ten teaching rooms; one in six work in large schools.

IT infrastructure

The typical IT Administrator manages at least 100 networked computers in their school, eight per cent manage more than 500, but 23 per cent fewer than 50. There are large variations between countries in computer numbers managed. The Windows operating system is almost universal but many IT Administrators work in environments with devices running Linux and Apple OS as well. Half their schools have tablets and 82 per cent interactive whiteboards. Corresponding to the range of school sizes, 24 per cent of IT Administrators' schools have fewer than 10 network access points, while a similar percentage have more than 100. Wifi is present in more than three-quarters of classrooms in 36 per cent of schools (concentrated overwhelmingly in Nordic countries), but there is no wifi in more than half the classrooms in the average school in this survey. Most schools have relatively high levels of freedom in decision making as regards ICT purchasing; schools are responsible for network management and data storage, hosted in school in 60 per cent of cases. In all countries more than half the schools allow students and teachers to bring their own device (BYOD), but consistently fewer provide corresponding network services for them.

While most countries have mixed characteristics, six can be grouped according to the degree of 'digitisation' in their schools:

- 'Highly digitised schools': Denmark, Norway and Sweden, with high equipment levels + large numbers of network access points, routers and switches + highly wifi connected classrooms + high use of cloud for hosting + BYOD policy + BYOD support
- 'Digitally developing schools': Poland, Romania and Turkey, with relatively low levels of equipment, low classroom wifi provision and services hosted in school.

The IT Administrator

The typical IT Administrator is both a network manager and a teacher (usually of ICT) and 36 per cent also provide support to teachers. While on average 60 per cent have a formal post-school qualification in computing, this varies considerably between countries. Half have undergone off-site training but 37 per cent report having had no training at all. The support of peers and colleagues plays an important role in professional development for 43 per cent of IT Administrators.

There are three groups of countries sharing common characteristics of IT Administrators:

- Denmark, Hungary, Italy, Lithuania and Norway, where IT Administrators tend to have fewer other roles (teaching or other duties) than other countries
- Czech Republic, Lithuania, Poland, Romania and Spain, where more IT Administrators than average have an IT qualification
- Finland, Italy, Malta, Sweden and Turkey, where IT Administrators tend to be less well qualified. The last two countries are also among those where the highest proportion of IT Administrators have had no training since appointment.

Challenges and training needs

Across all countries, over 80 per cent of IT Administrators are likely or very likely to be interested in an offer of online training in their own language. If offered in English, the figure drops to 50 per cent, with interest markedly lower in some countries than others (notably Poland, Hungary and Slovakia). The biggest challenges facing IT Administrators are supporting and developing school personnel, security and network operations. Their biggest training needs are new tools and services (instruction on the latest products in the market), security (including data management and e-safety), managing cloud services, followed by network operation and BYOD management.

There is clustering of countries sharing common challenges:

- 'Network operations': speakers of Estonian, German, Maltese, Portuguese, Slovakian and Turkish all rank highly as a challenge installing and managing hardware and software and deploying central services (only Romanians rank it highly as a training need however)
- 'People': the Nordic countries (Denmark, Finland, Norway, Sweden) emerge as a cluster where staff support and development in technical and pedagogical ICT is a highly ranked challenge, although not as a training need. Scandinavian countries also form the 'highly digitised schools' cluster.

There are two groups of countries where IT Administrators have markedly divided training preferences:

- IT Administrators speaking Estonian, Maltese, Portuguese, Romanian, Slovenian, Swedish, Turkish and of course English are more open to English language training and cross-border communities than others
- More speakers of Polish, Hungarian and Slovak express a stronger preference for training in their own language training and with colleagues from their country than other language speakers.

Finally there are two specific groupings of IT Administrators whose situation and needs are to some extent distinct from others:

- Denmark, Finland, Norway and Sweden have more highly digitally equipped schools than other countries and one of the main challenges they face is not technological but people. In Denmark and Norway IT Administrators tend to have no other role than IT management, and in both Finland and Sweden they tend to be less well qualified in ICT than in other countries.

- Although less clear, IT Administrators in Malta, Romania and Turkey tend to work in digitally developing schools, lack a relevant qualification (except for Romanians), are more likely to enroll on English language training courses and face challenges in basic network operations.

Based on this analysis, a number of training modules could be offered that are likely to be popular, relevant and useful:

- Connecting your school: external connectivity, internal connectivity, network topology, firewalling, secured channels

- Cloud computing: cloud models, pros and cons, providers and solutions

- Bring Your Own Device: opportunities and challenges, security risks, technical solutions

- New tools and services

- eSafety: with network security integrated within all modules.

This report presents the rich picture provided by respondents of their school and its technology, their own background and roles, the challenges facing them and their training needs and preferences. It outlines the methodology followed and analyses the aggregated results of the survey in three sections: the school and its technological infrastructure, the profile of IT Administrators, and their training preferences and needs. In addition there are 20 national summary reports.

Introduction

All countries are engaged in harnessing technology to modernise schools and introduce innovative approaches to teaching and learning. Access to reliable and appropriate technology is a pre-condition for pedagogical innovation and modern administrative systems, but in many schools the person responsible for this – if there is one – may not be receiving adequate support and training in managing complex, changing and increasingly mission-critical IT systems. In many schools such a role may not even exist or it may be covered by a range of ad hoc solutions: a teacher, student 'digital leaders', volunteer parents, product suppliers, external contractors or local government.

In a recent article[1] about UK network managers, Gerald Haigh praised their adaptability: "All of them have impressed me by their ability to thread their way through the varying pressures of fast moving curriculum and inspection expectations, rapid technological change, marginal budgets and the vagaries of ageing infrastructures." In particular he points out how the role has evolved from technician to involvement in school leadership and strategic planning. Ten years ago, he writes, "the pace and direction of ICT policy in a school was set by school leaders, often advised by a specialist ICT teacher. The job of the network manager – in effect a senior technician – was to pronounce on whether the policy was even possible, and if so, how it could be achieved. In some cases this was a recipe for friction, because (let it be whispered) there were some network managers whose default position was, 'We can't do that.'" Today's educational technology professionals, he notes, "are a new breed, connected nationally, even globally, with a sharing community of like-minded peers. They keep abreast of developments, understand the characteristics of various devices, know the capabilities of their school infrastructure, and have a feel for the professional, personal and technical issues around technological implementation."

Are there many such educational technology professionals in Europe's schools? What is their role? What challenges do they face, and what are their training needs? European Schoolnet and its network of ministries of education, in partnership with Cisco Systems, launched a survey in autumn 2014 to answer these question and investigate the background, duties, challenges and training needs of school IT Administrators. An IT Administrator – as distinct from an ICT coordinator or e-learning manager who has a more pedagogical role – is defined as the person in the school who oversees the technical development and implementation of IT, for example providing technical support to teachers, administering the network (and maybe the virtual learning environment), managing devices in the school and addressing security issues. In some countries the IT Administrator is known as the network manager or IT manager.

Initially the survey covered only three countries that had expressed an interest in the investigation: Spain, Poland and Italy. However funding from Cisco's US headquarters enabled the survey to be translated into 24 languages, the production of synoptic and national reports and strategic seminars to present the results.

This report outlines the methodology followed and analyses the aggregated results of the survey in three sections: the school and its technological infrastructure, the profile of IT Administrators and their training preferences and needs. In addition there are individual national summary reports covering each country.

Thanks are due to more than 3,600 IT Administrators who responded to the survey and completed the questionnaire and to the ministries of education for their support in this project.

1 http://blogs.msdn.com/b/ukschools/archive/2015/04/15/how-the-role-of-the-network-manager-within-education-has-changed-gerald-haigh.aspx

Methodology

A project management group was established, comprising management, industry, pedagogical and IT experts. This group agreed the scope of the survey and the items, under the following two areas:

- The school and its technological infrastructure: school size, age range, equipment, services, decision-making
- The IT Administrator: qualifications, roles, tasks, challenges and needs

Questionnaire items were then drafted in English (Annex) and translated into 24 languages by a panel of translators working for European Schoolnet. Each version of the survey was uploaded to SurveyMonkey, giving a total of 25 language-specific questionnaires. The surveys were grouped by language rather than country in order to focus on one of the main reasons for the enquiry: to determine the level of interest among IT Administrators in online training either in English or their own language.

The data collection period was from October 2014 to March 2015. European Schoolnet wrote to the ministries of education in the European Schoolnet consortium to ask them to contribute to the promotion of the survey in their respective countries. In addition, national and regional contacts were requested to publicise the survey through their media channels and to identify particular schools. Cisco contacted school IT Administrators in its network linked to the Cisco Networking Academy, and European Schoolnet regularly promoted the survey in its newsletters and social media channels. Respondents were therefore mostly self-selected, and from an unknown total population of IT Administrators. In order to encourage participation no personal information was requested but respondents were invited to provide their email address if they wished to be kept informed about developments.

At the end of the survey period, the results of each language version of the survey were exported and aggregated for analysis. In total there were over 3,600 responses, as seen in table 1 below. In five languages, despite repeated efforts to raise awareness and interest, there were insufficient responses: Dutch, Latvian, Bulgarian, Greek and Croatian and so unfortunately these are not included. As the response rate for Romanian and Swedish were relatively low, results for these languages should be treated with caution.

Country	Language code	Number of respondents
Bulgaria	BG	5
Czech Republic	CZ	84
Denmark	DA	128
Germany/Austria	DE	98
Greece / Cyprus	EL	6
United Kingdom / Ireland	EN	96
Spain	ES	190
Estonian	ET	96

Finland	FI	115
France/Belgium	FR	70
Croatia	HR	8
Hungary	HU	128
Italy	IT	215
Lithuania	LT	480
Latvia	LV	0
Malta	MT	64
Netherlands / Belgium	NL	2
Norway	NO	246
Poland	PL	145
Portugal	PT	140
Romania	RO	24
Slovakia	SK	528
Slovenia	SL	144
Sweden	SV	38
Turkey	TR	556
	Total	**3606**

Table 1 Languages and participation rates

At the close of the survey period, the data for each language version were exported, aggregated and analysed (the raw dataset is available on request). Mean values in the following charts and tables give each language equal weighting, regardless of the number of respondents or size of the population. In the following pages the country rather than the language is described for ease of understanding. In most cases the language corresponds to the country, except notably in German, where respondents may work in Austria or Germany, and in English, where respondents are from UK, Ireland and one or two from countries for which the survey was not translated, e.g. Serbia, Iceland.

1 The school and its technological infrastructure

In order to appreciate the profile and needs of IT Administrators, some understanding is needed of the school in which they work and of the technology in the school they manage.

School size and age range

In order to gauge the size of school served by IT Administrators, the survey asked respondents to state how many students were in the school and how many classrooms there were in their school.

As can be seen in fig. 1 nearly two-thirds of schools represented in the survey have between 200 and 1,000 students, one in six being larger and a similar figure smaller. Only 2 per cent are in very small schools with under 50 students. This suggests that only larger schools have a person who can be described as an IT Administrator. Generally in Europe the average school has fewer than 200 students, owing to the high number of small primary schools, and on this evidence few such schools have an IT Administrator.

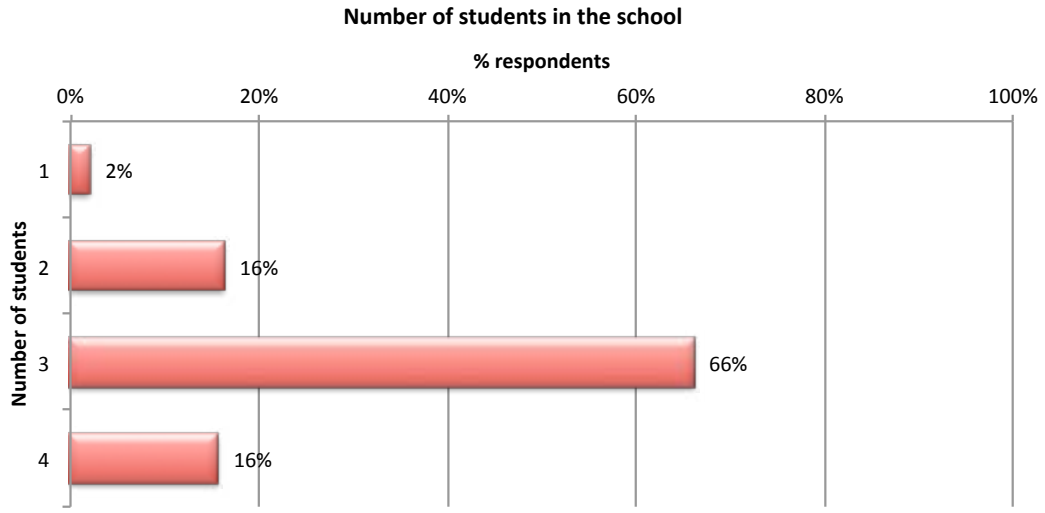

Figure 1 School size - two-thirds have between 200 and 1000 students

There is little variation in school size between countries, as shown in fig. 2. In every country more than half the IT Administrators responding are in schools with 201 to 1,000 students. However, IT Administrators in Portugal often work in very large schools: 45 per cent are in schools with over 1,000 students. On the other hand 37 per cent of IT Administrators in Slovakia work in small schools with fewer than 200 students.

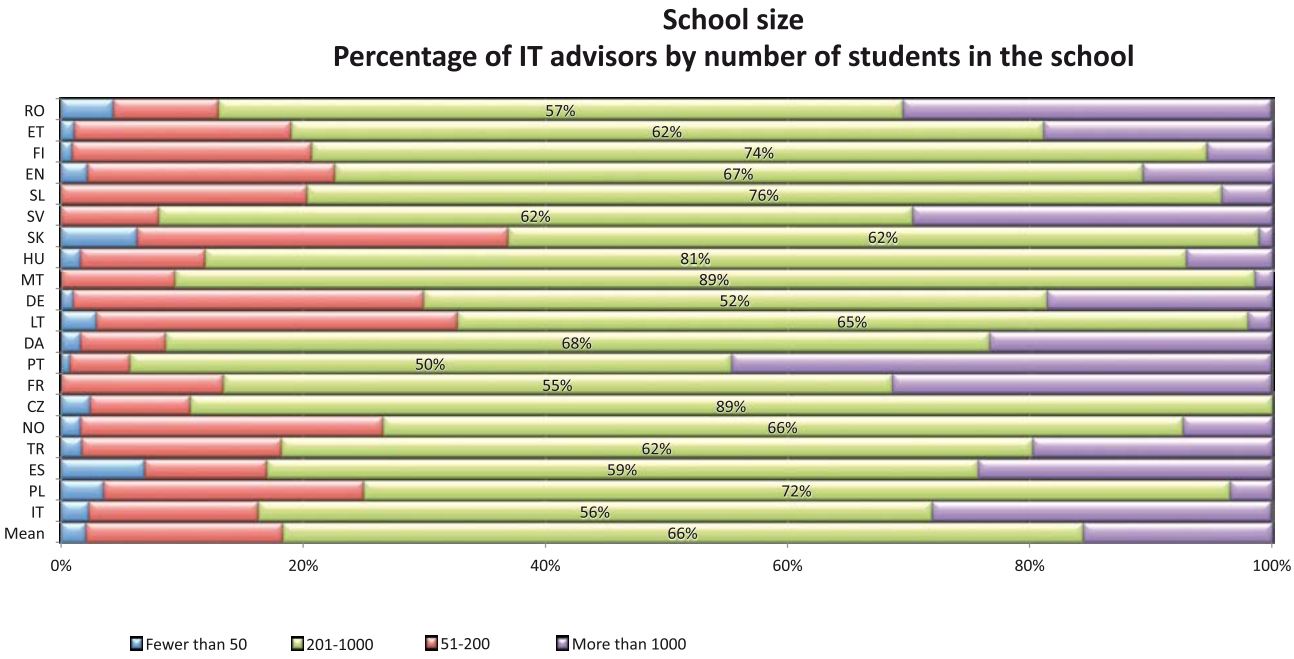

Figure 2 School size: Depending on the country 50 to 89 per cent of IT Administrators are in schools with 201 to 1,000 students

Not surprisingly the reported number of classrooms in schools (fig. 3), another indicator of size, closely matches the number of students, the majority of respondents working in schools with between 11 and 50 classrooms.

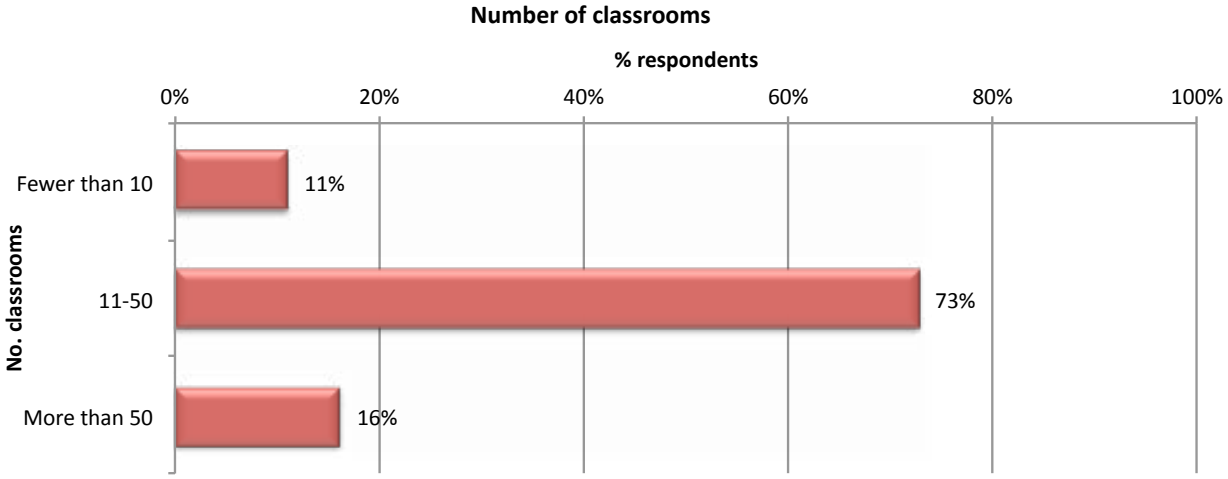

Figure 3 Number of classrooms: most IT Administrators manage IT in between 11 and 50 teaching rooms

It is important to know whether IT Administrators work in primary or secondary schools, as the type of infrastructure provided and patterns of use are quite different in the two phases of education (e.g. primary students tend to stay with one teacher all day, but secondary school students move from teacher to teacher). However, countries use different terminology and transfer ages vary, making common labels difficult. Therefore the survey simply asked at what age students enter and leave the school.

Fig. 4 indicates that most IT Administrators work with upper secondary school students in their teens (with the issues of increasing independence, safety and risk-taking associated with this age group), as over 85 per cent of students leave the school aged at least 14. At most 18 per cent are in primary schools, and up to 47 per cent are in lower secondary schools.

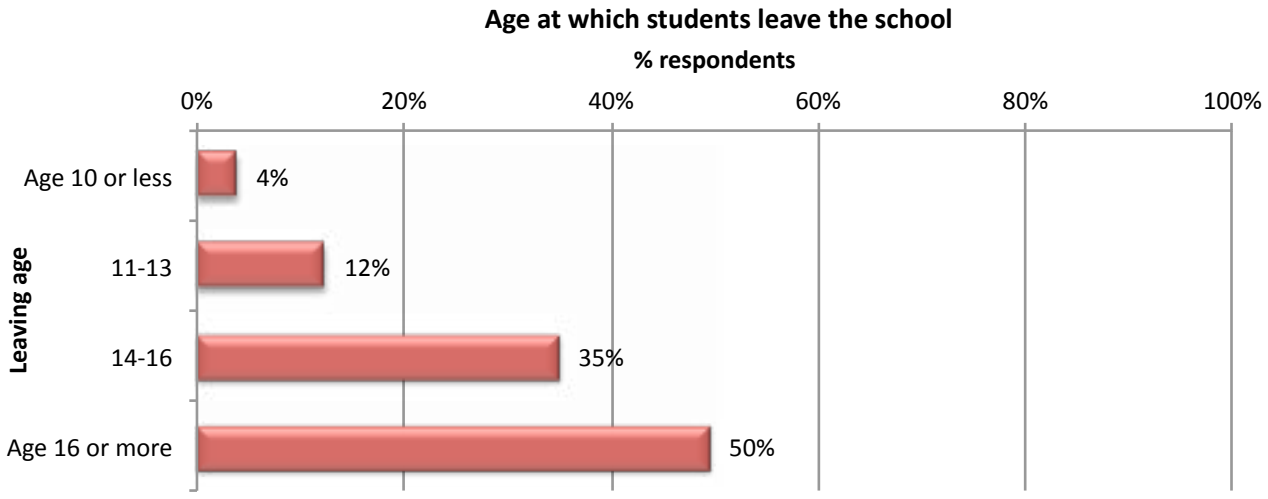

Figure 4 Age of school leavers: almost all IT Administrators are in secondary schools

Looking at national variations in schools with students aged 16 or more (fig. 5 – for language codes please refer to the Introduction), there are differences reflecting the different patterns of schooling: 82 per cent of Spanish respondents for example work with over 16s, and percentages are high in six other countries, while only 8 per cent of Maltese respondents do and percentages are also low in Finland, Slovenia and Slovakia.

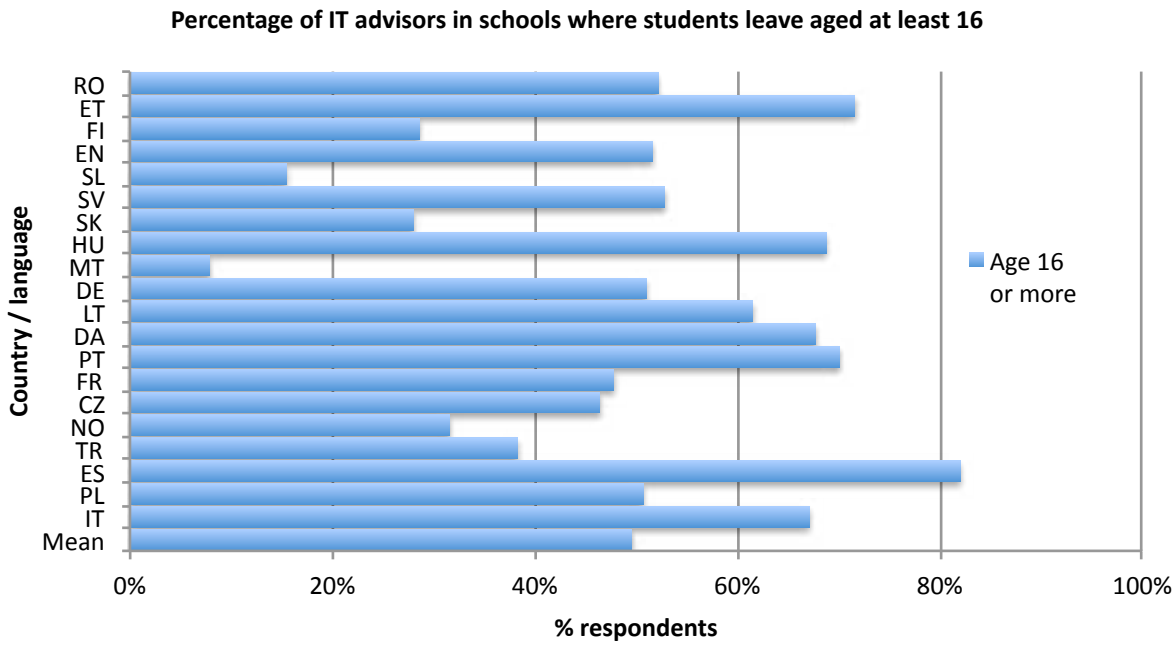

Figure 5 Leaving age, by country

In summary

IT Administrators work in a wide range of schools: from small to very large and from primary to upper secondary. However, the typical IT Administrator works in a medium-sized secondary school with between 200 and 1,000 teenage students in 11 to 50 classrooms. A significant minority however work in primary schools or in small schools with fewer than ten teaching rooms. There is clustering of countries related to school size and age of students: a 'large upper secondary school' cluster of four countries where IT Administrators are overwhelmingly in large secondary schools (more than 1,000 students) with older school leavers comprising Denmark, Italy, Portugal and Spain. Conversely there is a 'small primary/lower secondary school' cluster comprising Finland, Norway, Slovakia, and Slovenia where IT Administrators tend more than average to be in small schools (with under 200 students) with younger school leavers (who transfer to another school under single structure systems).

ICT infrastructure

Turning now to the technology in IT Administrators' schools, fig. 6 shows that almost 50 per cent are in schools with more than 100 computers, including desktops, notebooks and tablets. However 23 per cent manage comparatively few devices (under 50), certainly compared to the eight per cent who manage over 500.

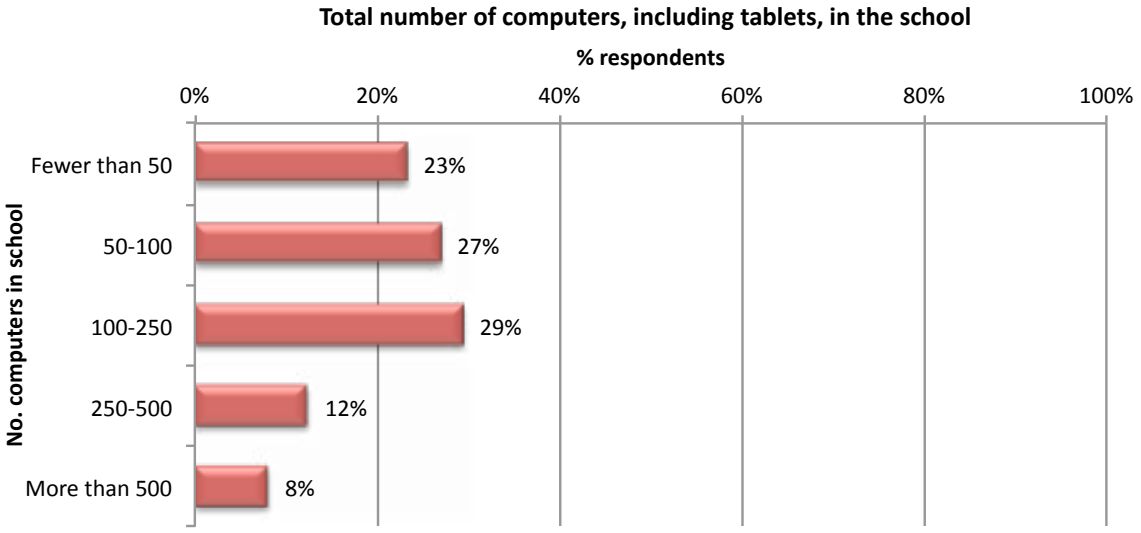

Figure 6 Number of computers: fewer than 50 in 23 per cent of schools

Furthermore, the averages cover wide variation between countries as seen in fig. 7, which shows only the responses indicating more than 100 computers in schools. Romania, for example, has none at all in the sample (all have fewer than 100 computers) and Slovakia, Turkey and Poland have relatively few, while over 80 per cent of Danish and Swedish participants are in schools with at least 100 computers. Swedish IT Administrators probably have to manage the most computers as 50 per cent are in schools with more than 500. This variation suggests that the sheer numbers of computers to be managed vary greatly between IT Administrators. A downwards trend for computer numbers is emerging in Norway and Denmark (identified in the 2013 *Survey of Schools: ICT and Education*[2]) as schools increasingly rely on students to bring and use their own devices, leaving schools to focus on providing connectivity, services, equitable access and specialised items (e.g. for subjects like engineering and assistive technology for students with special needs).

2 https://ec.europa.eu/digital-agenda/node/51275

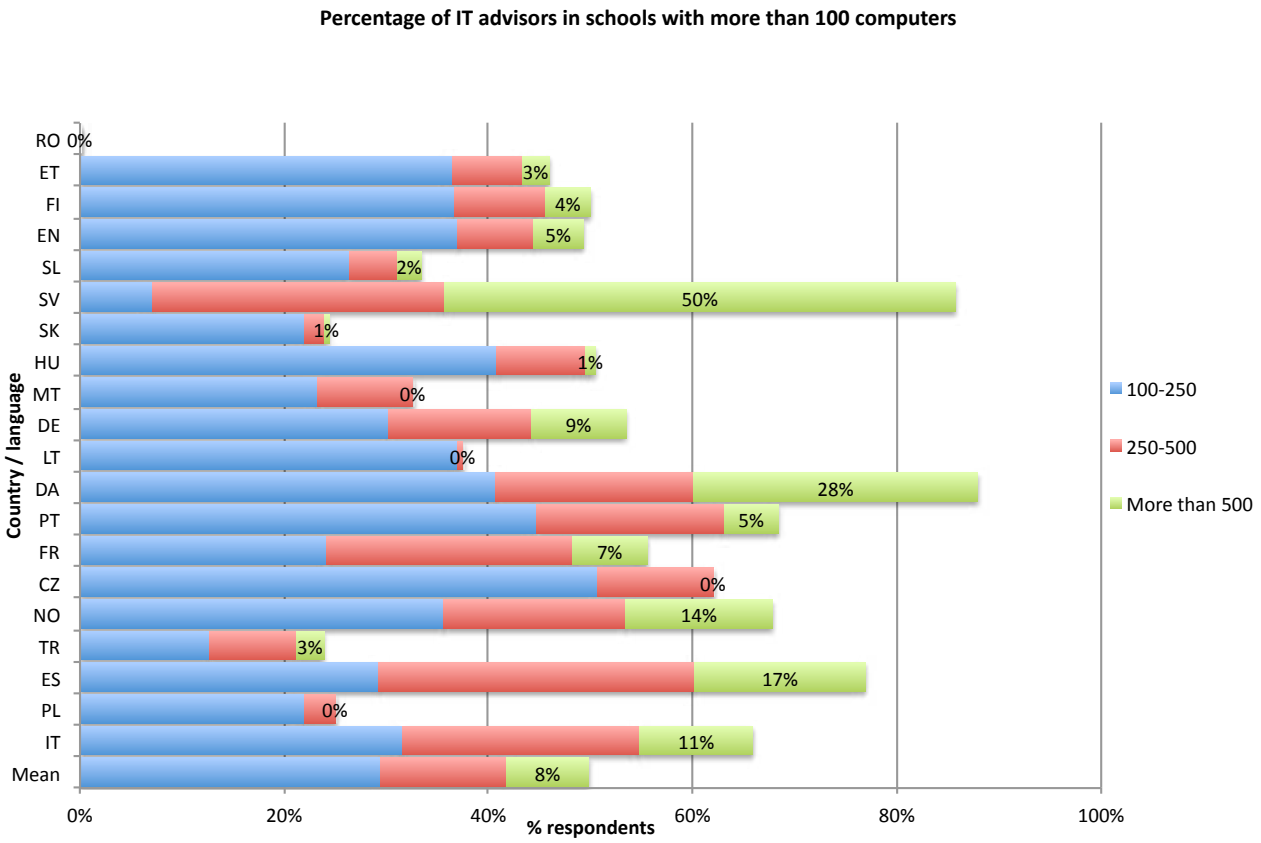

Figure 7 Computer numbers by country: large variation

Almost all (97 per cent on average) IT Administrators manage Windows computers (fig. 8), but around 20 per cent on average are in schools using Linux and / or Mac operating systems, in almost all cases in addition to the Windows OS. Tablets are found in one in two IT Administrators' schools. Interactive whiteboards are widespread: 82 per cent of IT Administrators have to manage interactive whiteboards in their schools.

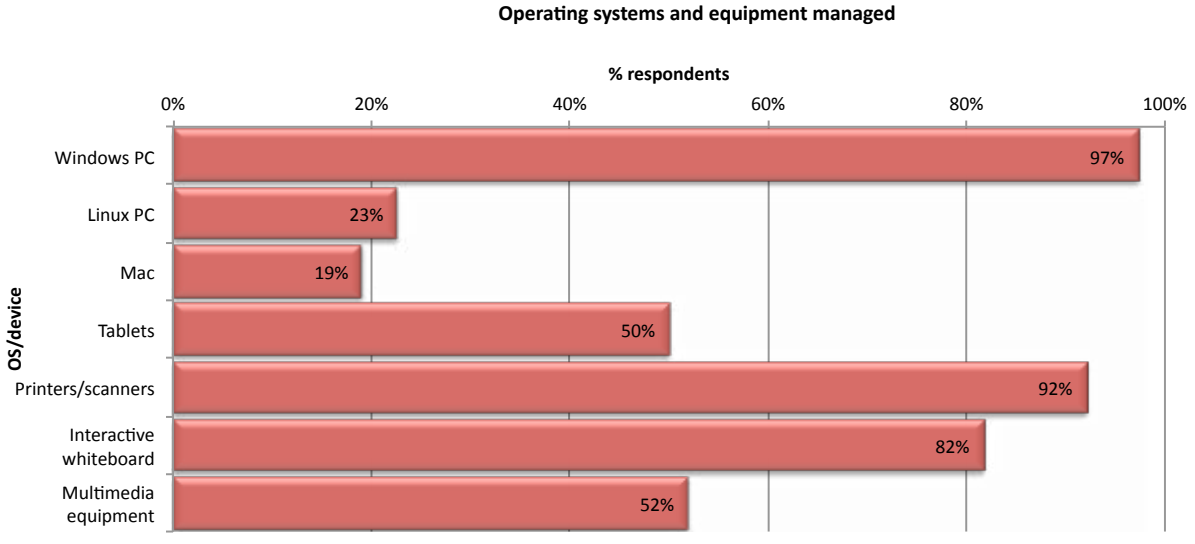

Figure 8 Type of operating system and equipment: Windows OS predominates

In no country does this figure drop below 85 per cent (Sweden[3]). Linux is particularly present in Spain (69 per cent), Italy (54 per cent) and Portugal (49 per cent). Many schools have the Mac OS in Denmark (62 per cent, even though 100 per cent have Windows), France (38 per cent) and German-speaking countries Austria and Germany (30 per cent). Are IT Administrators expected to manage more than one operating system? Looking at the data for the English language questionnaire as an example, 29 per cent of respondents are in schools with more than one operating system, surely not easy to manage. If this is typical elsewhere, one can say that most schools have homogenous (i.e. a single operating system) configurations but a significant minority manage two or more.

Portugal has the lowest penetration of interactive whiteboards according to this survey (present in 45 per cent of schools) while 98 per cent IT Administrators in Slovakia report having them in their school.

An indicator of the extent of local area networks in schools is the number of network access points. Across the countries surveyed there is quite a divide between schools with small numbers – over 42 per cent have fewer than 25 (fig. 9) – and those with large numbers, over 26 per cent reporting more than 100. As over 23 per cent have fewer than ten access points, there can even be schools without a LAN at all in some cases. This suggests that the responsibilities of IT Administrators vary greatly depending on the extent of the school's LAN.

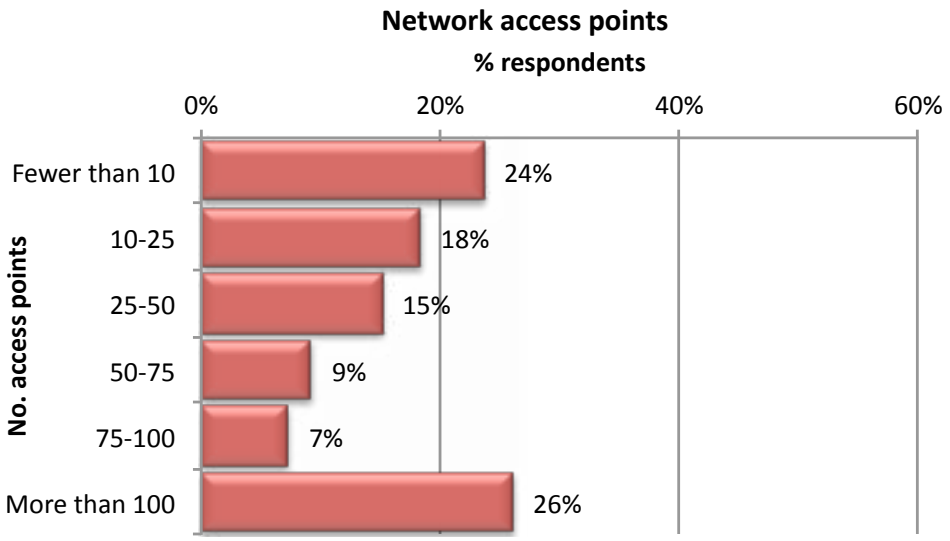

Figure 9 Access points: Important differences between numbers to manage

Swedish and Italian IT Administrators report the highest number of network access points (53 per cent and 51 per cent respectively).

Another indicator of LAN size is the number of routers and switches in a school, and here there is less of a split, almost 50 per cent of IT Administrators having fewer than ten in their school (fig. 10) and 82 per cent fewer than 25.

3 The underlying data for these findings are available separately.

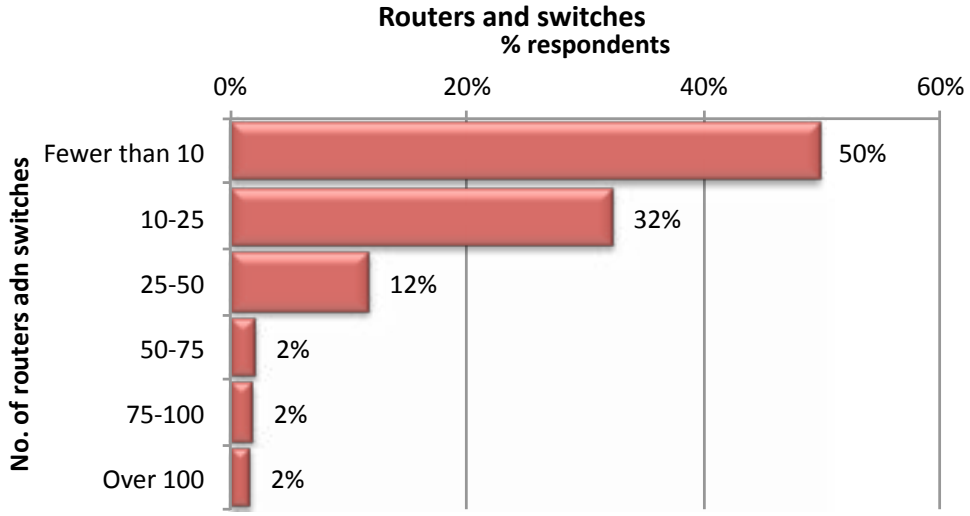

Figure 10 Routers and switches: 50 per cent of IT Administrators manage networks with fewer than ten

Sweden (8.3 per cent) and Denmark (6.2 per cent) have by some margin the highest percentage of IT Administrators in schools with over 100 routers.

Wireless networking is quite widespread in IT Administrators' schools on average, as fig. 11 shows, with over 36 per cent of schools having wifi in at least 75 per cent of classrooms. On the other hand in a substantial 28 per cent of IT Administrators are in schools where fewer than ten per cent of classrooms have wifi connectivity.

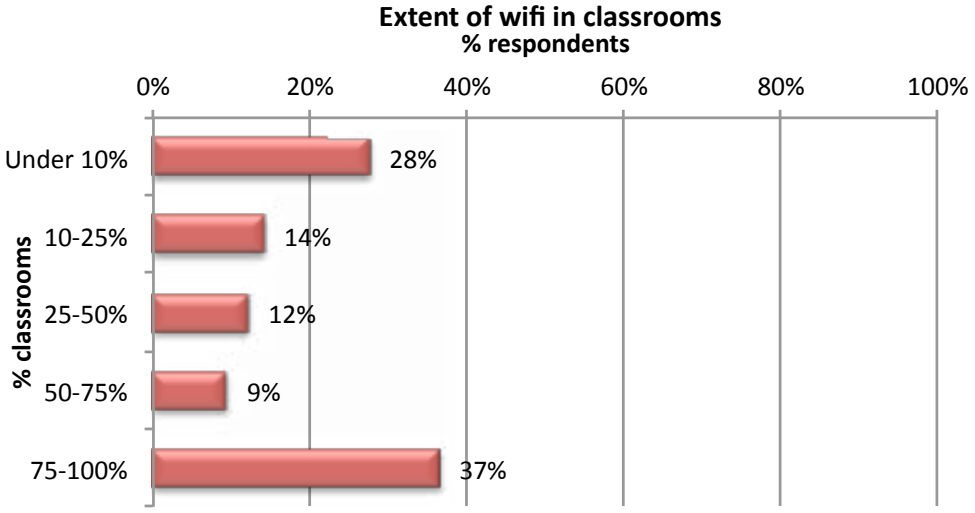

Figure 11 Wireless connected classrooms: a minority

There are considerable national differences (fig. 12), as regards wifi connectivity. In only Denmark, Norway and Sweden is wifi in at least 3 out of four IT Administrators' classrooms for over 50 per cent of IT Administrators. There is as yet very little classroom wifi penetration, even none at all, in countries like Romania, Lithuania, Turkey and France.

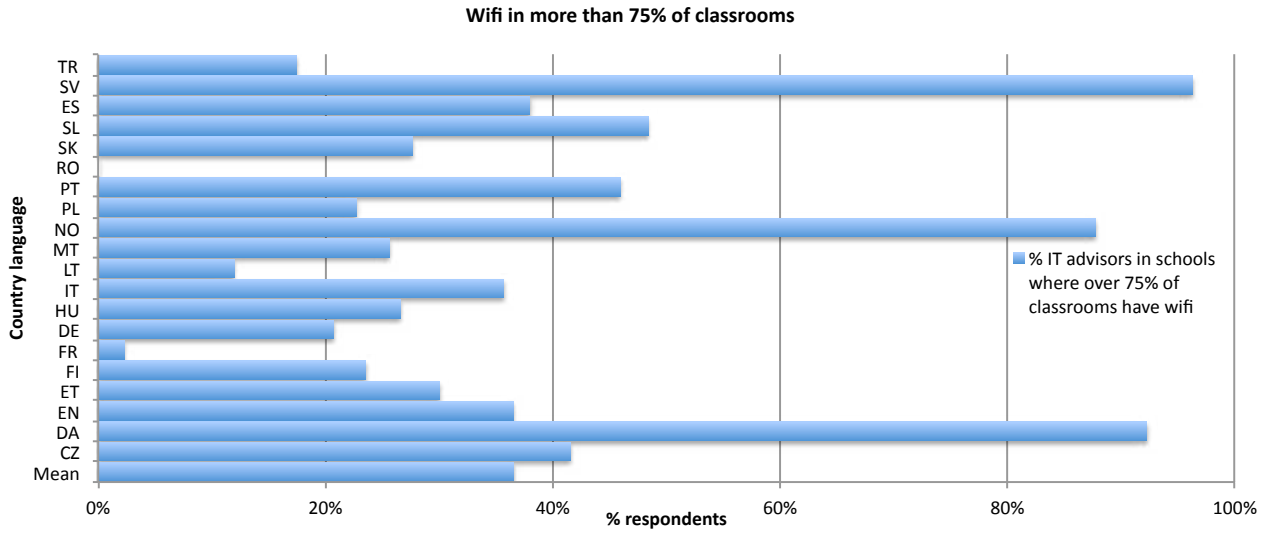

Figure 12 High penetration of classroom wifi: very large differences between countries

Looking in more detail at the distribution of devices (i.e. computers, tablets and also peripherals) networked by wifi or cable, fig. 13 shows that some IT Administrators manage large numbers – ten per cent more than 500 – while 26 per cent have fewer than 50. The majority of schools have between 50 and 250 connected devices, closely matching the figures for computer numbers in fig. 6 above. As with other findings, this variation between schools suggests that there is no 'typical' school or infrastructure setup that IT Administrators are expected to manage.

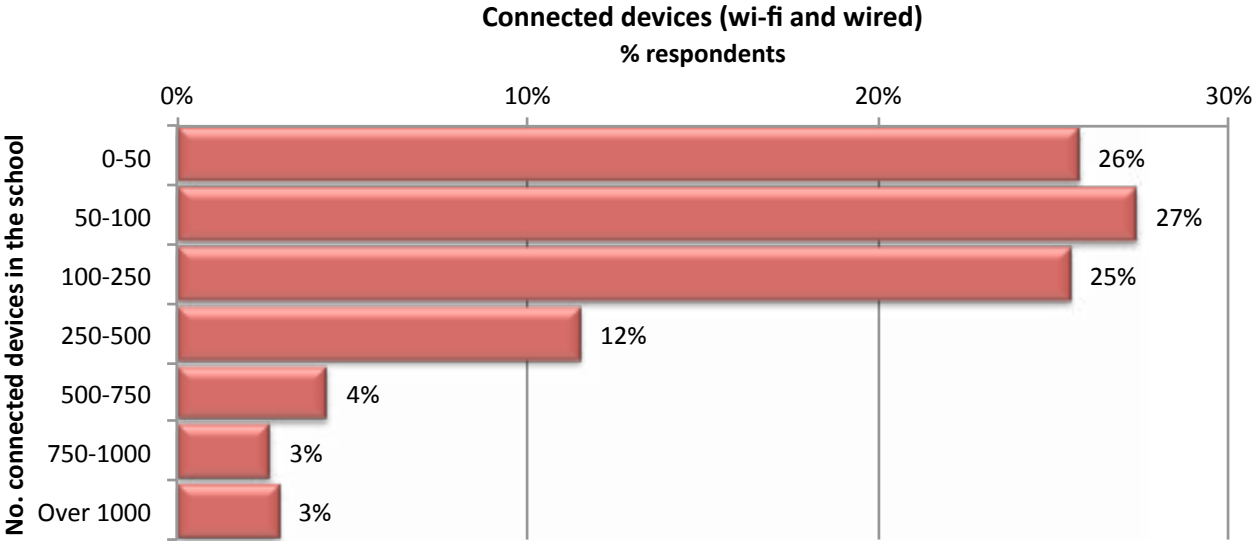

Figure 13 Connected devices: 53 per cent of IT Administrators manage fewer than 100

Services

In addition to managing infrastructure and devices, IT Administrators are faced with a range of digital services in their schools (fig. 14). The most commonly found services are data storage and network management (both in over 70 per cent of schools). Over half have some sort of learning platform or learning management system, ranging from 20 per cent in Hungary to 96 per cent in Sweden. 31 per cent of IT Administrators are responsible for tools for communication and collaboration (up to 65 per cent in Finland) and 50 per cent for content management systems. In 56 per cent of schools there are directory services and in 42 per cent identity management services. Cisco's SmartSchool Automation is reported by 7 per cent of respondents, ranging from 1 per cent in Finland to 17 per cent in Spain.

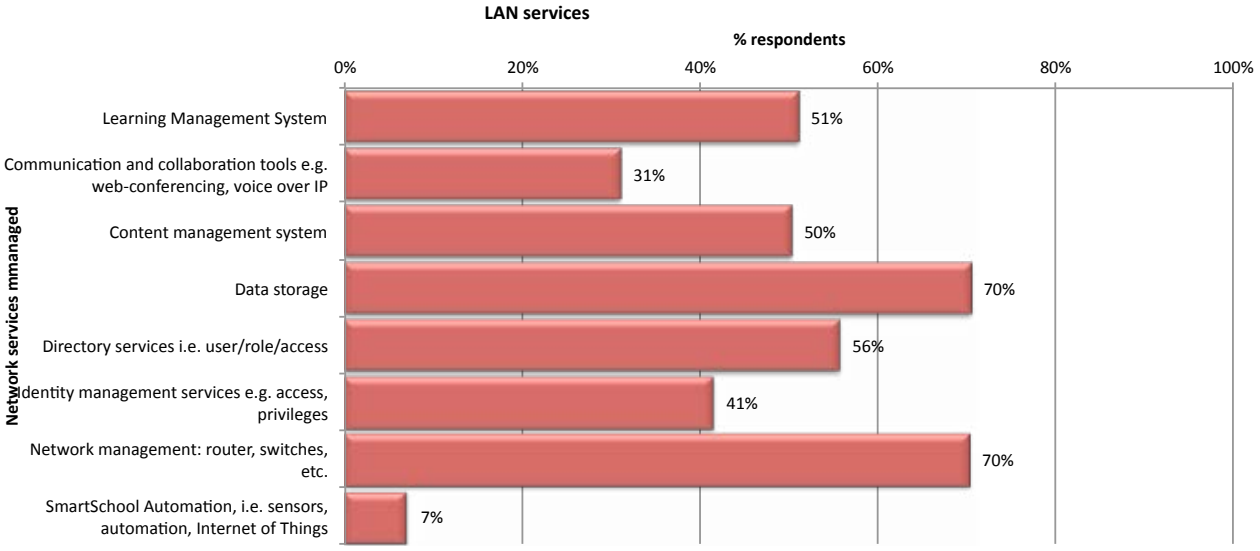

Figure 14 Digital services: a wide range to manage

Generally speaking, schools continue to host services on-site, as is the case for over 60 per cent of IT Administrators on average (fig. 15). For the other 40 per cent, some or all such services are hosted either in the cloud or externally. There is considerable variation between countries: over 80 per cent of IT Administrators in Turkey, Slovakia and Romania are in schools with internal hosting of services, while external and cloud services are prevalent in over 50 per cent of schools in Scandinavia (Norway, Denmark, Sweden) and Slovenia (78 per cent).

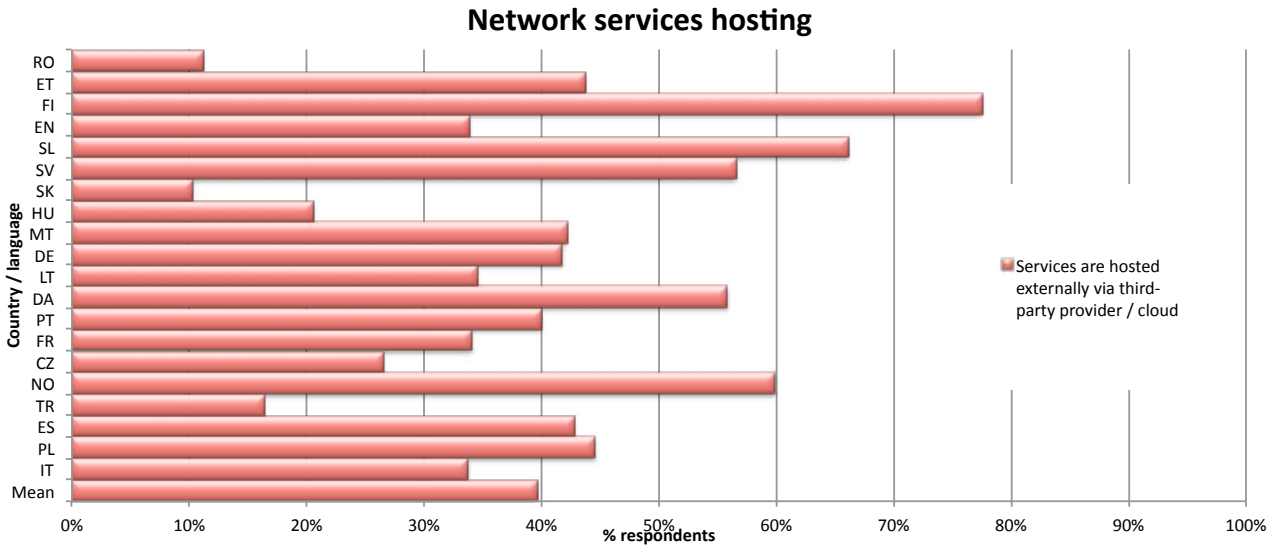

Figure 15 Hosting by country: predominantly school-based, except in Slovenia and Scandinavia

School ICT policies

The ICT policies of schools affect the tasks and responsibilities of IT Administrators. 'Bring Your Own Device' (BYOD) for example is becoming more widespread and schools are developing policies that allow students and teachers to connect and use their own portable equipment (smartphone, tablet…) in school, as is now the case in 75 per cent of schools on average, with Denmark, Portugal, Sweden, Spain, Romania and Estonia in the lead in this respect (fig. 16). These figures are noticeably higher than the 2013 Survey of Schools: ICT in Education (but the samples are not the same). The percentage of schools that provide services beyond basic connectivity is lower however, at just 38 per cent, with the highest percentages of schools in Denmark, Portugal and Sweden also providing services to support their BYOD policy.

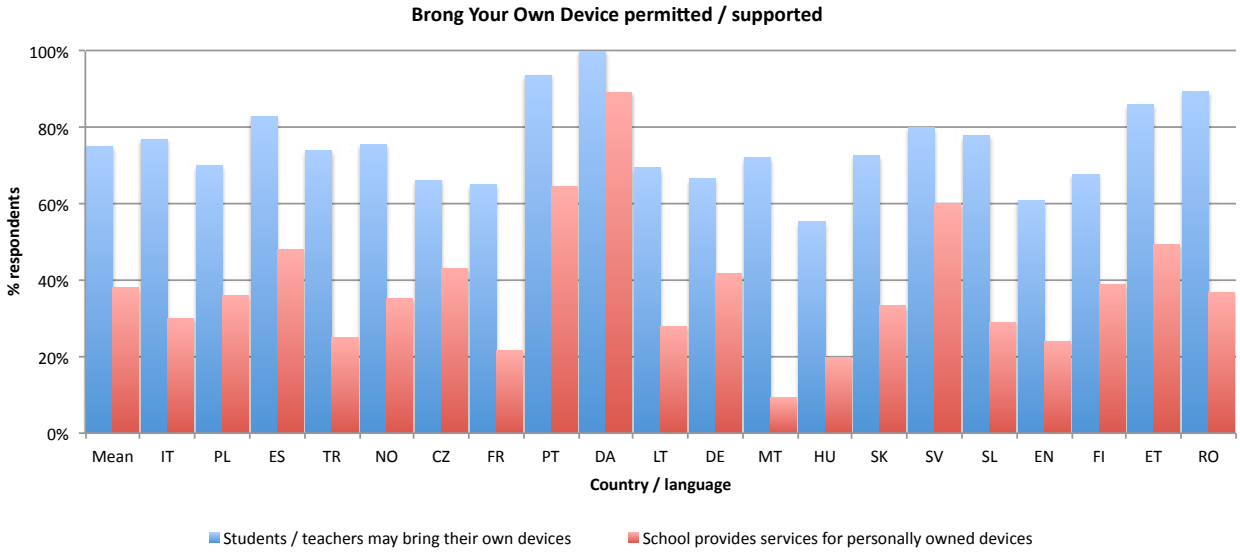

Figure 16 BYOD: Widespread but not always supported

Finally, the tasks of an IT Administrator are influenced by the degree of autonomy accorded to the school to make technology-related decisions. On average 62 per cent of IT Administrators are in schools where the school itself is responsible for decisions on internet and broadband provision, 79 per cent on equipment purchases and 74 per cent on running the local area network (fig. 17).

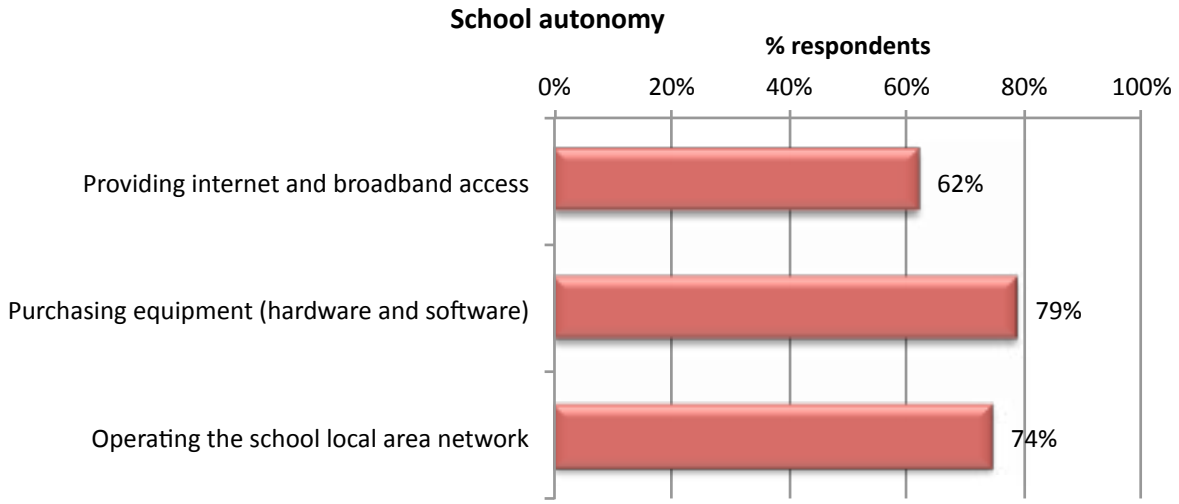

Figure 17 Autonomy: generally high levels, particularly as regards procurement of equipment

As can be seen from fig. 18 however, the picture is different according to the country; in Hungary for example there is considerable central control over connectivity and equipment procurement but in Italy, Poland, Spain and Slovenia almost all IT Administrators are in schools with decision-making powers in all three areas.

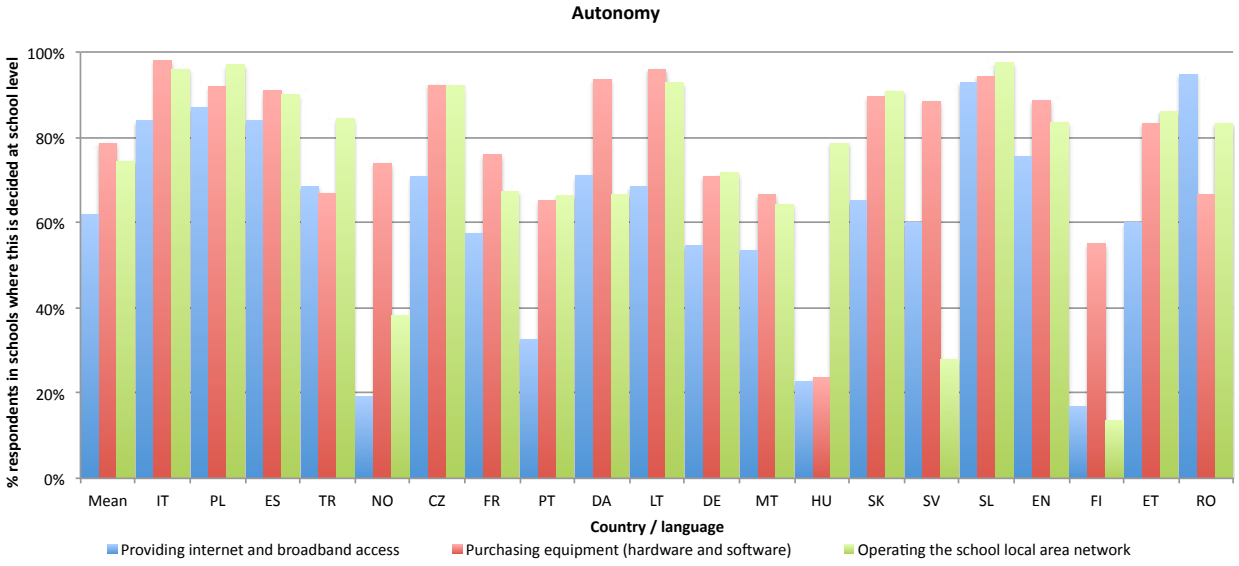

Figure 18 Decision-making: High levels of school-level decision-making and responsibility

In summary

The typical IT Administrator manages at least 100 computers in their school, eight per cent more than 500, and 23 per cent fewer than 50; most are networked. There are large national variations. Windows is the most prevalent operating system (OS) by far but many IT Administrators work in environments with devices running more than one OS. Half their schools have tablets and 82 per cent interactive whiteboards. Corresponding to the range of school sizes, 24 per cent of IT Administrators' schools have fewer than 10 network access points, while a similar percentage have more than 100. Wifi is present in more than three-quarters of classrooms in 36 per cent of schools (concentrated overwhelmingly in Nordic countries), but there is no wifi in more than half the classrooms in the average school. Several network services are managed by IT Administrators, notably network management and data storage, which are hosted in school in 60 per cent of cases. In all countries more than half the schools allow students and teachers to bring their own device, but fewer provide corresponding services for them. Most schools have relatively high levels of freedom in decision making as regards ICT.

Six countries can be grouped together according to the extent of digitisation. 'Highly digitised schools': Denmark, Norway and Sweden, with high equipment levels + large numbers of network access points, routers and switches + highly wifi connected classrooms + high use of cloud for hosting + BYOD policy + BYOD support. 'Digitally developing schools': Poland, Romania and Turkey, with relatively low levels of equipment, low classroom wifi provision and services hosted in school. In addition there are two 'Linux countries: Italy and Spain, with high levels of equipment and above average Linux OS penetration (though still low compared to Windows).

2. The school IT Administrator

The previous section outlined the school setting in which IT Administrators work and the range of equipment and services they manage. In this section the profile, work and needs of IT Administrators themselves are examined.

Role and profile

Despite the importance of their job and the many expectations placed on them by a range of stakeholders in schools, a high percentage (89 per cent on average, fig. 19) of IT Administrators have some teaching activities in addition to their IT management tasks. Only in Italy, Norway, Denmark, and Lithuania is the figure noticeably lower; thus, one in three IT Administrators in Lithuania is in the fortunate position of having no other duties, whereas in the Czech Republic every IT Administrator also teaches.

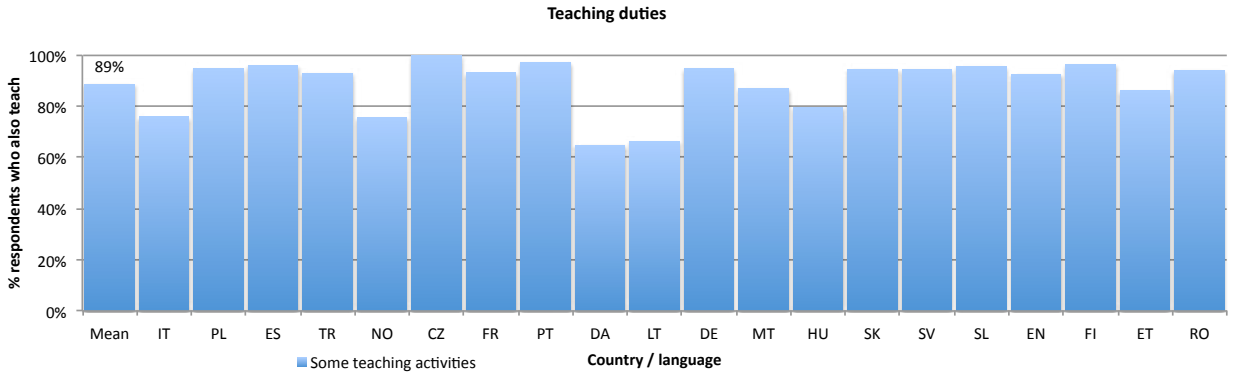

Figure 19 Dual role of IT Administrators: network manager and teacher

Not surprisingly, the typical IT Administrator, if they also teach, tends to cover STEM subjects, particularly ICT as a subject (i.e. computer science), as seen in fig. 20.

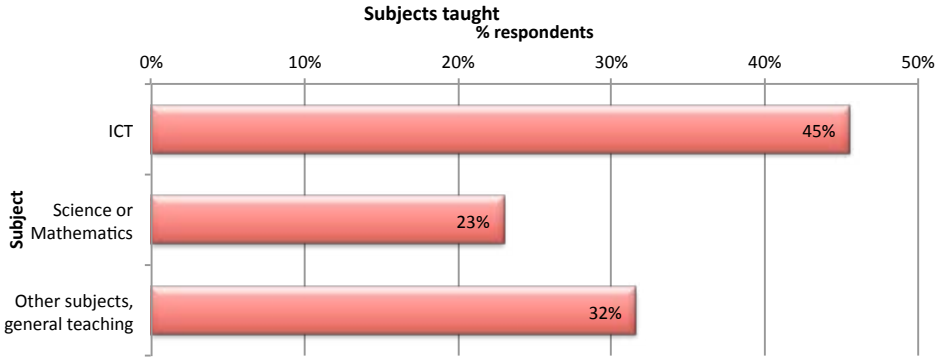

Figure 20 Subjects taught: usually ICT

IT Administrators not only manage IT systems and teach but on average 84 per cent also have other responsibilities (fig. 21). Only in Slovenia and Italy is this percentage below 70 per cent.

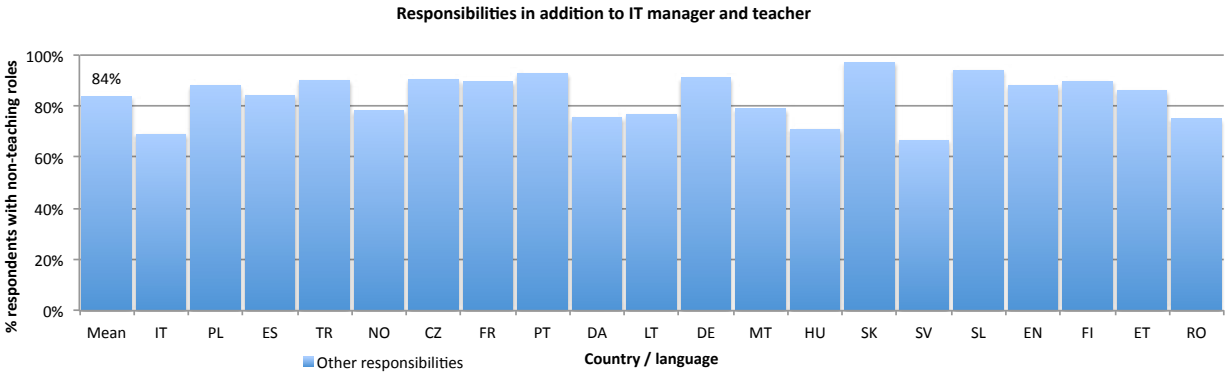

Figure 21 Non-teaching roles: the multi-tasking IT Administrator

The range of other duties can be seen in fig. 22, most commonly (36 per cent) providing support to colleagues (i.e. trouble-shooting, advising); 21 per cent manage a resource centre or computer lab and a similar percentage take care of the school website.

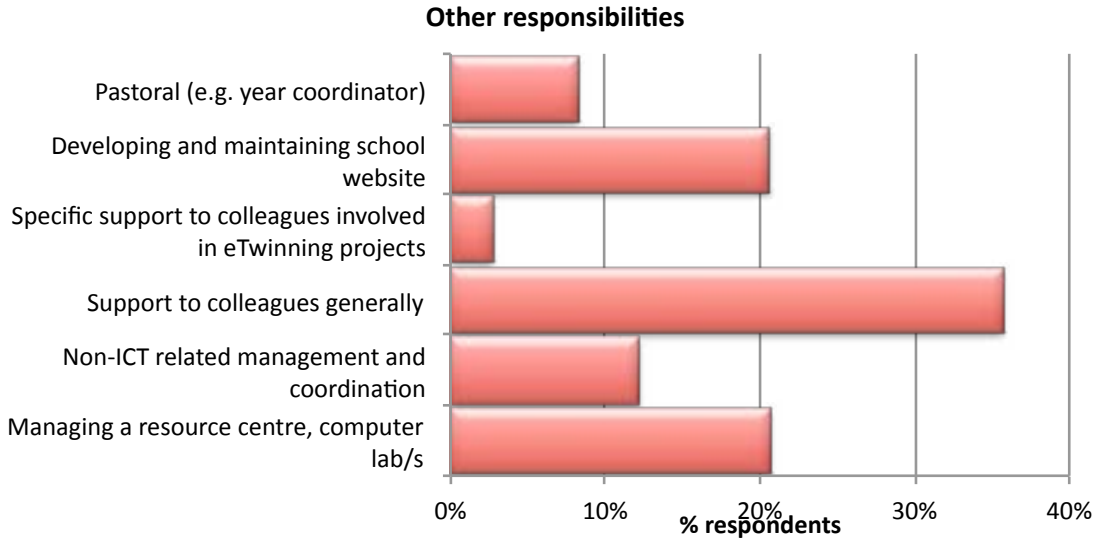

Figure 22 A variety of other roles than IT management and teaching

Qualifications and training

In other areas of economic activity an IT administrator would be expected to have a qualification in computing, but as fig. 23 shows, this is not necessarily the case in schools – only 60 per cent of IT Administrators hold a relevant qualification on average. In some countries, e.g. Romania and Spain, almost all IT Administrators have such a qualification, but in Italy, Turkey and Finland this is exceptional. In terms of support for IT Administrators this finding is of particular importance, and suggests that there could be significant differences between the needs and expectations of an IT Administrator in countries with over 80 per cent qualified staff as compared with those with fewer than 50 per cent qualified.

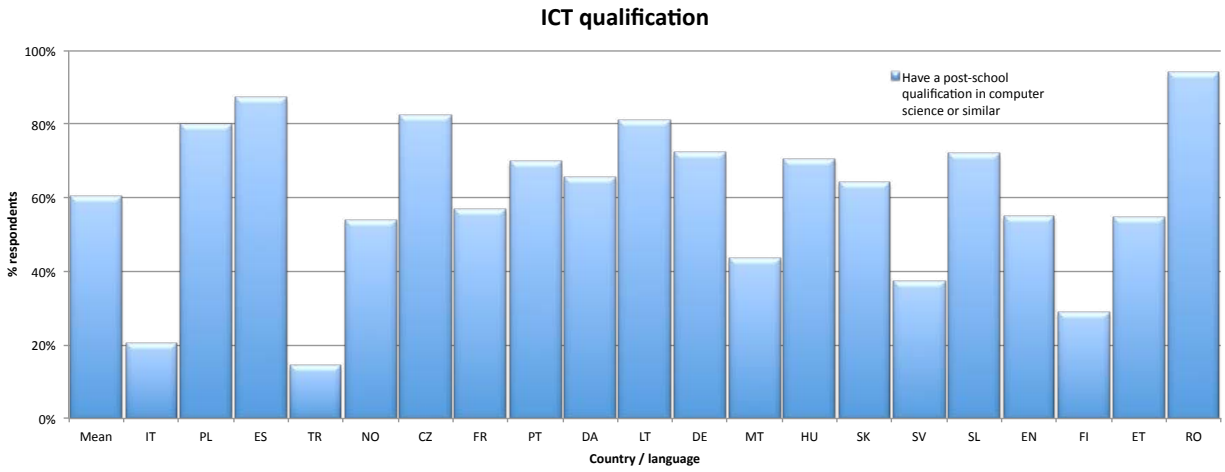

Figure 23 IT Administrators with a relevant qualification: from 14 to 94 per cent

It is possible that some IT Administrators not only have no formal qualification but also have had no training since being appointed – 38 per cent on average have had no training at all, learning 'on the job' (fig. 24). On the other hand 31 percent have obtained certification, and 52 percent have followed off-site face to face courses. The Cisco Networking Academy has provided training for 15 percent of respondents. Peer support provides an important role for 43 percent of IT Administrators: informal networking to solve problems as they arise, probably online, maybe using social media.

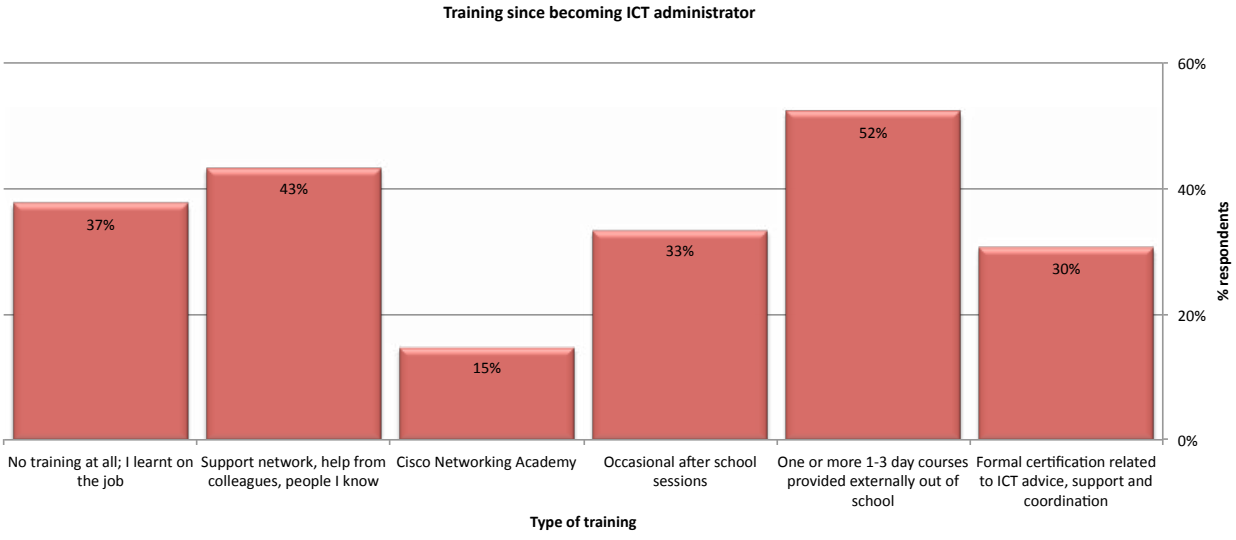

Figure 24 Training sources: off-site courses are the most common, if any

Investigating further the 'no training' responses, national differences emerge (fig. 25): while only 13 per cent of Slovenian IT Administrators have had no training, this percentage rises to 55 per cent in the case of Hungary (although a high 71 per cent of IT Administrators are qualified in ICT in this country).

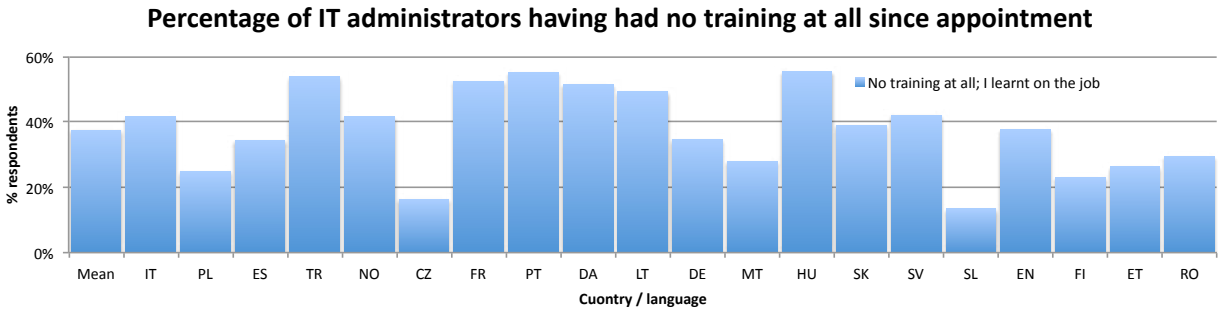

Figure 25 No training received – the situation for up to 55 per cent of IT Administrators

In summary

The typical IT Administrator is both a network manager and a teacher, usually of ICT, and 36 per cent provide support to school personnel in addition. While on average 60 per cent have a formal post-school qualification in computing, this varies considerably between countries. Half have undergone off-site training but 37 per cent report having had no training at all. The support of peers and colleagues plays an important role for 43 per cent of IT Administrators.

There are three groups of countries sharing common characteristics of IT Administrators. Denmark, Hungary, Italy, Lithuania and Norway, where IT Administrators tend to have fewer other roles (teaching or other duties) than other countries. Czech Republic, Lithuania, Poland, Romania and Spain, where more IT Administrators than average have an IT qualification. Finland, Italy, Malta, Sweden and Turkey, where IT Administrators tend to be less well qualified. The last two countries are also among those where the highest proportion of IT Administrators have had no training since appointment

3. IT Administrators' training preferences and needs

It is clear that there are gaps in the qualification and training, and perhaps a need for further training, but do IT Administrators want more? If the training is in English, 53 per cent of respondents on average are likely or very likely to be interested (fig. 26), but if in their own language this figure rises to 81 per cent.

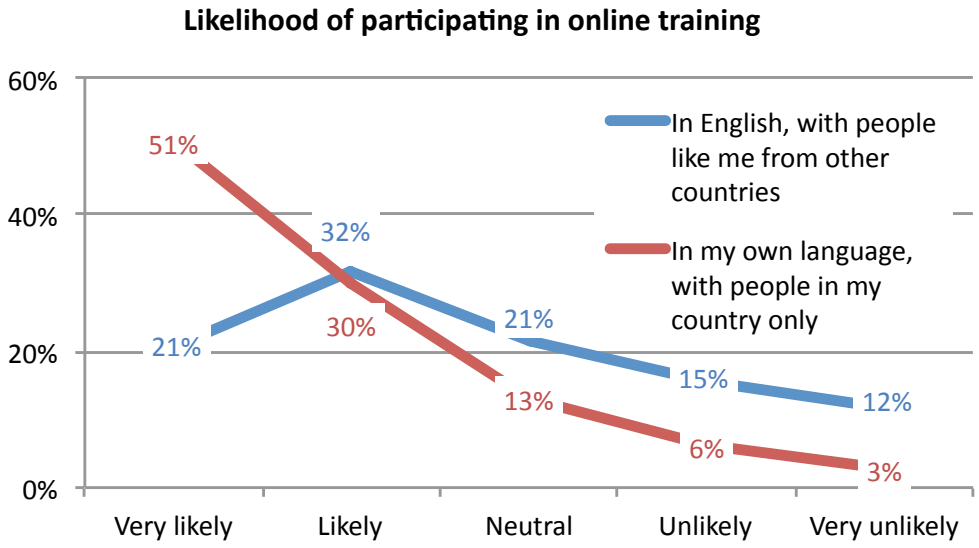

Figure 26 Interest in online training is high, preferably in the home language

This figure rises to 88 per cent in Turkey, but is as low as 18 per cent in Slovakia (fig. 27). Training in English, if provided, is likely to appeal particularly to speakers of Turkish, Portuguese, Maltese, Swedish, Slovenian, Estonian, Romanian and of course English, all with over 60 per cent likely or very likely to be interested. The attraction of a course in English could be to exchange with peers outside one's own country, but many IT Administrators, indeed a majority, would prefer to work in their own language and with people from their own country (fig. 28).

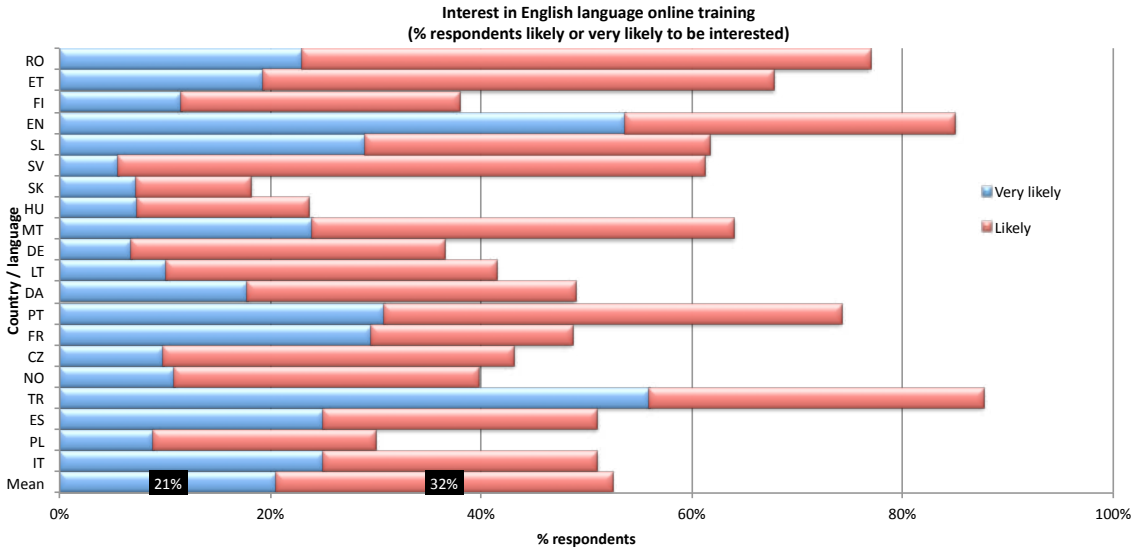

Figure 27 Interest in online training in English: above 50 per cent in 11 countries, low in only three

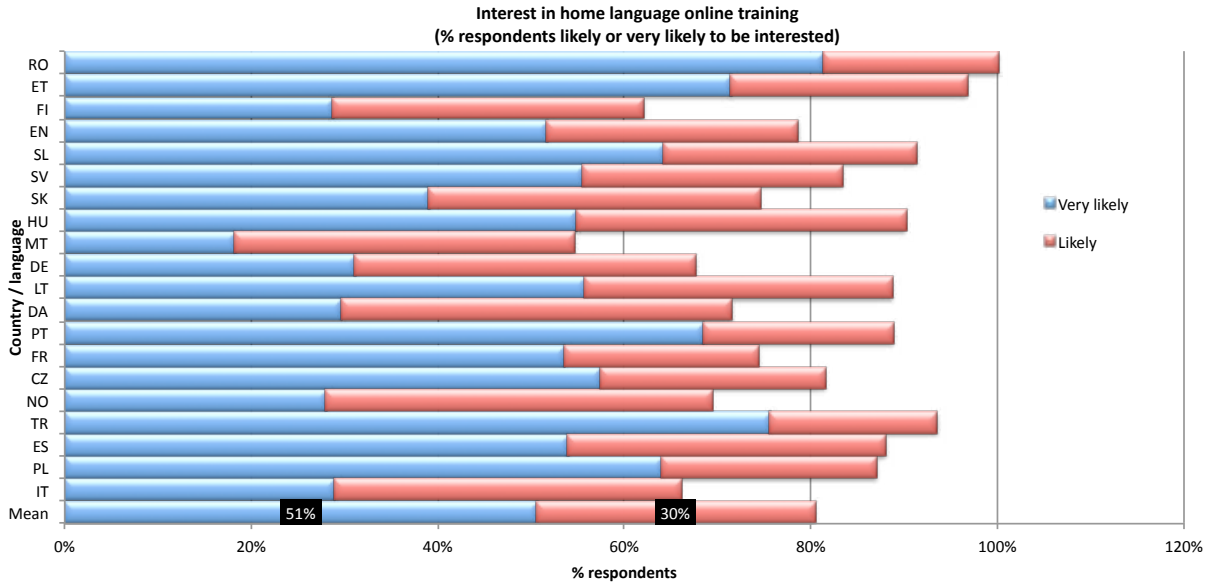

Figure 28 Interest in online training in one's own language

One of the main aims of the survey is to identify user needs, and fig. 29 shows both training needs and challenges faced by IT Administrators. In each country respondents were asked to mark those of 17 items that were firstly a 'main challenge in my role' and secondly a topic on which they need training. The top five challenges and needs were identified for each country and scored 5 if ranked first, 4 if second, to 1 if fifth. These scores were then added together for all countries.

The biggest challenge reported by IT Administrators is staff development and training in the pedagogical use of ICT – which in other sectors might not be considered part of the role of IT Administrator. Close behind are more technical challenges: security, data management and e-safety, and network operations. Other challenges are staff support (related to the main challenge) and hardware installation and management.

All 17 items except budgeting received at least a few votes indicating a wide range of training needs. Overall though, the results clearly show that the fast pace of technological innovation is a main

training need, many IT Administrators seeing training in the use of new tools, services and products as their number one need. Second is security, data management and e-safety, third cloud computing and fourth BYOD and network management with equal votes.

Although the topic of new tools and services heads the list of training needs, it is not a top challenge. Topics that rank high as both challenges and training needs are security, data management and e-safety, network operations and staff development in the pedagogical use of ICT.

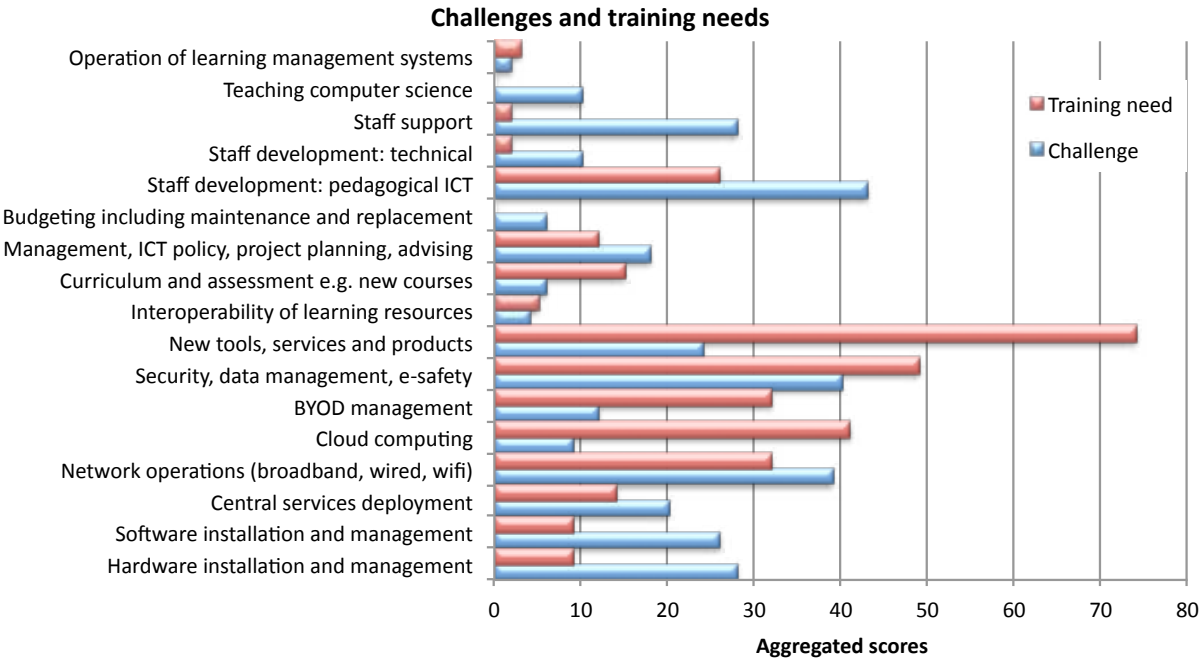

Figure 29 Challenges and needs: a long list

In summary

Over 80 per cent of IT Administrators are likely or very likely to be interested in an offer of online training in their own language. If offered in English, the figure drops to 50 per cent, with interest markedly lower in some countries than others (notably Poland, Hungary and Slovakia). The biggest challenges facing IT Administrators are supporting and developing school personnel, security and network operations. Their biggest training needs are in new tools and products, security, managing cloud services, followed by network operation and BYOD management.

There is clustering of countries where IT Administrators have challenges in common. 'Network operations': speakers of Estonian, German, Maltese, Portuguese, Slovakian and Turkish all rank highly as a challenge installing and managing hardware and software and deploying central services (only Romanians rank it highly as a training need however). 'People': the Nordic countries (Denmark, Finland, Norway, Sweden) emerge as a cluster where staff support and development in technical and pedagogical ICT is a highly ranked challenge, although not as a training need. Scandinavian countries also form the 'highly digitised schools' cluster

There are two groups of countries where IT Administrators have markedly divided training preferences. IT Administrators speaking Estonian, Maltese, Portuguese, Romanian, Slovenian, Swedish, Turkish and of course English are more open to English language training and cross-border communities than others. More speakers of Polish, Hungarian and Slovak express a stronger preference for training in their own language training and with colleagues from their country than other language speakers.

Conclusions and recommendations

The challenge facing the IT Administrator of tomorrow is, in the words of Gerald Haigh[4], how to have the "time, space and status to live up to the strategic role, given the never-ending demands of network firefighting." Professionalising the role of IT Administrator to enable them to take on their multiple tasks and increasing status is crucial in the creation of schools for the future. It relies on appropriately designed need-driven support and training.

The findings of this first snapshot survey of IT Administrators confirm this view, showing that:

- Technology is entering the school environment more and more, including through BYOD situations that pose new challenges in terms of scalability and security
- IT Administrators have to deal with a variety of systems and platforms, which make their task harder
- Their role is not only technical, but also includes some pedagogical and staff support
- The situation in one country differs from that in the others. Few countries have identical profiles in terms of schools, infrastructure, IT Administrator profile and training needs
- Due to the challenges (more devices, more technologies, more needs), IT Administrators need to make the most efficient use of their time, and training is definitely one of the way forward (together with others, probably, like sharing practices...)
- There is a relatively strong preference for training in own language rather than in English
- There is a wide range of training needs: 16 of the 17 topics listed in the questionnaire received at least a few votes.

THE KEY FINDINGS ARE

Schools

The typical IT Administrator works in a medium-sized secondary school with between 200 and 1,000 teenage students in 11 to 50 classrooms. A significant minority however work in primary schools or in small schools with fewer than ten teaching rooms.

There is clustering of countries related to school size and age of students: a 'large upper secondary school' cluster of four countries where IT Administrators are overwhelmingly in large secondary schools (more than 1,000 students) with older school leavers comprising Denmark, Italy, Portugal and Spain. Conversely there is a 'small primary/lower secondary school' cluster comprising Finland, Norway, Slovakia, and Slovenia where IT Administrators tend more than average to be in small schools (with under 200 students) with younger school leavers (who transfer to another school under single structure systems).

IT infrastructure

The typical IT Administrator manages at least 100 computers in their school, eight per cent more than 500, and 23 per cent fewer than 50; most are networked. There are large national variations. Windows is the most prevalent operating system by far but many IT Administrators work in environments with devices running more than one OS. Half their schools have tablets and 82 per cent interactive whiteboards. Corresponding to the range of school sizes, 24 per cent of IT Administrators' schools have fewer than 10 network access points, while a similar percentage have more than 100. Wifi is absent from more than half the classrooms. Present in more than three-quarters of classrooms in 36 per cent of schools (concentrated overwhelmingly in Nordic countries), in 28 per cent it is to be found in fewer than one in ten classrooms. IT Administrators manage various network services, notably network management and data storage, which are hosted in school in 60 per cent of cases. In all countries more than half the schools allow students and teachers to bring their own device, but fewer provide corresponding services for them. Most schools have relatively high levels of freedom in decision making as regards ICT.

Six countries can be grouped according to the degree of digitisation in schools:

4 http://blogs.msdn.com/b/ukschools/archive/2015/04/15/how-the-role-of-the-network-manager-within-education-has-changed-gerald-haigh.aspx

- 'Highly digitised schools': Denmark, Norway and Sweden, with high equipment levels + large numbers of network access points, routers and switches + highly wifi connected classrooms + high use of cloud for hosting + BYOD policy + BYOD support

- 'Digitally developing schools': Poland, Romania and Turkey, with relatively low levels of equipment, low classroom wifi provision and services hosted in school.

In addition there are two 'Linux countries: Italy and Spain, with high levels of equipment and above average Linux OS penetration (though still low compared to Windows).

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There are three groups of countries sharing common characteristics of IT Administrators:

- Denmark, Hungary, Italy, Lithuania and Norway, where IT Administrators tend to have fewer other roles (teaching or other duties) than other countries

- Czech Republic, Lithuania, Poland, Romania and Spain, where more IT Administrators than average have an IT qualification

- Finland, Italy, Malta, Sweden and Turkey, where IT Administrators tend to be less well qualified. The last two countries are also among those where the highest proportion of IT Administrators have had no training since appointment.

Fig. 30 illustrates the groupings related the IT Administrator's context in graphical form.

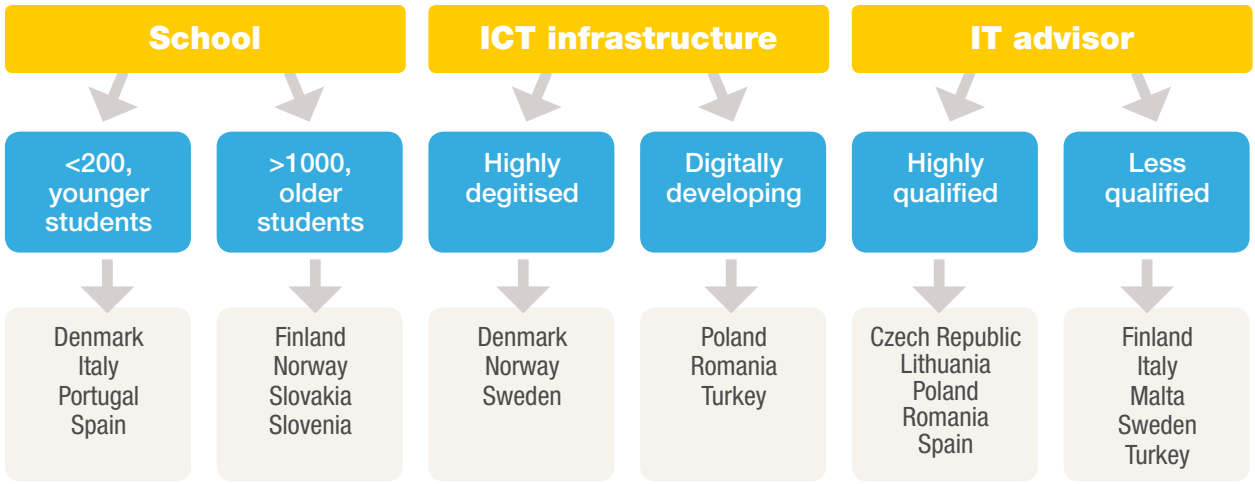

Figure 30 Clusters related to contexts

Challenges and training needs

Over 80 per cent of IT Administrators are likely or very likely to be interested in an offer of online training in their own language. If offered in English, the figure drops to 50 per cent, with interest markedly lower in some countries than others (notably Poland, Hungary and Slovakia). The biggest challenges facing IT Administrators are supporting and developing school personnel, security and network operations. Their biggest training needs are in new tools and products, security, managing cloud services, followed by network operation and BYOD management.

There is clustering of countries sharing common challenges (fig. 31):

- 'Network operations': speakers of Estonian, German, Maltese, Portuguese, Slovakian and Turkish all rank highly as a challenge installing and managing hardware and software and deploying central services (only Romanians rank it highly as a training need however)
- 'People': the Nordic countries (Denmark, Finland, Norway, Sweden) emerge as a cluster where staff support and development in technical and pedagogical ICT is a highly ranked challenge, although not as a training need. Scandinavian countries also form the 'highly digitised schools' cluster.

There are two groups of countries where IT Administrators have markedly divided training preferences:

- IT Administrators speaking Estonian, Maltese, Portuguese, Romanian, Slovenian, Swedish, Turkish and of course English are more open to English language training and cross-border communities than others
- More speakers of Polish, Hungarian and Slovak express a stronger preference for training in their own language training and with colleagues from their country than other language speakers

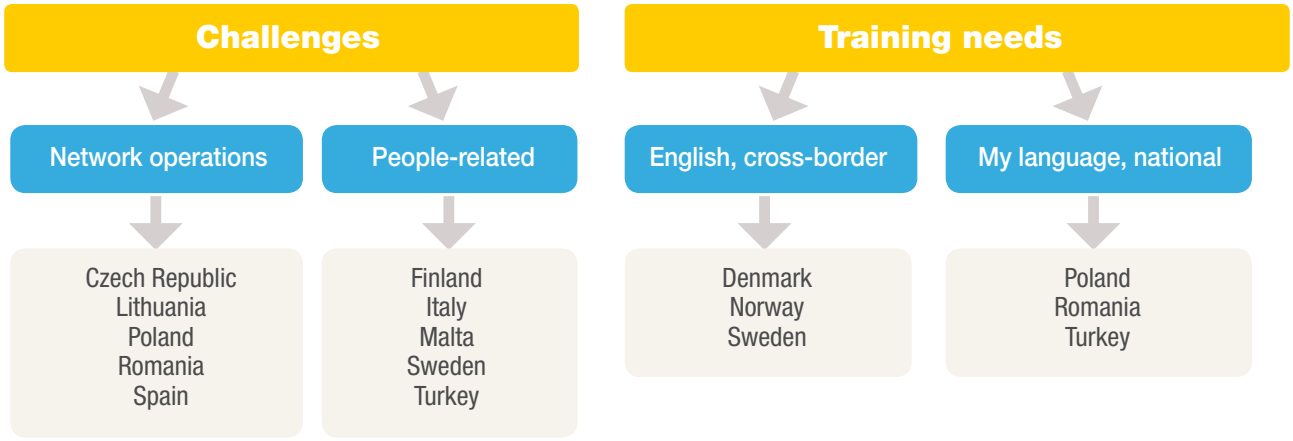

Figure 31 Clusters related to challenges and the training needs of IT Administrators

The results clearly show an unmet demand for training and a willingness to participate in online professional development opportunities, in particular (in rank order):

- New tools, services and products
- Security, data management and e-safety
- Cloud computing
- Managing Bring Your Own Device settings
- Network operations and management.

Although the topic of new tools and services heads the list of training needs, it is not a top challenge, suggesting that to some extent this is a topic chosen more from personal and professional interest than need. Topics that rank high as both challenges and training needs are security, data management and e-safety, network operations and staff development in the pedagogical use of ICT.

In addition to the clusters identified already, each of which has a particular context and training needs, further analysis shows that, although there are commonalities across all countries, there are two specific groupings of IT Administrators whose situation and needs are to some extent distinct from others:

- Denmark, Finland, Norway and Sweden have more highly digitally equipped schools than other countries and one of the main challenges they face is not technological but people. In Denmark and Norway IT Administrators tend to have no other role than IT management, and in both Finland and Sweden they tend to be less well qualified in ICT than in other countries.
- Although less clear, IT Administrators in Malta, Romania and Turkey tend to work in digitally developing schools, lack a relevant qualification (except for Romanians), are more likely to enroll on English language training courses and face challenges in basic network operations.

Based on this analysis, a number of training modules could be offered that are likely to be popular, relevant and useful:

- Connecting your school, where the following would be discussed: external connectivity, internal connectivity, network topology, firewalling, secured channels
- Cloud computing: description and history, cloud models (SaaS, IaaS, PaaS), pros and cons, possible providers and solutions
- BYOD: opportunities and challenges, security risks, technical solutions (adapted to the school environment)
- New tools and services
- eSafety: a stand-alone module.

Security is a transversal issue, and therefore rather than have a separate module on the topic, it should be included as a topic in every module.

Further discussions should take place with potential tutors and IT Administrators themselves.

Let us conclude with the voice of a profession that is seemingly under great stress and under-supported, just ten of the many comments made by survey respondents, some of which are translated and reproduced in the country fiches annexed:

- *The vast majority of schools do not give sufficient time to the management of ICT. In schools, like mine, with large IT networks, it is impossible to work well with 4, 5 or 6 hours per week for the position of IT Administrator*
- *Need for online training and get certified. It is high time to regulate the status of computer experts in schools*
- *We lack a certified or uncertified training internationally recognized*
- *It would be good to create a central European team of teachers from schools or some platform directly for teachers, with regular training for teachers*
- *I feel it would be useful to form a support network to manage hardware and software problems, especially in primary and secondary schools*
- *I would like to learn the tricks and access to the best examples of colleagues*
- *Give me ONE place where I can look for / read the news to the theme of ICT in schools*
- *It is important ICT consultants are acquainted with educational programs in order to adapt learning computers with the latest software and take full advantage of opportunities*
- *My work has changed fundamentally in recent weeks, after we moved to 1: 1 with tablets for all students and teachers. This means that I can finally focus on the educational use of tools instead of repairing old kit*

And finally, from a Turkish respondent: Am I an engineer or a teacher?

ANNEX

Country fiches

Czech Republic

There were 85 Czech respondents to the survey, of whom 22 provided their email address.

The typical school

- 90 per cent of respondents are in schools with 201-1000 students (EU mean on this measure: 66 per cent)
- 92 per cent are in schools with 11-50 classrooms (EU mean: 73 per cent)
- 93 per cent are in secondary schools where students leave aged at least 14 (EU: 85 per cent)

The school's technological infrastructure

- 51 per cent are in schools with 100-250 computers / tablets (EU: 29 per cent)
- 100 per cent are in schools using the Windows Operating System (EU 97 per cent), but in 37 per cent of cases Linux is also present (EU 23 per cent). In 11 per cent of schools the Mac OS is present (EU 19 per cent)
- 48 per cent are in schools with more than 100 network access points (EU 26 per cent)
- 55 per cent are in schools with 10-25 switches and routers (EU 32 per cent)
- 42 per cent are in schools in which at least 75 per cent of classrooms have wifi (EU 36 per cent), but 28 per cent are in schools with fewer than 10 per cent wifi-connected classrooms (EU 28 per cent)
- 53 per cent are in schools with 100-250 devices networked by wire or wifi (EU 26 per cent)
- More respondents than the EU average are responsible for network and identity management, directory services, data storage, content management and communication and collaboration tools (fig. 32).

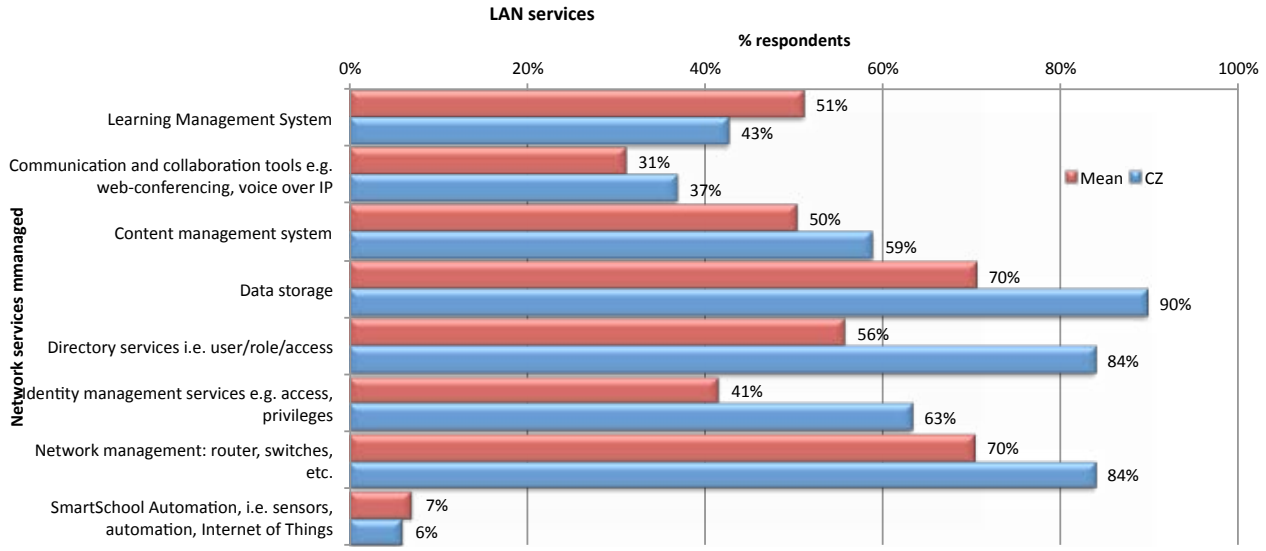

Figure 32 Network services provided: Czech Republic compared to EU mean

- 74 per cent are in schools where these services are hosted locally at the school (EU 61 per cent)
- 66 per cent are in schools where students and teachers may bring their own devices (EU 75 per cent); 43 per cent are in schools providing services for such devices (EU 38 per cent)
- On all three indicators of school autonomy (providing connectivity, purchasing equipment, operating the school network), the Czech Republic scores above the EU mean.

The profile and needs of the IT Administrator

- All respondents have teaching duties as well as IT management (EU 89 per cent); 90 per cent have other responsibilities (EU 84 per cent), most commonly supporting colleagues 47 per cent, compared to EU mean of 36 per cent
- 50 per cent teach ICT (EU 46 per cent), 34 per cent science or mathematics (EU 23 per cent)
- 83 per cent have an ICT qualification (EU 60 per cent)
- CZ IT Administrators have had more peer support, Cisco Networking Academy training, after school sessions, external off-site courses and formal certification than the EU mean; fewer learnt on the job (fig. 33).
- In a typical week most time is spent on duties not related to the IT Administrator role (e.g. teaching) and technical issues / network operation.

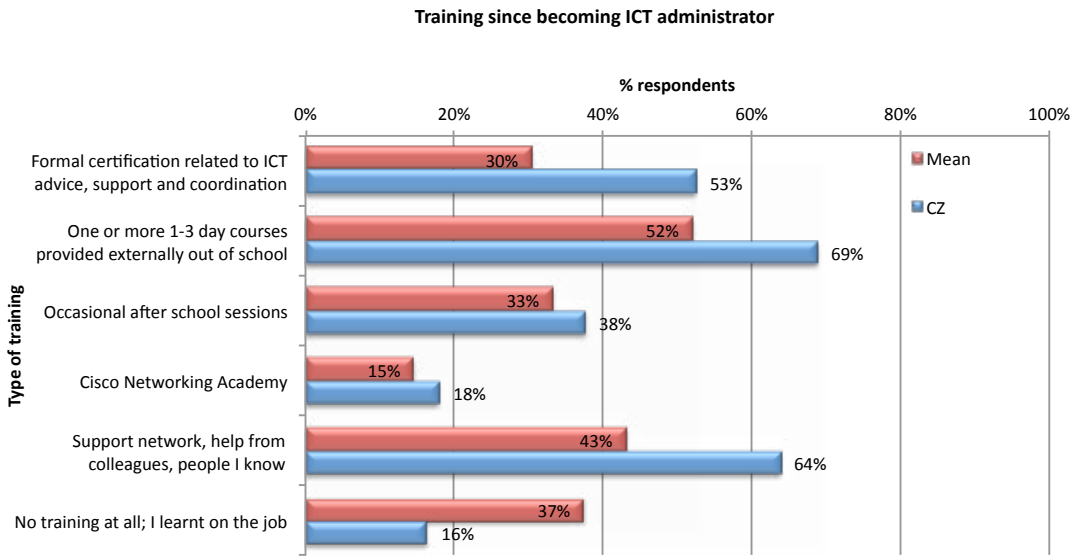

Figure 33 Training undergone

IT Administrators' challenges and training needs

- 43 per cent are likely or very likely to be interested in online training in English (EU 52 per cent), 82 per cent in their own language (EU 80 per cent)
- The most mentioned challenges are security, BYOD management, IT management, staff support and development.
- The most mentioned training needs are new tools and products, IT management, security, BYOD and network management.

Denmark

There were 128 Danish respondents to the survey, of whom 28 provided email address.

The typical school

- 68 per cent of respondents are in schools with 201-1000 students (EU mean on this measure: 66 per cent)
- 72 per cent are in schools with 11-50 classrooms (EU mean: 73 per cent)
- 68 per cent are in secondary schools where students leave aged at least 16 (EU: 50 per cent)

The school's technology infrastructure

- 47 per cent are in schools with more than 250 computers / tablets (EU: 20 per cent)
- 100 per cent are in schools using the Windows Operating System (EU 97 per cent), but in 62 per cent of schools the Mac OS is also present (EU 19 per cent)
- 55 per cent are in schools with between 25 and 75 network access points (EU 25 per cent)
- 74 per cent are in schools with up to 25 switches and routers (EU 87 per cent)
- 92 per cent are in schools in which at least 75 per cent of classrooms have wifi (EU 36 per cent)
- 33 per cent are in schools with more than 750 devices networked by wire or wifi (EU 6 per cent)
- Higher proportions of respondents than the EU average are responsible for all LAN services except SmartSchool Automation (fig. 34).

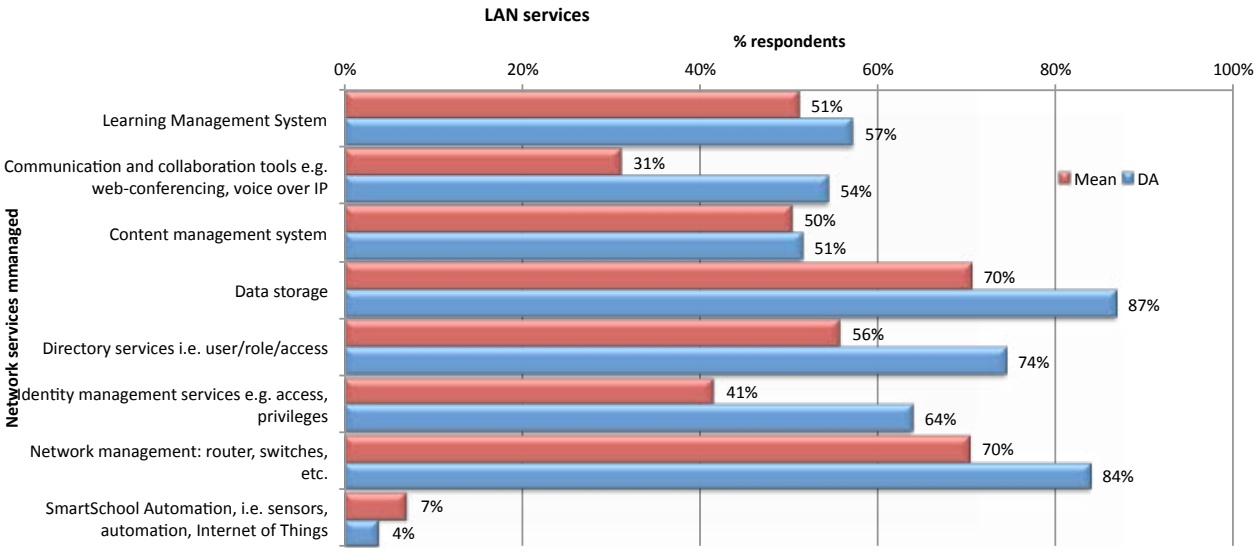

Figure 34 Network services provided: Denmark compared to the EU mean

- 61 per cent are in schools where these services are hosted locally at the school (EU 61 per cent)
- 100 per cent are in schools where students and teachers may bring their own devices (EU 75 per cent); 89 per cent are in schools providing services for such devices (EU 38 per cent)

- On two indicators of school autonomy (providing connectivity 71 per cent, purchasing equipment 94 per cent), Denmark scores above the EU means (62 per cent, 79 per cent, respectively), but 67 per cent are responsible for operating the school network compared to the EU mean of 74 per cent.

The profile of the IT Administrator

- 65 per cent of respondents have teaching duties as well as IT management (EU 89 per cent); 76 per cent have other responsibilities (EU 84 per cent), most commonly general support to colleagues 61 per cent, compared to EU mean of 84 per cent
- Only 14 per cent teach ICT (EU 46 per cent), while 53 per cent science or mathematics (EU 23 per cent)
- 65 per cent have an ICT qualification (EU 60 per cent)
- IT Administrators have had less training than EU means on all indicators (fig. 35), with 52 per cent learning on the job (EU mean: 38 per cent).
- In a typical week most time is spent on technical advice and support for teachers, technical issues / network operation and duties not related to the IT Administrator role (e.g. teaching).

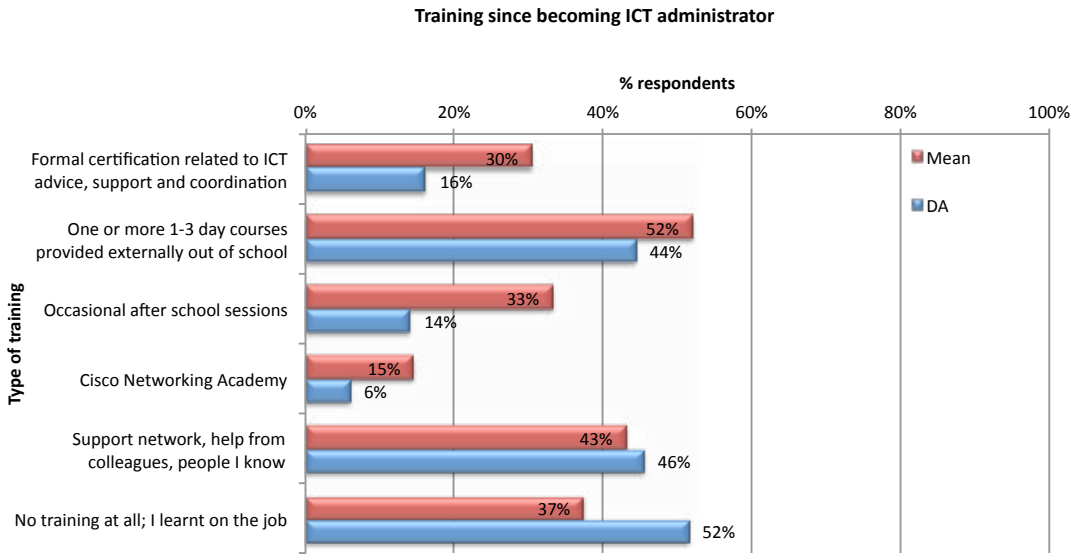

Figure 35 Training undergone: Denmark compared to EU mean

IT Administrators' challenges and training needs

- 49 per cent are likely or very likely to be interested in online training in English (EU 52 per cent), 71 per cent in their own language (EU 80 per cent)
- The most mentioned challenges are staff support and new tools, services and products.
- The most mentioned training needs are (in order): staff development in pedagogical ICT, new tools and services, BYOD, network operations, and cloud computing

Free text comments of note:

- *BYOD does not solve all problems!*

English language: UK, Ireland, and other countries

There were 96 respondents to the English version of the survey, of whom 46 provided email addresses. Of these, one or two were from schools in Iceland, Serbia and Russia.

The typical school

- 67 per cent of respondents are in schools with 201-1000 students (EU mean on this measure: 66 per cent)
- 73 per cent are in schools with 11-50 classrooms (EU mean: 73 per cent)
- 52 per cent are in secondary schools where students leave aged at least 16 (EU: 50 per cent)

The school's technology infrastructure

- 62 per cent are in schools with 50-250 computers / tablets (EU: 56 per cent)
- 96 per cent are in schools using the Windows Operating System (EU 97 per cent), but in 26 per cent of schools the Mac OS is also present (EU 19 per cent)
- While 29 per cent are in schools with more than 100 network access points (EU 26 per cent), 42 per cent have fewer than 25 (EU 42 per cent), relatively few in between
- 57 per cent are in schools with up to 25 switches and routers (EU 50 per cent)
- 37 per cent are in schools in which at least 75 per cent of classrooms have wifi (EU 36 per cent)
- 61 per cent are in schools with 50-250 devices networked by wire or wifi (EU 53 per cent)
- Higher proportions of respondents than the EU average are responsible for network management and data storage (fig. 36).

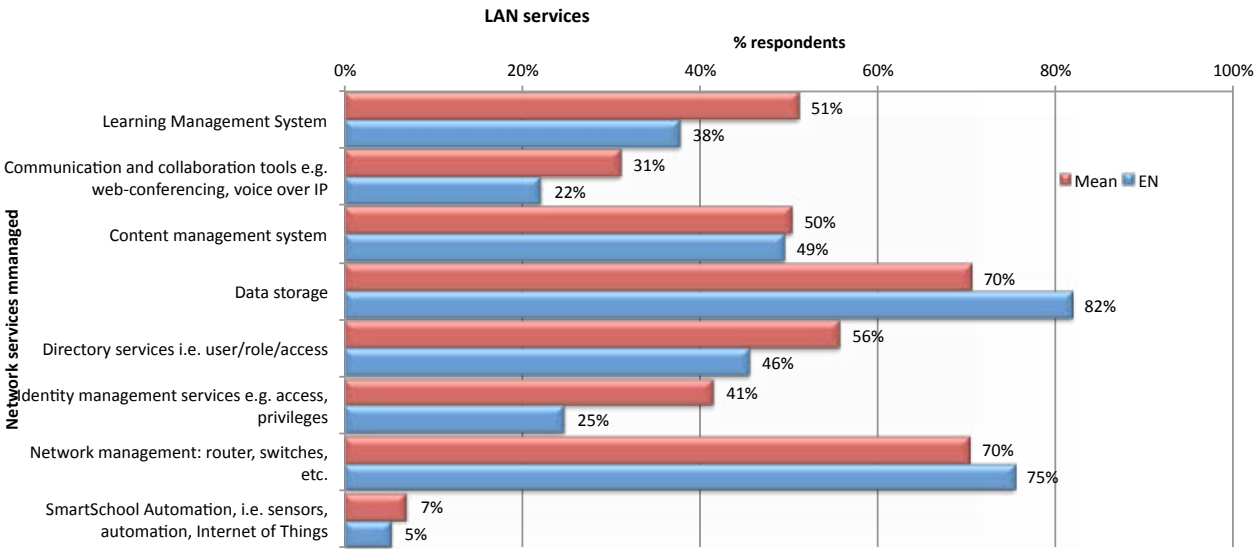

Figure 36 Network services provided: English language answers compared to the EU mean

- 66 per cent are in schools where these services are hosted locally at the school (EU 61 per cent)
- 61 per cent are in schools where students and teachers may bring their own devices (EU 75 per cent); 24 per cent are in schools providing services for such devices (EU 38 per cent)
- On all three indicators of school autonomy (providing connectivity 76 per cent, purchasing equipment 89 per cent, operating the school network 84 per cent) the UK scores well above the EU means (62 per cent, 79 per cent, 74 per cent respectively)

The profile of the IT Administrator

- 93 per cent of respondents have teaching duties as well as IT management (EU 89 per cent); 88 per cent have other responsibilities (EU 84 per cent), most commonly general support to colleagues 27 per cent, (EU mean 36 per cent, and running the school website 23 per cent (EU mean 21 per cent)
- 35 per cent teach ICT (EU 46 per cent), while 48 per cent other subjects (EU 32 per cent)
- 55 per cent have an ICT qualification (EU 60 per cent)
- More IT Administrators than EU means have attended Cisco Networking Academy courses and obtained formal ICT certification (fig. 37), but slightly fewer undertaking courses off-site (46 per cent compared to the EU mean of 52 per cent).

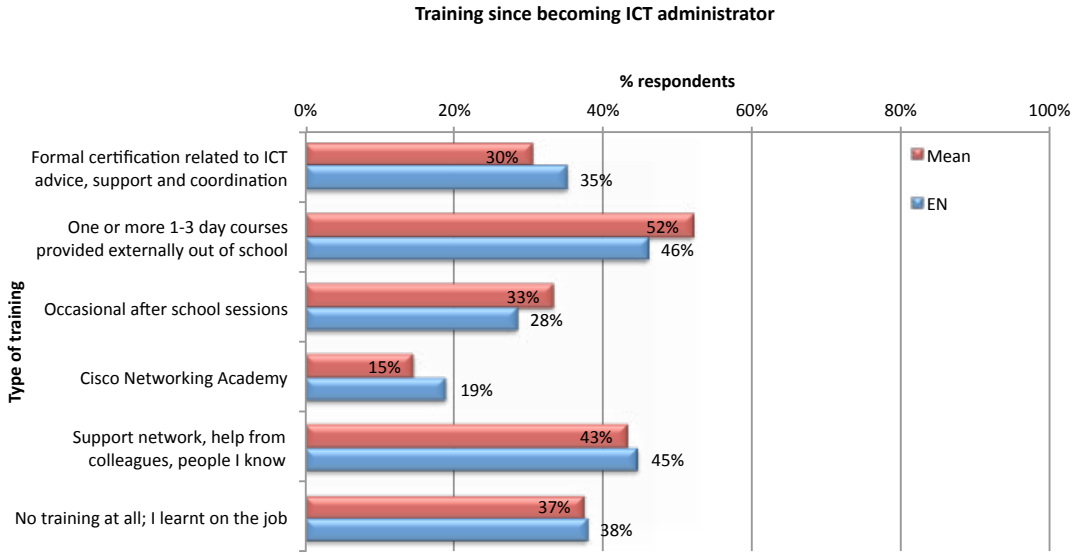

Figure 37 Training undergone: English language compared to EU mean

- In a typical week most time is spent on duties not related to the IT Administrator role (e.g. teaching), followed by technical support to staff and technical issues.

IT Administrators' challenges and training needs

- 85 per cent are likely or very likely to be interested in EU-wide online training in English (EU 52 per cent), 79 per cent in their own language, only with colleagues in their country (EU 80 per cent)
- The most mentioned challenges, in rank order, are pedagogical ICT support for teachers, network operations, hardware management and cloud computing
- The most mentioned training needs are (in order): cloud computing, BYOD, network operations, new tools and products, and curriculum and assessment (new courses)

Free text comments of note:

- *How to get verified Certificate from variety of MOOC courses that we (from Serbia) are attending?*
- *We need funding to expand our wifi network, to allow us to develop our student access to resources.*
- *Many thanks for giving me the opportunity to answer this survey. I am eager to start training sessions on the matter of ICT with European Schoolnet Academy; I am very grateful for all the contents of your courses. I happened to discover European Schoolnet academy only four months ago, but it has completely changed my way of thinking and teaching*
- *We use vmWare in our school and think that the system should be reviewed as possibly a game changer for ICT in education. Huge economies of scale in evidence. Would love to invite someone in authority to view our system.*
- *Little support and understanding from management who have poor knowledge of challenges and risks associated with a developing ICT infrastructure*
- *Not an official IT Administrator - somehow got landed with being the go to person for issues. This sounds like a great opportunity to share with others in same position*
- *ICT co-ordination in schools really needs to be a non-teaching role or a full time tech to be shared between two similar size schools to allow ICT teachers to teach in schools. Doing both and supporting teaching staff is just too much. Financial support for maintaining systems must come from the Dept of Ed not just (very welcome) one off money to up date really out of date hard ware. How is the maintenance of that to be funded? Finance to upgrade XP machines which schools are full of will be needed. Cheap and easy courses on aspects of maintaining systems should be easily available if techs are not going to be provided. A lot of ICT co-ordinators are enthusiastic but unqualified"*

Estonia

There were 96 respondents to the Estonian version of the survey, of whom 17 provided email addresses.

The typical school

- 62 per cent of respondents are in schools with 201-1000 students (EU mean on this measure: 66 per cent)
- 81 per cent are in schools with 11-50 classrooms (EU mean: 73 per cent)
- 72 per cent are in secondary schools where students leave aged at least 16 (EU: 50 per cent)

The school's technology infrastructure

- 60 per cent are in schools with 50-250 computers / tablets (EU: 56 per cent)
- 99 per cent are in schools using the Windows Operating System (EU 97 per cent), but in 24 per cent of schools the Mac OS (EU 19 per cent), and in 27 per cent Linux is also present (EU 23 per cent)
- 47 per cent are in schools with 10-25 network access points (EU 34 per cent)
- 67 per cent are in schools with fewer than 10 switches and routers (EU 50 per cent)
- 30 per cent are in schools in which at least 75 per cent of classrooms have wifi (EU 36 per cent)
- 62 per cent are in schools with 50-250 devices networked by wire or wifi (EU 53 per cent)
- Higher proportions of respondents than the EU average are responsible for almost all network services (fig. 38).

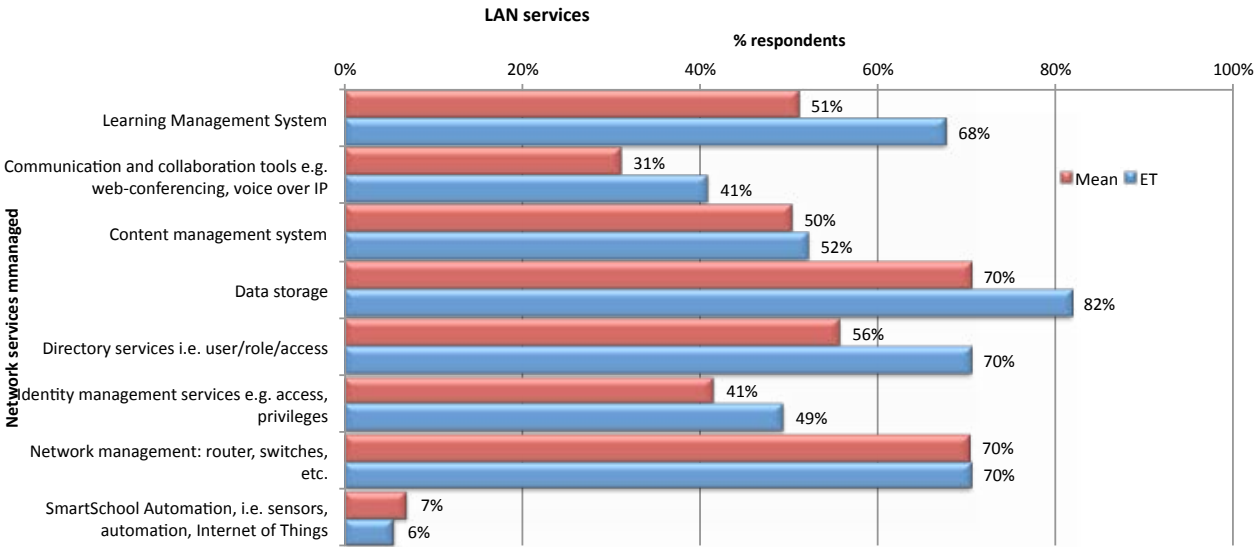

Figure 38 Network services provided: Estonian answers compared to the EU mean

- 56 per cent are in schools where these services are hosted locally at the school (EU 61 per cent)
- 86 per cent are in schools where students and teachers may bring their own devices (EU 75 per cent); 49 per cent are in schools providing services for such devices (EU 38 per cent)

- Most IT Administrators in Estonia have considerably autonomy, particularly in operating the school network (86 per cent compared to the mean of 74 per cent), less so for connectivity (60 per cent, EU mean 62 per cent).

Profile of the IT Administrator

- 86 per cent of respondents have teaching duties as well as IT management (EU 89 per cent); 86 per cent also have other responsibilities (EU 84 per cent), most commonly general support to colleagues 56 per cent, (EU mean 36 per cent), and running the school website 25 per cent (EU mean 21 per cent)
- 60 per cent teach ICT (EU 46 per cent), and 35 per cent other subjects (EU 32 per cent)
- 55 per cent have an ICT qualification (EU 60 per cent)
- More IT Administrators than EU means have undergone training since being appointed to their post (except for Cisco Networking Academy courses) and fewer have had none; support networks and external courses appear popular (fig. 39)
- In a typical week most time is spent on technical support to staff and duties not related to the IT Administrator role (e.g. teaching).

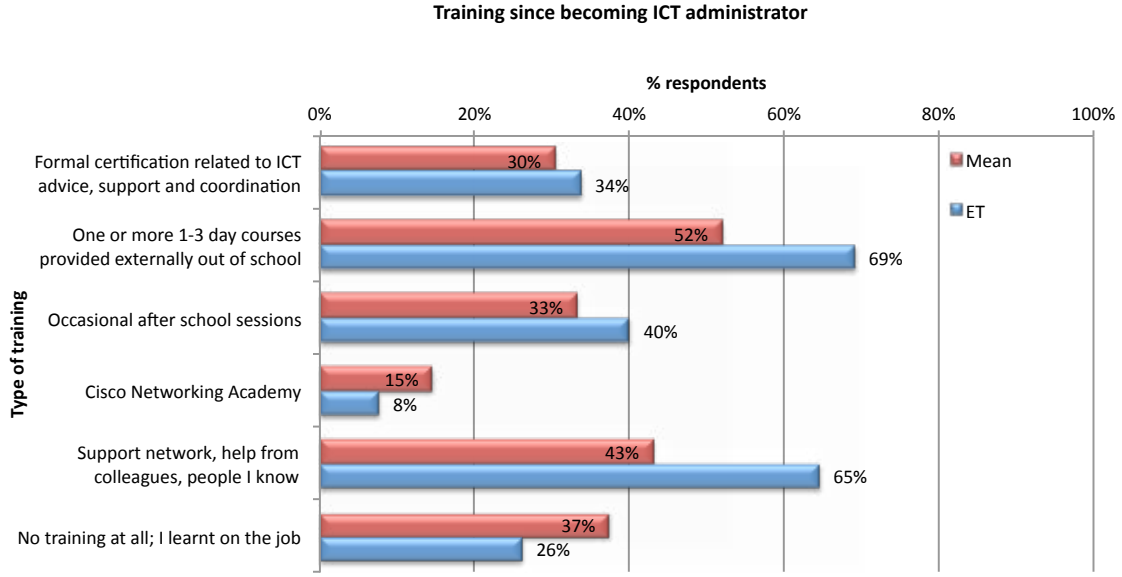

Figure 39 Training undergone: English language compared to EU mean

IT Administrators' challenges and training needs

- 68 per cent are likely or very likely to be interested in EU-wide online training in English (EU 52 per cent), 97 per cent in their own language, only with colleagues in their country (EU 80 per cent)
- The most mentioned challenges, in rank order, are central services deployment, network operations, and hardware and software management, followed by staff pedagogical ICT development
- The most mentioned training needs are (in order): new tools and products, staff ICT development, security and cloud computing.

Free text comments of note:

- *I would like to learn the tricks and access to the best examples of colleagues.*

Finland

There were 115 respondents to the Finnish version of the survey, of whom 36 provided email addresses.

The typical school

- 74 per cent of respondents are in schools with 201-1000 students (EU mean on this measure: 66 per cent)
- 80 per cent are in schools with 11-50 classrooms (EU mean: 73 per cent)
- 41 per cent are in secondary schools where students leave aged 14-16 (EU: 35 per cent)

The school's technology infrastructure

- 68 per cent are in schools with 50-250 computers / tablets (EU: 56 per cent)
- 99 per cent are in schools using the Windows Operating System (EU 97 per cent), and fewer than average have other systems (Linux, Mac)
- 37 per cent are in schools with more than 100 network access points (EU 26 per cent)
- 40 per cent are in schools with fewer than 10 switches and routers (EU 50 per cent)
- 32 per cent are in schools in which at least half the classrooms have wifi (EU 52 per cent)
- 69 per cent are in schools with 50-250 devices networked by wire or wifi (EU 53 per cent)
- Higher proportions of respondents than the EU average are responsible for data storage and communication / collaboration tools (fig. 40).

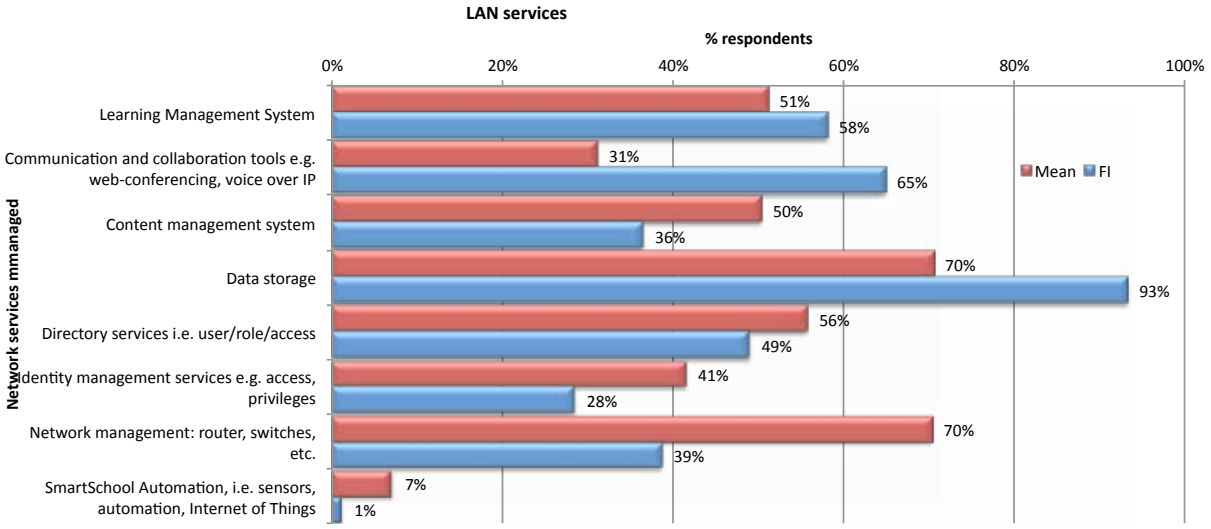

Figure 40 Network services provided: Finnish data compared to the EU mean

- Only 23 per cent are in schools where these services are hosted locally at the school (EU 61 per cent)
- 68 per cent are in schools where students and teachers may bring their own devices (EU 75 per cent); 39 per cent are in schools providing services for such devices (EU 38 per cent)

- Most IT Administrators in Finland have low levels of autonomy, particularly in operating the school network (14 per cent compared to the mean of 74 per cent), and for connectivity (17 per cent, EU mean 62 per cent).

Profile of the IT Administrator

- 96 per cent of respondents have teaching duties as well as IT management (EU 89 per cent); 90 per cent also have other responsibilities (EU 84 per cent), most commonly general support to colleagues 46 per cent, (EU mean 36 per cent)
- Unusually compared to other countries only 7 per cent teach ICT (EU 46 per cent), most (59 per cent) teaching other subjects (EU 32 per cent)
- Only 29 per cent have an ICT qualification (EU 60 per cent)
- More IT Administrators than EU means have undergone external training since being appointed to their post (except for Cisco Networking Academy courses) and fewer have had no training at all; informal support networks and after school sessions courses appear popular (fig. 41)
- In a typical week much time appears to be spent on duties not related to the IT Administrator role (e.g. teaching), followed by technical support for teacher colleagues.

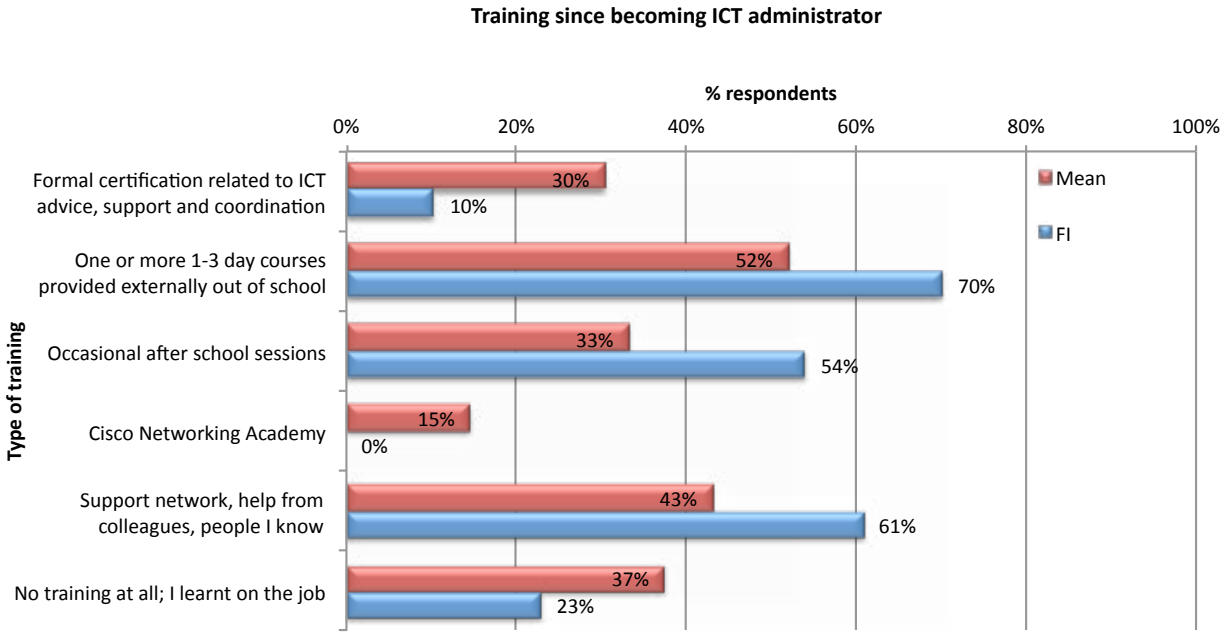

Figure 41 Training undergone: Finland compared to EU mean

IT Administrators' challenges and training needs

- Only 38 per cent are likely or very likely to be interested in EU-wide online training in English (EU 52 per cent), and 62 per cent in their own language, only with colleagues in their country (EU 80 per cent)
- The most mentioned challenges, in rank order, are staff support and development, followed by new tools and *products*
- The most mentioned training needs are (in order): new tools and products, staff ICT development, cloud computing.

Free text comments of note:

- *Computer Support Technician job is so stressful that the normal work of a teacher is suffering and weekly hours worked enough to work in any way, i.e. should be a five-hour work against a one-hour compensation.*
- *Social media ICT groups of teachers are great! They can learn a lot by reading. From there, get tips. Also, webinars and MOOCs are good.*
- *The need for training is great, but in particular, priority, or the amount of time teachers are often not allowed into the training.*
- *Financial compensation for the work to be fair; show that our work is important. School size and the number of devices should be considered remuneration.*
- *I am a national title in our school ICT support staff. My main responsibility is to provide support for IT problems of colleagues.*
- *I administer a network, I'm not an administrator, I do not even have rights to install programs, school computers.*

France / French-speaking Belgium Switzerland and Luxembourg

There were 70 respondents to the French version of the survey, of whom 24 provided email addresses.

The typical school

- 55 per cent of respondents are in schools with 201-1000 students (EU mean on this measure: 66 per cent)
- 57 per cent are in schools with 11-50 classrooms (EU mean: 73 per cent)
- 48 per cent are in secondary schools where students leave aged 16 or older (EU: 50 per cent)

The school's technology infrastructure

- 48 per cent are in schools with 50-250 computers / tablets (EU: 56 per cent)
- 89 per cent are in schools using the Windows Operating System (EU 97 per cent), and 38 per cent have Mac OS computers (EU 19 per cent)
- 42 per cent are in schools with more than 100 network access points (EU 26 per cent)
- 40 per cent are in schools with fewer than 10 switches and routers (EU 50 per cent)
- 66 per cent are in schools in which fewer than 10 per cent of classrooms have wifi (EU 28 per cent)
- 54 per cent are in schools with 50-250 devices networked by wire or wifi (EU 53 per cent)
- Higher proportions of respondents than the EU average are responsible for data storage and directory services (fig. 42).

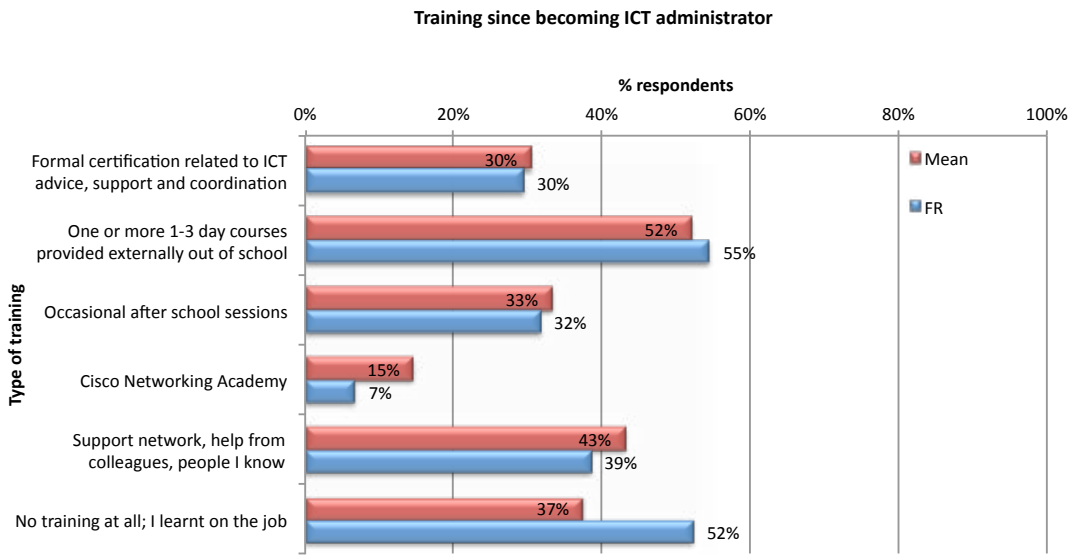

Figure 42 Network services provided: French data compared to the EU mean

- 66 per cent are in schools where these services are hosted locally at the school (EU 61 per cent)
- 65 per cent are in schools where students and teachers may bring their own devices (EU 75 per cent); only 22 per cent are in schools providing services for such devices (EU 38 per cent)

- IT Administrators have levels of autonomy on three indicators close to the mean, lower for operating the school network (67 per cent compared to the mean of 74 per cent)

Profile of the IT Administrator

- 93 per cent of respondents have teaching duties as well as IT management (EU 89 per cent); 90 per cent also have other responsibilities (EU 84 per cent), most commonly and unusually pastoral e.g. year coordinator (43 per cent compared to the EU mean of 8 per cent).
- 49 per cent teach ICT (EU 46 per cent)
- 57 per cent have an ICT qualification (EU 60 per cent)
- More IT Administrators than the EU mean have received no training at all (52 per cent compared to a mean of 38 per cent) but more than average have undergone off-site training since being appointed to their post (fig. 43)
- In a typical week time appears to be spent on duties not related to the IT Administrator role (e.g. teaching).

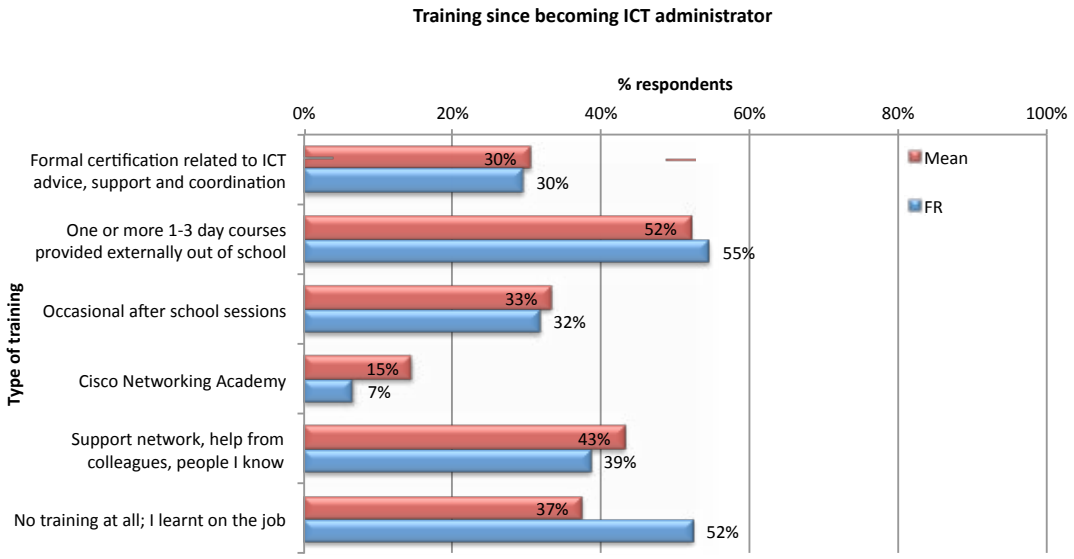

Figure 43 Training undergone: French responses compared to EU mean

IT Administrators' challenges and training needs

- 49 per cent are likely or very likely to be interested in EU-wide online training in English (EU 52 per cent), and 74 per cent in their own language, only with colleagues in their country (EU 80 per cent)
- The most mentioned challenges, in rank order, are hardware and software management, staff development in pedagogical ICT, and new tools and services
- The most mentioned training needs are (in order): BYOD and new tools and products, and network operation.

Free text comments of note:

- *In Belgium, it is unfortunate that the people in schools with a good grasp of ICT do not train school staff. This should be the number one priority to promote ICT in our schools.*
- *It is time to create a position of "recognized" head of ICT in each school, preferably full-time.*

German language /Austria, Germany, Switzerland and Luxembourg/

There were 98 respondents to the German version of the survey, of whom 31 provided email address.

The typical school

- 52 per cent of respondents are in schools with 201-1000 students (EU mean on this measure: 66 per cent)
- 62 per cent are in schools with 11-50 classrooms (EU mean: 73 per cent)
- 51 per cent are in secondary schools where students leave aged at least 16 (EU: 50 per cent)

The school's technology infrastructure

- 55 per cent are in schools with 50-250 computers / tablets (EU: 56 per cent)
- 93 per cent are in schools using the Windows Operating System (EU 97 per cent), but in 30 per cent of schools the Mac OS is present (EU 19 per cent)
- 57 per cent are in schools with more fewer than 10 network access points (EU 24 per cent) and only 3 per cent have more than 100 (EU 26 per cent)
- 76 per cent are in schools with up to 25 switches and routers (EU 50 per cent)
- 49 per cent are in schools where fewer than 10 per cent of classrooms have wifi (EU 28 per cent) and only 21 per cent are in schools where at least 75 per cent of classrooms have wifi (EU 37 per cent)
- 53 per cent are in schools with up to 100 devices networked by wire or wifi (EU 39 per cent)
- Higher proportions of respondents than the EU average are responsible for five network services (fig. 44).

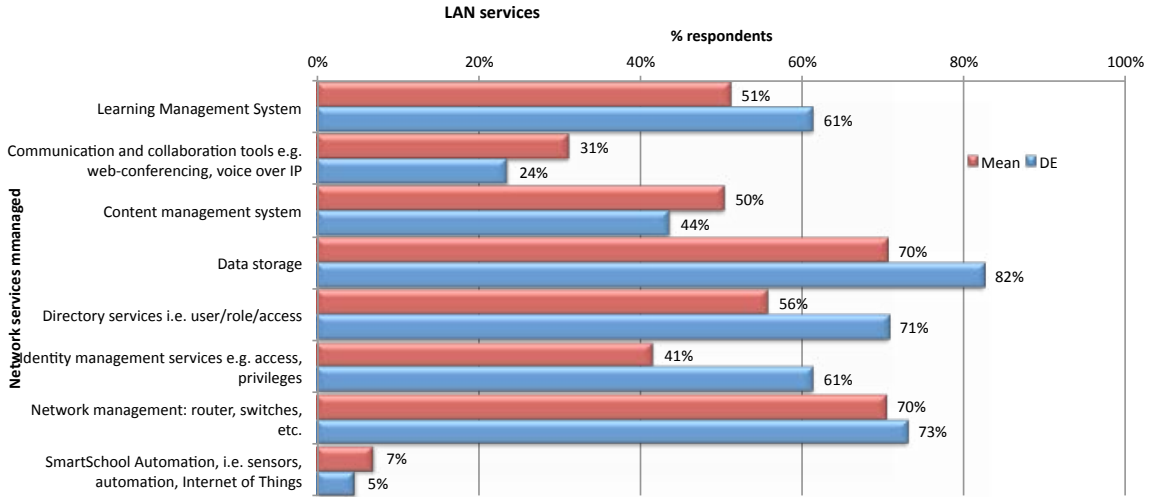

Figure 44 Network services provided: German language answers compared to the EU mean

- 58 per cent are in schools where these services are hosted locally at the school (EU 61 per cent)
- 67 per cent are in schools where students and teachers may bring their own devices (EU 75 per cent); 42 per cent are in schools providing services for such devices (EU 38 per cent)

- On all three indicators of school autonomy (providing connectivity 55 per cent, purchasing equipment 71 per cent, operating the school network 72 per cent) the German-speaking respondents scores below EU means (62 per cent, 79 per cent, 74 per cent respectively)

The profile of the IT Administrator

- 95 per cent of respondents have teaching duties as well as IT management (EU 89 per cent); 91 per cent have other responsibilities (EU 84 per cent), most commonly managing a computer lab and providing support to colleagues
- 32 per cent teach ICT (EU 46 per cent), 32 per cent science or mathematics (EU 23 per cent), while 36 per cent other subjects (EU 32 per cent)
- 72 per cent have an ICT qualification (EU 60 per cent)
- More IT Administrators than EU means have attended off-site courses Cisco Networking Academy courses and obtained formal ICT certification (fig. 45), and slightly more have taken part in after-school sessions.
- In a typical week most time is spent on duties not related to the IT Administrator role (e.g. teaching), followed by technical issues and technical support.

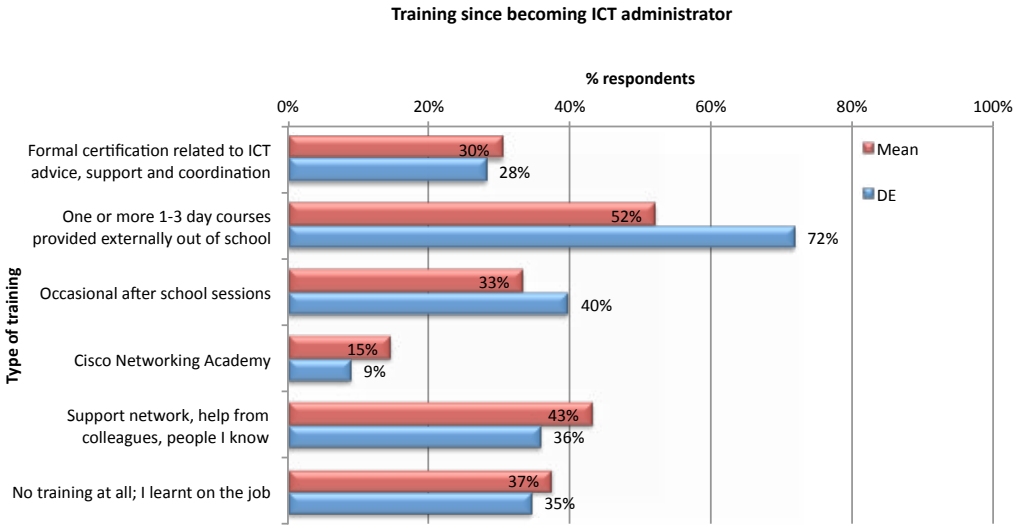

Figure 45 Training undergone: German language compared to EU mean

IT Administrators' challenges and training needs

- Only 37 per cent are likely or very likely to be interested in EU-wide online training in English (EU 52 per cent), 68 per cent in their own language, only with colleagues in their country (EU 80 per cent)
- The most frequently mentioned challenges are network operations, hardware and software management, followed by security
- The most mentioned training needs are (in order): security, cloud computing, network operations and BYOD

Free text comments of note:

- *The job as a system administrator requires no small amount of time in addition to the tasks as teacher and member of the school board!*

Hungary

There were 128 respondents to the Hungarian version of the survey, of whom 30 provided email addresses.

The typical school

- 81 per cent of respondents are in schools with 201-1000 students (EU mean on this measure: 66 per cent)
- 79 per cent are in schools with 11-50 classrooms (EU mean: 73 per cent)
- 69 per cent are in secondary schools where students leave aged at least 16 (EU: 50 per cent)

The school's technology infrastructure

- 68 per cent are in schools with 50-250 computers / tablets (EU: 56 per cent)
- 98 per cent are in schools using the Windows Operating System (EU 97 per cent)
- 38 per cent are in schools with more than100 network access points (EU 26 per cent)
- 51 per cent are in schools with fewer than 10 switches and routers (EU 50 per cent)
- 27 per cent are in schools in which at least 75 per cent of classrooms have wifi (EU 36 per cent) while 19 per cent are in schools with fewer than 10 per cent wifi classrooms (EU 28 per cent)
- 65 per cent are in schools with 50-250 devices networked by wire or wifi (EU 53 per cent)
- Higher proportions of respondents than the EU average are responsible for network and identity management, fewer for learning management systems (fig. 46).

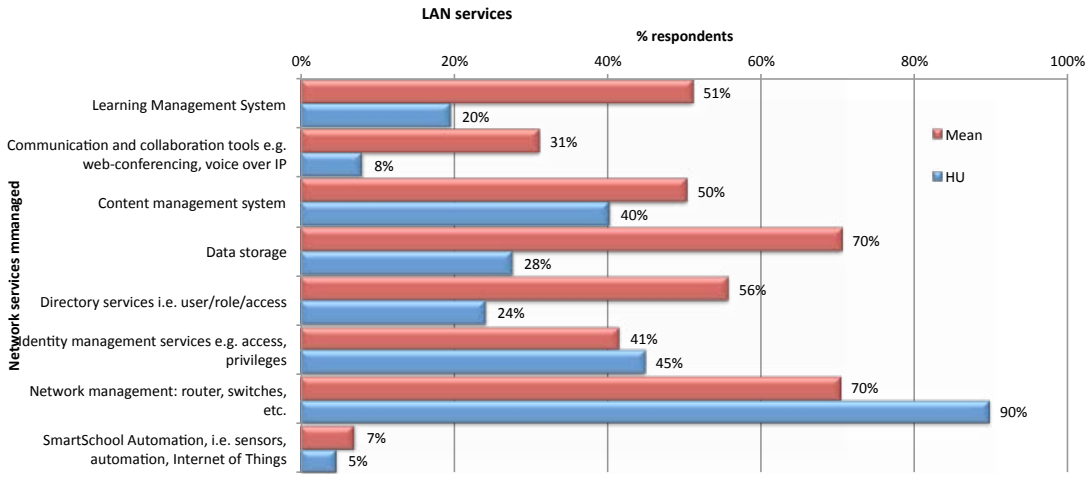

Figure 46 Network services provided: Hungarian answers compared to the EU mean

- 80 per cent are in schools where these services are hosted locally at the school (EU 61 per cent)
- Only 55 per cent are in schools where students and teachers may bring their own devices (EU 75 per cent); 20 per cent are in schools providing services for such devices (EU 38 per cent)
- Most IT Administrators have low levels of autonomy, particularly in connectivity (23 per cent, EU mean 62 per cent) and purchasing (24 per cent compared to the EU mean of 79 per cent)

Profile of the IT Administrator

- 80 per cent of respondents have teaching duties as well as IT management (EU 89 per cent); 71 per cent also have other responsibilities (EU 84 per cent), most commonly support to colleagues, managing a computer lab and running the school website
- 48 per cent teach ICT (EU 46 per cent), 26 per cent Science or mathematics (mean 23 per cent) and 26 per cent other subjects (EU 32 per cent)
- 71 per cent have an ICT qualification (EU 60 per cent)
- More IT Administrators than EU means have had no training at all (55 per cent, EU mean 38 per cent) and fewer have had any type of training (fig. 47)
- In a typical week most time is spent on duties not related to the IT Administrator role (e.g. teaching) and technical support to staff

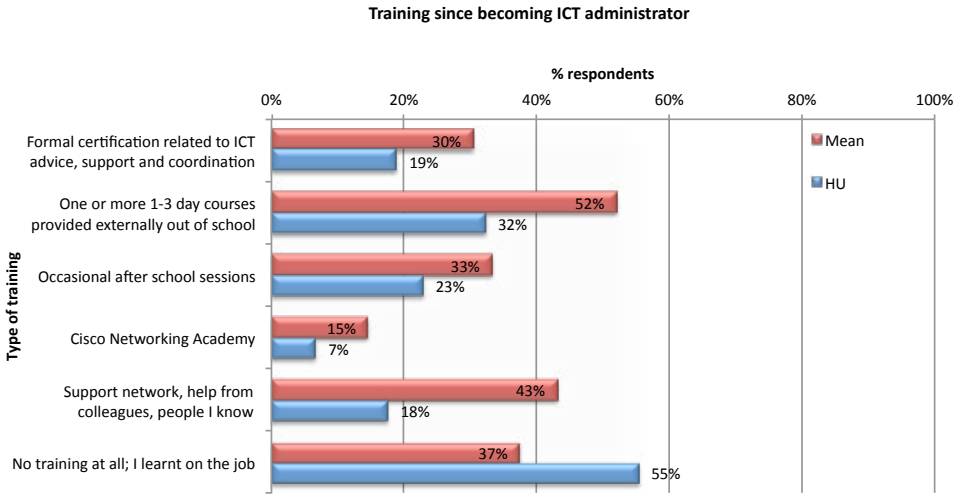

Figure 47 Training undergone: Hungary compared to EU mean

IT Administrators' challenges and training needs

- 24 per cent are likely or very likely to be interested in EU-wide online training in English (EU 52 per cent), 90 per cent in their own language, only with colleagues in their country (EU 80 per cent)
- The most mentioned challenges, in rank order, are BYOD, network operations, central services deployment, management and staff pedagogical ICT development
- *The most mentioned training needs are (in order): BYOD, cloud computing, IT management and learning management systems.*

Free text comments of note:

- *We have a 12 year-old 32-bit server. I lack time and there are skills shortages within the school (I'm all alone)*
- *95 per cent of IT tools obsolete, 15 years old, unfit to serve the needs of modern ICT*
- *I was pleased to be asked to complete the survey.*
- *We need free, intensive English language training, because this is a big obstacle to many teachers who cannot effectively get involved in ICT-based education.*
- *The ICT consultant at our school does not provide technical assistance to teachers but also commissions and configures tools and online applications and is also the one who aims to introduce them to the possibilities of ICT in order to improve teachers' pedagogical culture*

Italy

There were 215 respondents to the Italian version of the survey, of whom 87 provided email addresses.

The typical school

- 56 per cent of respondents are in schools with 201-1000 students (EU mean on this measure: 66 per cent)
- 60 per cent are in schools with 11-50 classrooms (EU mean: 73 per cent)
- 67 per cent are in secondary schools where students leave aged at least 16 (EU: 50 per cent)

The school's technology infrastructure

- 55 per cent are in schools with 100-500 computers / tablets (EU: 42 per cent)
- 99 per cent are in schools using the Windows Operating System (EU 97 per cent), but a high 54 per cent also have Linux (the highest in the 20 countries, EU mean 23 per cent) and Apple OS is found in 25 per cent of IT Administrators' schools (EU 19 per cent)
- 51 per cent are in schools with more than100 network access points (EU 26 per cent)
- 68 per cent are in schools with fewer than 25 switches and routers (EU 82 per cent)
- 36 per cent are in schools in which at least 75 per cent of classrooms have wifi (EU 36 per cent) while 35 per cent are in schools with fewer than 10 per cent wifi classrooms (EU 28 per cent)
- 56 per cent are in schools with 100-500 connected devices (EU 53 per cent)
- Higher proportions of respondents than the EU average are responsible for all types of LAN services except learning management systems (fig. 48).

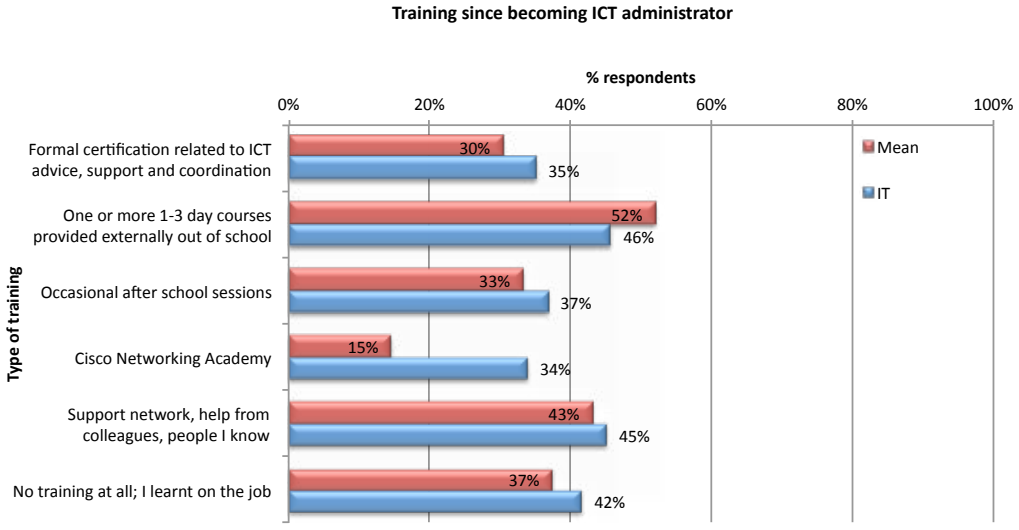

Figure 48 Network services provided: Italian answers compared to the EU mean

- 66 per cent are in schools where these services are hosted locally at the school (EU 61 per cent)
- 77 per cent are in schools where students and teachers may bring their own devices (EU 75 per cent) but only 30 per cent are in schools providing services for such devices (EU 38 per cent)

- IT Administrators typically have higher levels of autonomy, particularly purchasing (98 per cent compared to the EU mean of 79 per cent), the highest of all countries surveyed

Profile of the IT Administrator

- 76 per cent of respondents have teaching duties as well as IT management (EU 89 per cent); 69 per cent also have other responsibilities (EU 84 per cent), most commonly managing a computer lab and support to colleagues
- 48 per cent teach ICT (EU 46 per cent)
- Only 20 per cent have an ICT qualification (EU 60 per cent)
- More IT Administrators than EU means have had no training at all and more rely on a support network; the Cisco Networking Academy has provided substantial training for Italian IT Administrators compared to other countries (34 per cent vis-à-vis 15 per cent) (fig. 49)

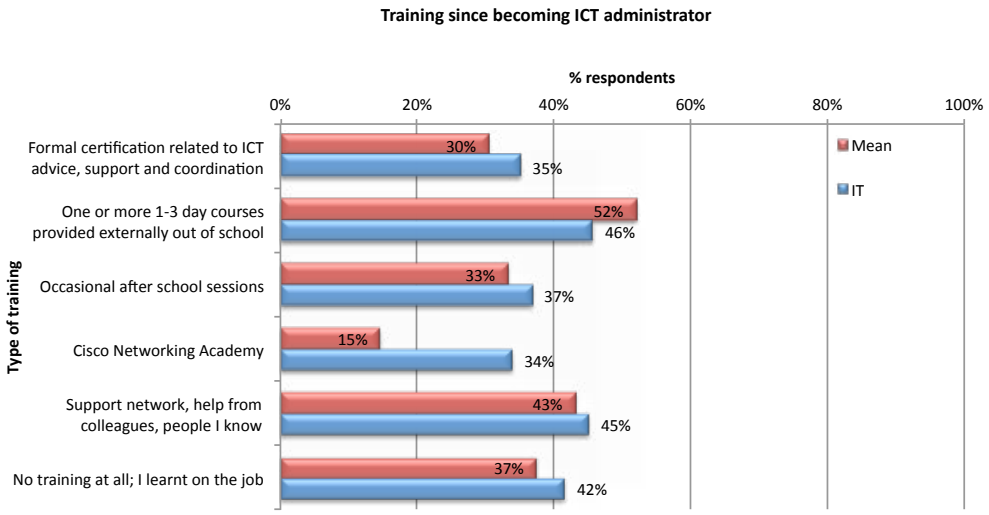

Figure 49 Training undergone: Italy compared to EU mean

- In a typical week most time is spent on duties not related to the IT Administrator role (e.g. teaching) network maintenance and technical support to staff

IT Administrators' challenges and training needs

- 51 per cent are likely or very likely to be interested in EU-wide online training in English (EU 52 per cent), 66 per cent in their own language, with colleagues in their country (EU 80 per cent)
- The most mentioned challenges, in rank order, are budgeting, security, network operations, and staff IT development
- The highest ranked training needs are (in order): security, new tools and services, central services deployment, network operations and cloud computing

Free text comments of note:

- *I feel it would be useful to form a support network to manage hardware and software problems, especially in primary and secondary schools in which there is the figure of the technician. I believe it is also essential that there is, if not a recognition, at least an acknowledgment of the certificates obtained by the staff. I attended courses by Microsoft, EPICT, possess ECDL and I took part in numerous Microsoft seminars,*
- *There should be an official recognition for training in ICT support*
- *Subsidize training and collaboration within a motivated community work and education, to ensure that work is not isolated.*
- *Excessive bureaucracy for the testing and use of new technologies (demand, costs, licenses and authorizations)*

Lithuania

There were 480 respondents to the Lithuanian version of the survey, of whom 115 provided email addresses.

The typical school

- 65 per cent of respondents are in schools with 201-1000 students (EU mean on this measure: 66 per cent)
- 75 per cent are in schools with 11-50 classrooms (EU mean: 73 per cent)
- 62 per cent are in secondary schools where students leave aged at least 16 (EU: 50 per cent)

The school's technology infrastructure

- 69 per cent are in schools with 50-250 computers / tablets (EU: 56 per cent)
- 98 per cent are in schools using the Windows Operating System (EU 97 per cent)
- 48 per cent are in schools with up to 25 network access points (EU 42 per cent)
- 59 per cent are in schools with fewer than 10 switches and routers (EU 50 per cent)
- 52 per cent are in schools with less than 10 per cent wifi classrooms (EU 28 per cent)
- 66 per cent are in schools with under 100 connected devices (EU 53 per cent)
- Higher proportions of respondents than the EU average are responsible for content management, but fewer for all other services (fig. 50).

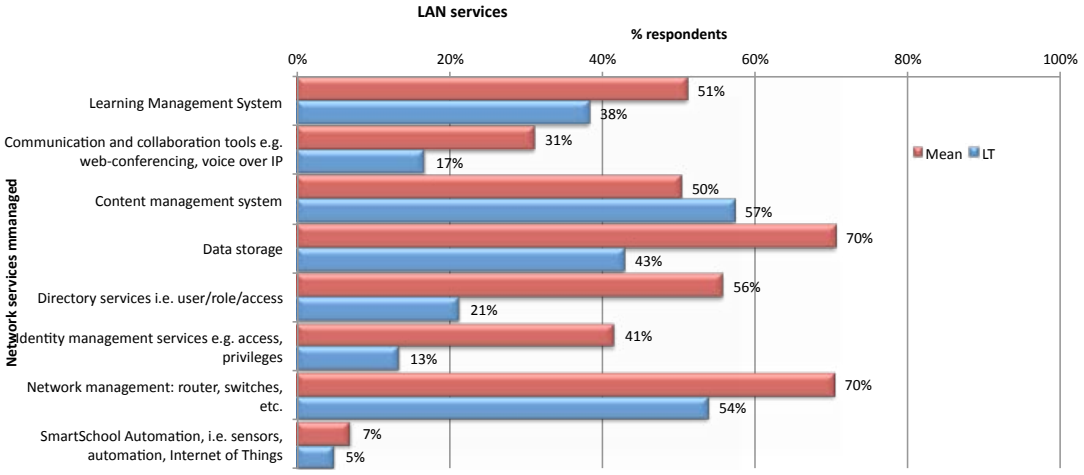

Figure 50 Network services provided: Lithuanian answers compared to the EU mean

- 66 per cent are in schools where these services are hosted locally at the school (EU 61 per cent)
- 70 per cent are in schools where students and teachers may bring their own devices (EU 75 per cent); 28 per cent are in schools providing services for such devices (EU 38 per cent)
- The average IT Administrator has high levels of autonomy, particularly in equipment purchase (96 per cent, EU mean 79 per cent) and network operation (93 per cent compared to the EU mean of 74 per cent)

Profile of the IT Administrator

- 66 per cent of respondents have teaching duties as well as IT management (EU 89 per cent); 77 per cent also have other responsibilities (EU 84 per cent), most commonly running the school website
- Only 35 per cent teach ICT (EU 46 per cent), 27 per cent Science or mathematics (mean 23 per cent) and 38 per cent other subjects (EU 32 per cent)
- 81 per cent have an ICT qualification (EU 60 per cent), among the highest of all countries surveyed
- More IT Administrators than EU means have had no training at all (49 per cent, EU mean 38 per cent) and the average IT Administrator has had less training of any type (fig. 51)

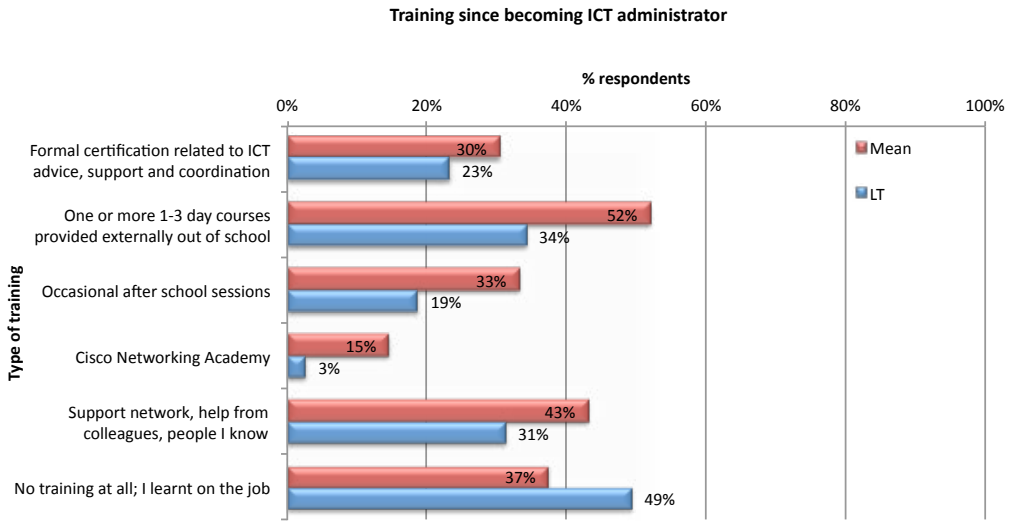

Figure 51 Training undergone: Lithuania compared to EU mean

- In a typical week most time is spent on technical support to staff and technical issues and managing the school web site

IT Administrators' challenges and training needs

- 41 per cent are likely or very likely to be interested in EU-wide online training in English (EU 52 per cent), 89 per cent in their own language, with colleagues in their country (EU 80 per cent)
- The most mentioned challenges, in rank order, are security, central services deployment, and network operation
- The most mentioned training needs are (in order): new tools and products, security, cloud computing

Free text comments of note:

- *Courses should be held for the native language and according to the type of school (e.g. Gymnasium, the main year-School, Kindergarten)*
- *In schools it is important ICT consultants acquaintance with educational programs in order to adapt learning computers with the latest software and take full advantage of opportunities.*
- *Often deal with the old (outdated) equipment which is necessary updates from the technical side*

Malta

There were 64 respondents to the Maltese version of the survey, of whom 10 provided email addresses.

The typical school

- 89 per cent of respondents are in schools with 201-1000 students (EU mean on this measure: 66 per cent)
- 84 per cent are in schools with 11-50 classrooms (EU mean: 73 per cent)
- 70 per cent are in secondary schools where students leave aged 14-16 (EU: 35 per cent)

The school's technology infrastructure

- 67 per cent are in schools with fewer than 100 computers / tablets (EU: 47 per cent)
- 98 per cent are in schools using the Windows Operating System (EU 97 per cent), very few having any other OS
- 51 per cent are in schools with up to 10-50 network access points (EU 34 per cent)
- 48 per cent are in schools with fewer than 10 switches and routers (EU 50 per cent)
- 23 per cent are in schools with less than 10 per cent wifi classrooms (EU 28 per cent), conversely 26 per cent are in schools with wifi in more than three-quarters of classrooms (EU 37 per cent)
- 73 per cent are in schools with under 100 connected devices (EU 53 per cent)
- Lower proportions of respondents than the EU average are responsible for identity management, directory services and communication and collaboration tools (fig. 52).

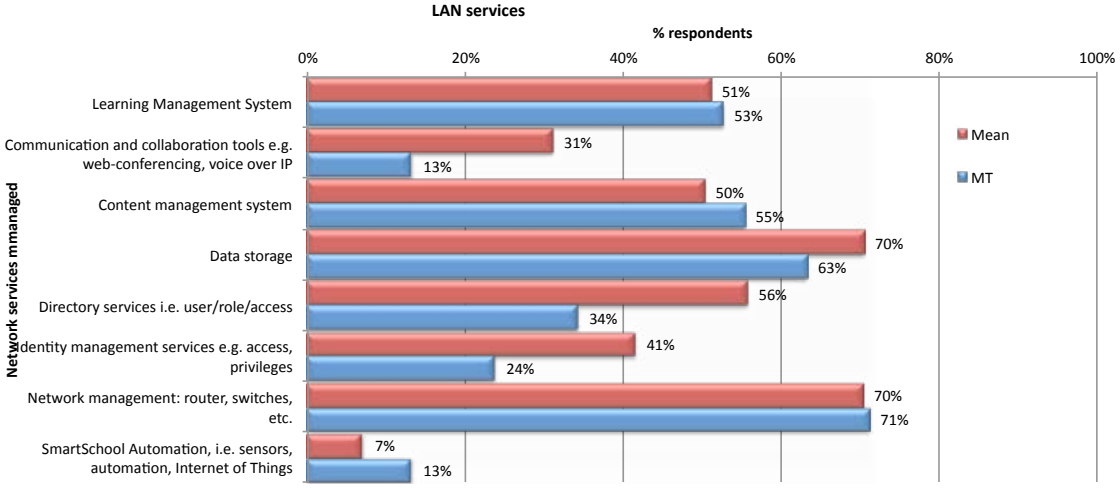

Figure 52 Network services provided: Maltese answers compared to the EU mean

- 58 per cent are in schools where these services are hosted locally at the school (EU 61 per cent)

- 72 per cent are in schools where students and teachers may bring their own devices (EU 75 per cent); only 9 per cent are in schools providing services for such devices (EU 38 per cent)
- The average IT Administrator has slightly lower levels than average of autonomy as regards providing internet access, purchasing equipment and operating the school LAN

Profile of the IT Administrator

- 87 per cent of respondents have teaching duties as well as IT management (EU 89 per cent); 79 per cent also have other responsibilities (EU 84 per cent), most commonly support for colleagues and managing a computer lab
- 85 per cent teach ICT (EU 46 per cent), none Science or mathematics (mean 23 per cent) and 15 per cent other subjects (EU 32 per cent)
- 43 per cent have an ICT qualification (EU 60 per cent)
- More IT Administrators than EU means have had training after school and out of school and received formal certification (fig. 53), but there is generally less peer networking
- In a typical week most time is spent on work not related to IT management and technical support to staff

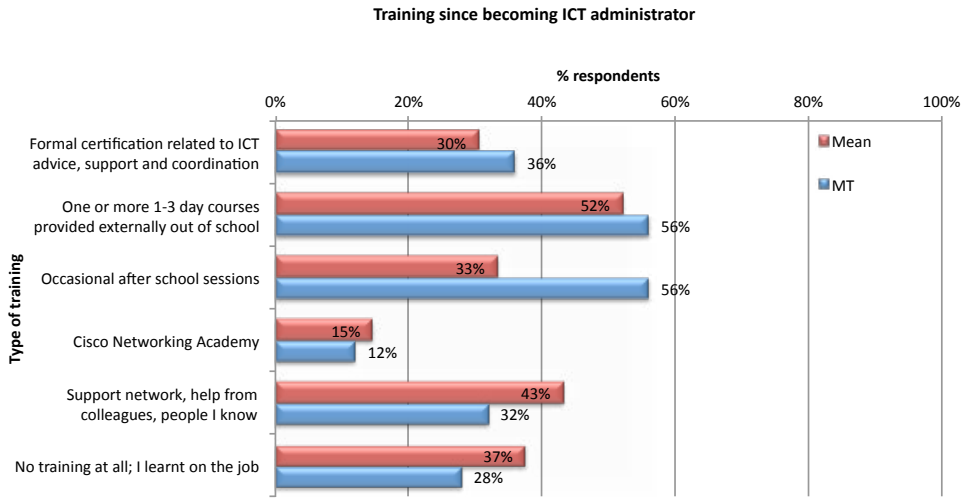

Figure 53 Training undergone: Malta compared to EU mean

IT Administrators' challenges and training needs

- 64 per cent are likely or very likely to be interested in EU-wide online training in English (EU 52 per cent), 55 per cent in their own language, with colleagues in their country (EU 80 per cent)
- The most mentioned challenges, in rank order, are staff support, managing the learning management system and network operation
- The most mentioned training needs are (in order): BYOD, cloud computing, and new tools and products

Norway

There were 246 respondents to the Norwegian version of the survey, of whom 58 provided email addresses.

The typical school

- 66 per cent of respondents are in schools with 201-1000 students (EU mean on this measure: 66 per cent)
- 74 per cent are in schools with 11-50 classrooms (EU mean: 73 per cent)
- 57 per cent are in schools where students leave aged under 13 (EU: 18 per cent)

The school's technology infrastructure

- 62 per cent are in schools with 100-500 computers / tablets (EU: 42 per cent)
- 99 per cent are in schools using the Windows Operating System (EU 97 per cent)
- 46 per cent are in schools with more than 100 network access points (EU 26 per cent); 78 per cent are in schools with fewer than 25 switches and routers (EU 82 per cent)
- 88 per cent are in schools in which at least 75 per cent of classrooms have wifi (EU 36 per cent)
- 54 per cent are in schools with up to 100 connected devices (EU 39 per cent)
- Higher proportions of respondents than the EU average are responsible for all types of LAN services except content management and SmartSchool automation (fig. 54).
- 42 per cent are in schools where these services are hosted locally at the school (EU 61 per cent), most hosted externally

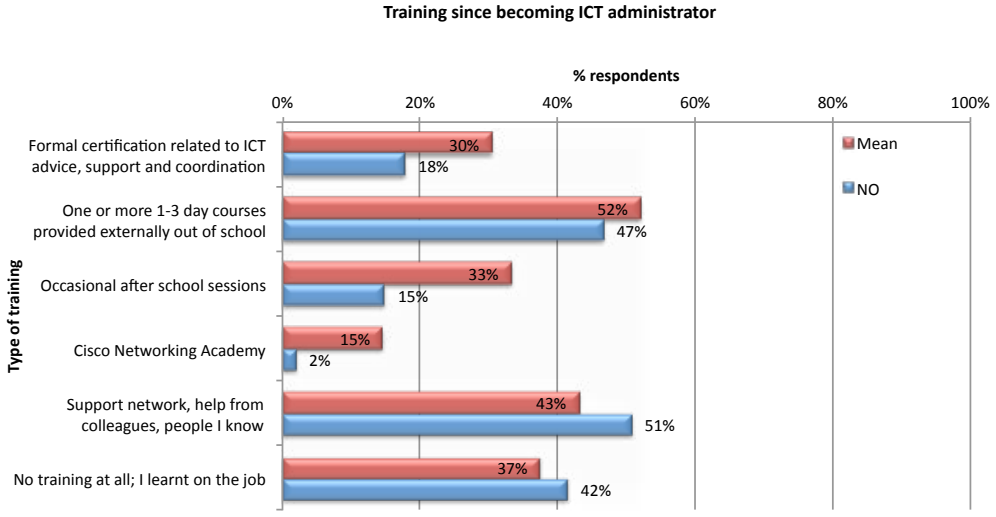

Figure 54 Network services provided: Norwegian answers compared to the EU mean

- 76 per cent are in schools where students and teachers may bring their own devices (EU 75 per cent), 35 per cent are in schools providing services for such devices (EU 38 per cent)
- IT Administrators typically have lower levels of autonomy, in providing internet access (19 per cent compared to the EU mean of 62 per cent), and operating the LAN (38 per cent, EU 74 per cent)

Profile of the IT Administrator

- 76 per cent of respondents have teaching duties as well as IT management (EU 89 per cent); 78 per cent also have other responsibilities (EU 84 per cent), most commonly support to colleagues
- Only 13 per cent teach ICT (EU 46 per cent), 66 per cent other subjects or general teaching (EU 32 per cent)
- 54 per cent have an ICT qualification (EU 60 per cent)
- More IT Administrators than EU means have had no training at all and more rely on a support network (fig. 55)

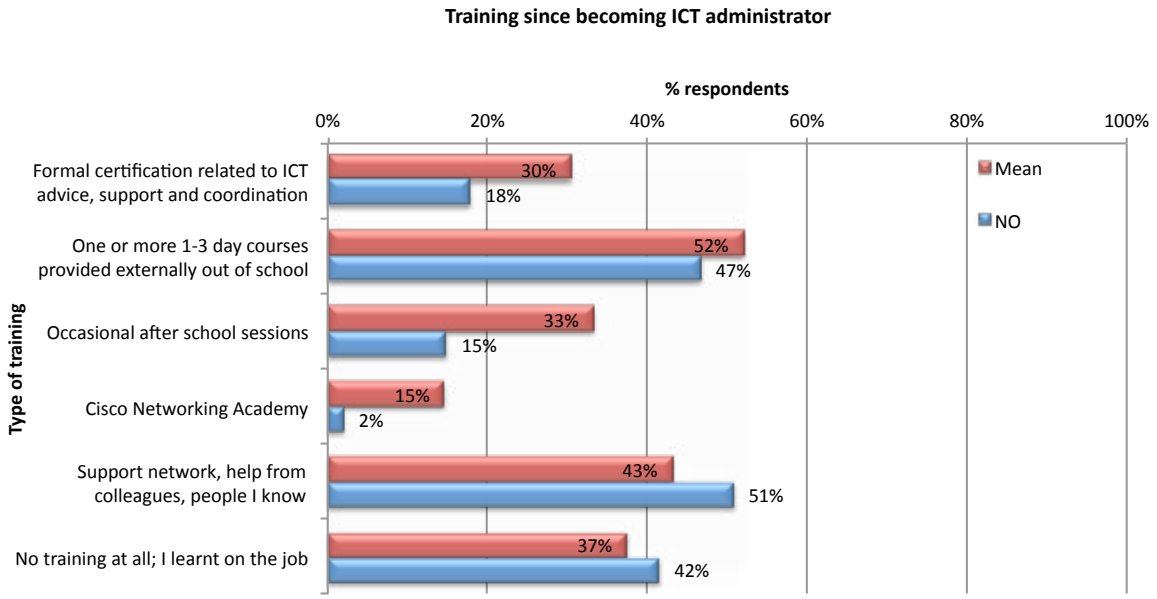

Figure 55 Training undergone: Norway compared to EU mean

- In a typical week most time is spent on technical support to staff, duties not related to the IT Administrator role (e.g. teaching), and network maintenance

IT Administrators' challenges and training needs

- 40 per cent are likely or very likely to be interested in EU-wide online training in English (EU 52 per cent), 69 per cent in their own language, with colleagues in their country (EU 80 per cent)
- The most mentioned challenges, in rank order, are pedagogical and ICT staff support and development, followed by new tools and services
- The highest ranked training needs are (in order): new tools and services, staff development in the pedagogical use of ICT and cloud computing

Free text comments of note:

- *My job, as it is today, is providing technical support to the students first and foremost. That's where the challenges lie regarding use and hardware.*
- *There is a need to carry out development in the use of ICT in schools. This must be done by teachers with adequate technical knowledge. This is difficult in a school where professional development rarely takes with ICT. Professional development is such training in the subject English. ICT is little addressed in teacher education. It is assumed that you use ICT without meeting competence requirements.*
- *My role requires more time. It's under two hours a week.*
- *Timing: there is never enough time to work; I'm always in arrears.*
- *I have 4 hours as ICT Coordinator, 4 hours for school library work*
- *My work has changed fundamentally in recent weeks, after we moved to 1: 1 with tablets for all students and teachers. This means that I can finally focus on the educational use of tools instead of repairing old kit.*
- *Give me ONE place where I can look for / read the news to the theme of ICT in schools. Certainly an RSS page with filtering and search capabilities.*

Poland

There were 145 Polish respondents to the survey, of whom 30 provided email address.

The typical school

- 72 per cent of respondents are in schools with 201-1000 students (EU mean on this measure: 66 per cent)
- 60 per cent are in schools with 11-50 classrooms (EU mean: 73 per cent)
- 72 per cent are in secondary schools where students leave aged at least 14 (EU: 85 per cent)

The school's technology infrastructure

- 75 per cent are in schools with fewer than 100 computers / tablets (EU: 50 per cent)
- 99 per cent are in schools using the Windows Operating System (EU 97 per cent), but in 34 per cent of cases Linux is also present (EU 23 per cent). In 25 per cent of schools the Mac OS is present (EU 19 per cent)
- 45 per cent are in schools with fewer than 10 network access points (EU 24 per cent)
- 65 per cent are in schools with fewer than10 switches and routers (EU 32 per cent)
- 23 per cent are in schools in which at least 75 per cent of classrooms have wifi (EU 36 per cent), but 34 per cent are in schools with fewer than 10 per cent wifi-connected classrooms (EU 28 per cent)
- 45 per cent are in schools with 50-100 devices networked by wire or wifi (EU 23 per cent)
- More respondents than the EU average are responsible for SmartSchool Automation and network management, but fewer on other indicators (fig. 56).

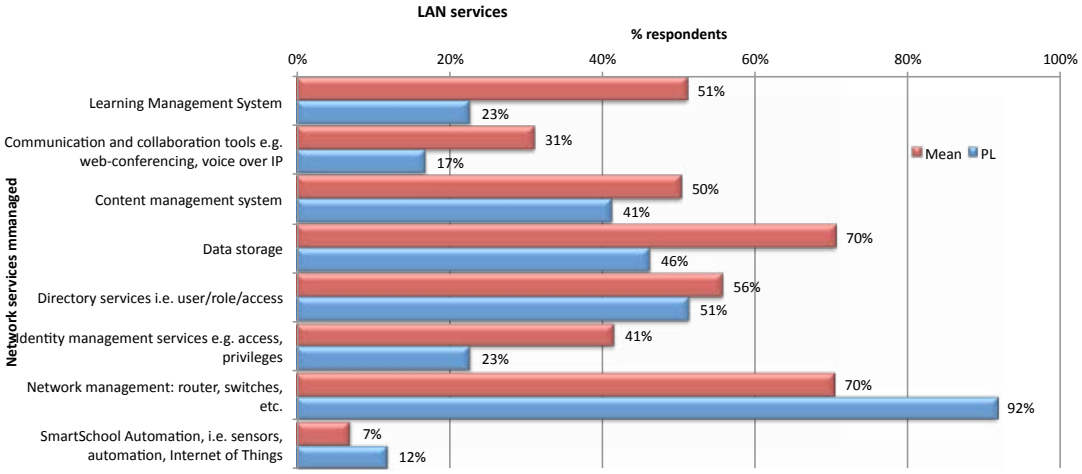

Figure 56: Network services provided: Poland compared to the EU mean

- 56 per cent are in schools where these services are hosted locally at the school (EU 61 per cent)
- 70 per cent are in schools where students and teachers may bring their own devices (EU 75 per cent); 36 per cent are in schools providing services for such devices (EU 38 per cent)
- On all three indicators of school autonomy (providing connectivity 87 per cent, purchasing equipment 92 per cent, operating the school network 97 per cent), Poland scores well above the EU mean (62 per cent, 79 per cent, 74 per cent respectively).

The profile of the IT Administrator

- 95 per cent of respondents have teaching duties as well as IT management (EU 89 per cent); 88 per cent have other responsibilities (EU 84 per cent), most commonly managing a computer lab 46 per cent, compared to EU mean of 21 per cent
- 70 per cent teach ICT (EU 46 per cent), 14 per cent science or mathematics (EU 23 per cent)
- 80 per cent have an ICT qualification (EU 60 per cent)
- IT Administrators have had more peer support, Cisco Networking Academy training, external off-site courses than the EU mean; fewer learnt on the job, after school or on formal courses (fig. 57).

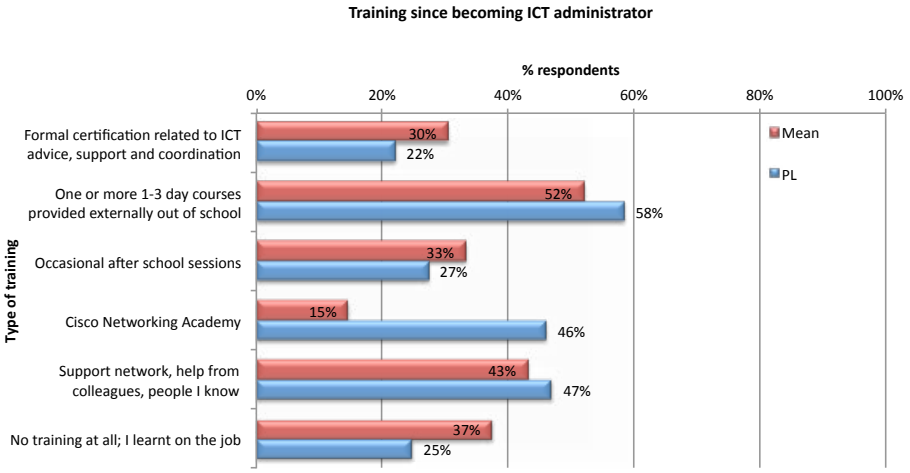

Figure 57: Training undergone: Poland compared to EU mean

- In a typical week most time is spent on duties not related to the IT Administrator role (e.g. teaching) and technical issues / network operation, followed by technical advice and support for teachers.

IT Administrators' challenges and training needs

- 30 per cent are likely or very likely to be interested in online training in English (EU 52 per cent), 87 per cent in their own language (EU 80 per cent)
- The most mentioned challenges are security, BYOD management, IT management, staff support and development.
- The most mentioned training needs are (in order): network operations, security, operation of learning management system, new tools and services, and software installation and management.

Free text comments of note:

- *The greatest ills in my school are: aging computer equipment (computers are over 8 years old!), The need to provide computers in every classroom (for the teacher) and multimedia devices (at least projector); lack of access to the network in some rooms (no LAN or wifi connection); more and more duties as a teacher of computer science (of course made socially).*
- *Instead of training needs, the analysis should take care of and push the establishment of an independent technical / IT technician in each school. Too many computers and hardware, too little time. ICT teacher is to teach and not to service, install and repair. For 15 years I have been fighting for this but without success as the role implies financing an additional post in each school. The only possibility of achieving this NECESSARY idea is to have support and recommendation or directly from an open letter signed by big players such as European Schoolnet.*
- *The level of preparation of early childhood education teachers to conduct computer classes in grades 1-3 is disastrously low.*

Portugal

There were 140 respondents to the Portuguese version of the survey, of whom 65 provided email addresses.

The typical school

- 50 per cent of respondents are in schools with 201-1000 students (EU mean on this measure: 66 per cent), and 45 per cent are in schools with over 1000 students (EU only 16 per cent); very few are in schools with young learners
- 62 per cent are in schools with 11-50 classrooms (EU mean: 73 per cent), and 36 per cent in schools with more than 50 classrooms, well above the EU mean of 16 per cent; only 3 per cent are in small schools with fewer than ten classrooms
- 70 per cent are in schools where students leave aged over 16 (EU: 50 per cent)

The school's technology infrastructure

- 72 per cent are in schools with 50-250 computers / tablets (EU: 56 per cent), 23 per cent have more than 250 (EU 20 per cent)
- Every IT Administrator responding is in a school using the Windows Operating System (EU 97 per cent) but 49 per cent also run the Linux OS (EU 23 per cent)
- 45 per cent are in schools with more than 100 network access points (EU 26 per cent); 78 per cent are in schools with fewer than 25 switches and routers (EU 82 per cent)
- 46 per cent are in schools in which at least 75 per cent of classrooms have wifi (EU 36 per cent)
- 59 per cent are in schools with 50-250 connected devices (EU 53 per cent)
- Higher proportions of respondents than the EU average are responsible for all types of LAN services except communication and collaboration tools (fig. 58).

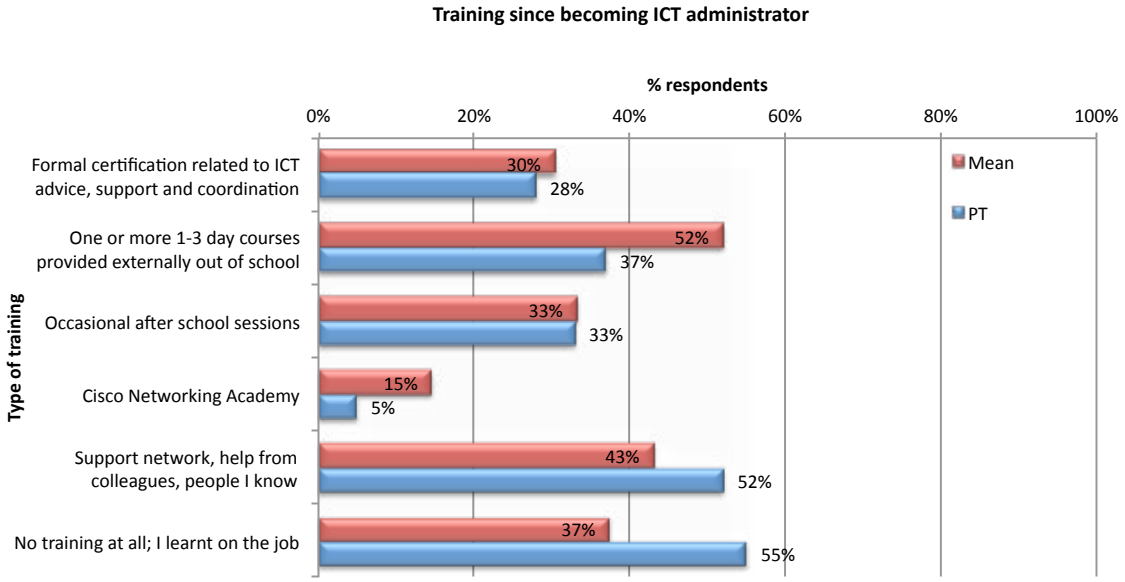

Figure 58 Network services provided: Portuguese answers compared to the EU mean

- 60 per cent are in schools where these services are hosted locally at the school (EU 61 per cent)
- 94 per cent are in schools where students and teachers may bring their own devices (EU 75 per cent), 65 per cent are in schools providing services for such devices (EU 38 per cent)
- IT Administrators typically have lower levels of autonomy, particularly in providing internet access (33 per cent compared to the EU mean of 62 per cent), but also in operating the LAN (66 per cent, EU 74 per cent) and IT purchasing (65 per cent, EU 79 per cent)

Profile of the IT Administrator

- 97 per cent of respondents have teaching duties as well as IT management (EU 89 per cent); 93 per cent also have other responsibilities (EU 84 per cent), most commonly managing a web site and computer lab, but also support to colleagues
- 70 per cent teach ICT (EU 46 per cent), 22 per cent other subjects or general teaching (EU 32 per cent)
- 70 per cent have an ICT qualification (EU 60 per cent)
- More IT Administrators than EU means have had no training at all and more rely on a support network (fig. 59), and fewer than average have had any other type of training

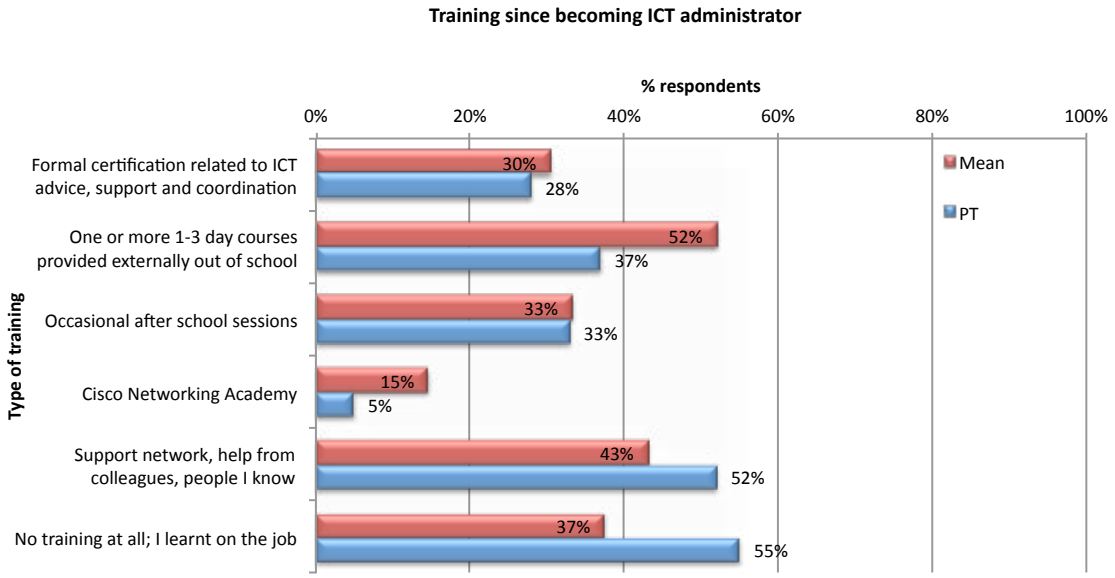

Figure 59 Training undergone: Portugal compared to EU mean

- In a typical week most time is spent on duties not related to the IT Administrator role (e.g. teaching), network maintenance and providing technical support to staff

IT Administrators' challenges and training needs

- A high 74 per cent of IT Administrators are likely or very likely to be interested in EU-wide online training in English (EU 52 per cent), 89 per cent in their own language, with colleagues in their country (EU 80 per cent)
- The most mentioned challenges, in rank order, are hardware and software installation and management, central services deployment, followed by security
- The highest ranked training needs are (in order): security, network operations, central services deployment and new tools and services

Free text comments of note:

- *It does not seem reasonable to expect that schools will have some quality of service in the field of IT, if this is done only in the context of non-teaching component of teachers.*
- *We lack a certified or uncertified training internationally recognized Microsoft or Cisco type. At the hardware level, I also believe that we lack other certifications, such as certifications in EPSON and HP equipment.*
- *The vast majority of schools do not give sufficient time to the management of ICT. In schools, like mine, with large IT networks, it is impossible to work well with 4, 5 or 6 hours per week for the position of IT Administrator.*

Romania

There were only 24 respondents to the Romanian version of the survey, of whom nine provided email addresses. This low response (the average was 180) means that the results for Romania should be interpreted with caution.

The typical school

- 57 per cent of respondents are in schools with 201-1000 students (EU mean on this measure: 66 per cent), and 45 per cent are in schools with over 1000 students (EU only 16 per cent)
- 71 per cent are in schools with 11-50 classrooms (EU mean: 73 per cent),
- 52 per cent are in schools where students leave aged over 16 (EU: 50 per cent)

The school's technology infrastructure

- 52 per cent are in schools with 50-100 computers / tablets (EU: 56 per cent), 48 per cent have fewer than 50 (EU 23 per cent)
- Every IT Administrator responding is in a school using the Windows Operating System (EU 97 per cent)
- 44 per cent are in schools with fewer than 10 network access points (EU 24 per cent); 88 per cent are in schools with fewer than 10 switches and routers (EU 50 per cent)
- 44 per cent are in schools in which under 10 per cent of classrooms have wifi (EU 28 per cent)
- 56 per cent are in schools with fewer than 50 connected devices (EU 26 per cent)
- Higher proportions of respondents than the EU average are responsible for SmartSchool Automation, data storage, communication tools and LMS (fig. 60).

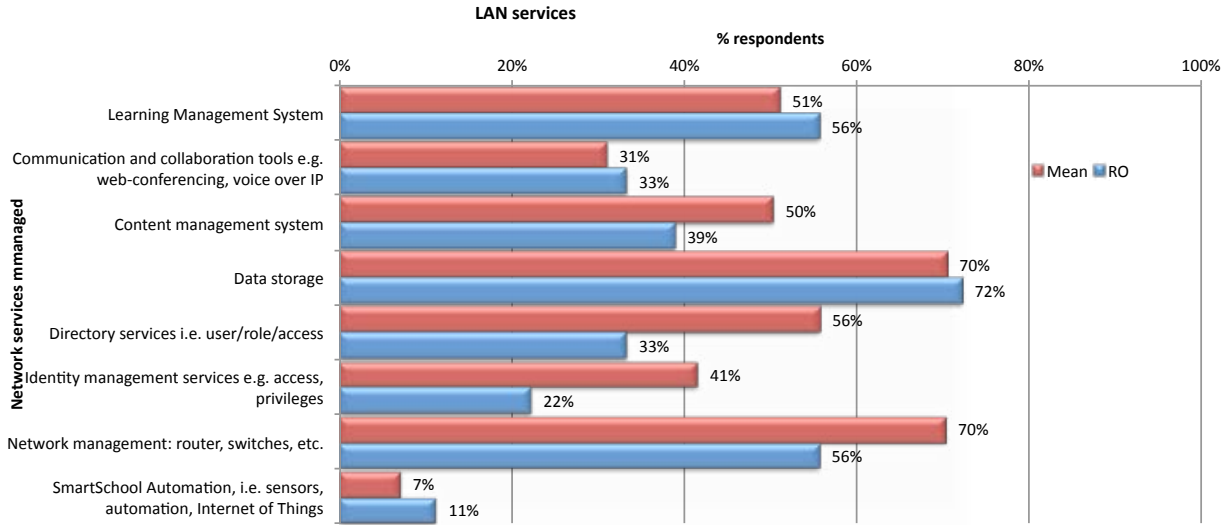

Figure 60 Network services provided: Romanian answers compared to the EU mean

- 89 per cent are in schools where these services are hosted locally at the school (EU 61 per cent)
- A high 90 per cent of IT Administrators are in schools where students and teachers may bring their own devices (EU 75 per cent), 37 per cent are in schools providing services for such devices (EU 38 per cent)

- IT Administrators typically have the highest levels of autonomy in choosing internet supplier of all countries in the survey (95 per cent compared to the EU mean of 62 per cent), but less in equipment purchasing decisions (67 per cent, EU 79 per cent)

Profile of the IT Administrator

- 94 per cent of respondents have teaching duties as well as IT management (EU 89 per cent); 75 per cent also have other responsibilities (EU 84 per cent), most commonly managing a computer lab, but also support for eTwinning projects
- 47 per cent teach ICT (EU 46 per cent), 35 per cent other subjects or general teaching (EU 32 per cent)
- 94 per cent have an ICT qualification (EU 60 per cent), the highest proportion of all countries surveyed
- More IT Administrators than EU means have had Cisco Networking Academy training and out of school courses leading to formal certification (fig. 61)

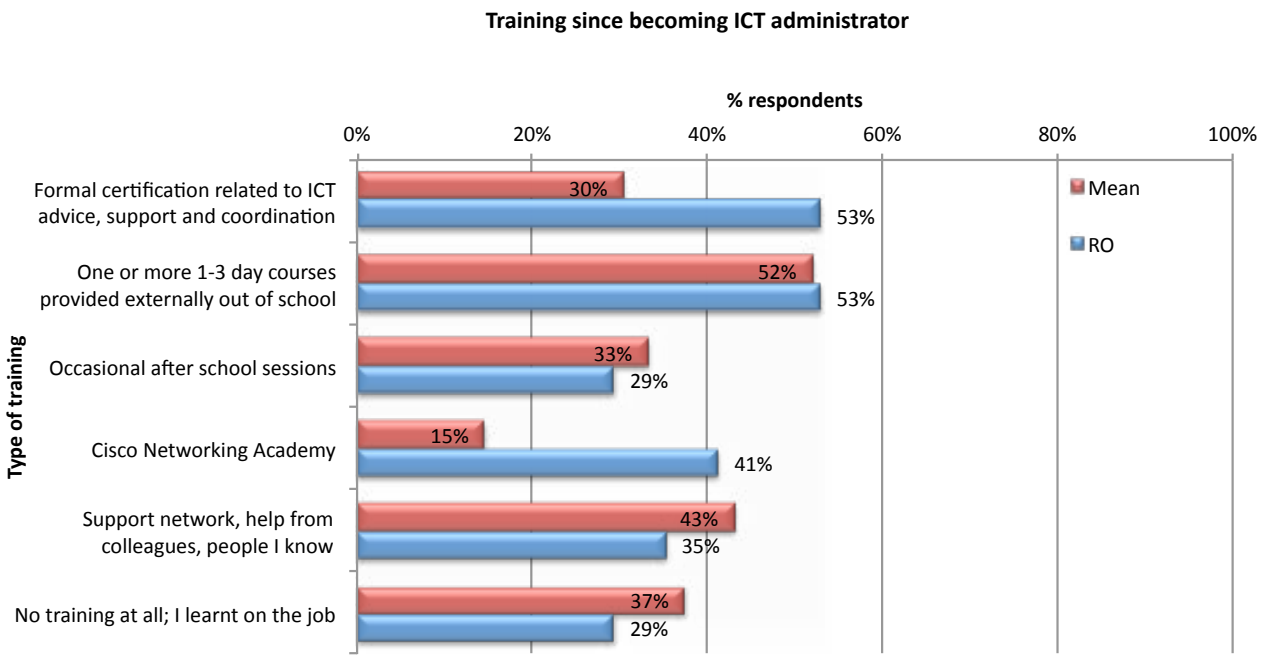

Figure 61 Training undergone: Romania compared to EU mean

- In a typical week most time is spent on duties not related to the IT Administrator role (e.g. teaching) and providing technical support to staff

IT Administrators' challenges and training needs

- A high 74 per cent of IT Administrators are likely or very likely to be interested in EU-wide online training in English (EU 52 per cent), 89 per cent in their own language, with colleagues in their country (EU 80 per cent)
- The most mentioned challenges, in rank order, are new tools and services, cloud computing, security and interoperability of resources
- The highest ranked training needs are mainly of a technical nature (in order): hardware and software management and security

Slovakia

There were 528 respondents to the Slovakian version of the survey, the highest of all countries participating in the survey. 76 provided email addresses.

The typical school

- 62 per cent of respondents are in schools with 201-1000 students (EU mean on this measure: 66 per cent)
- 68 per cent are in schools with 11-50 classrooms (EU mean: 73 per cent),
- 62 per cent are in schools where students leave aged 14-16 (EU: 35 per cent)

The school's technology infrastructure

- 76 per cent are in schools with fewer than 100 computers / tablets (EU: 50 per cent)
- Every IT Administrator responding is in a school using the Windows Operating System (EU 97 per cent)
- 66 per cent are in schools with fewer than 10 network access points (EU 24 per cent); 62 per cent are in schools with fewer than 10 switches and routers (EU 50 per cent)
- Although 28 per cent are in schools in which over 75 per cent of classrooms have wifi (EU 37 per cent), 29 per cent are in schools where fewer than 10 per cent of classrooms have wifi (EU 28 per cent)
- 41 per cent are in schools with fewer than 50 connected devices (EU 26 per cent)
- Slightly lower proportions of respondents than the EU average are responsible for most services (fig. 62).

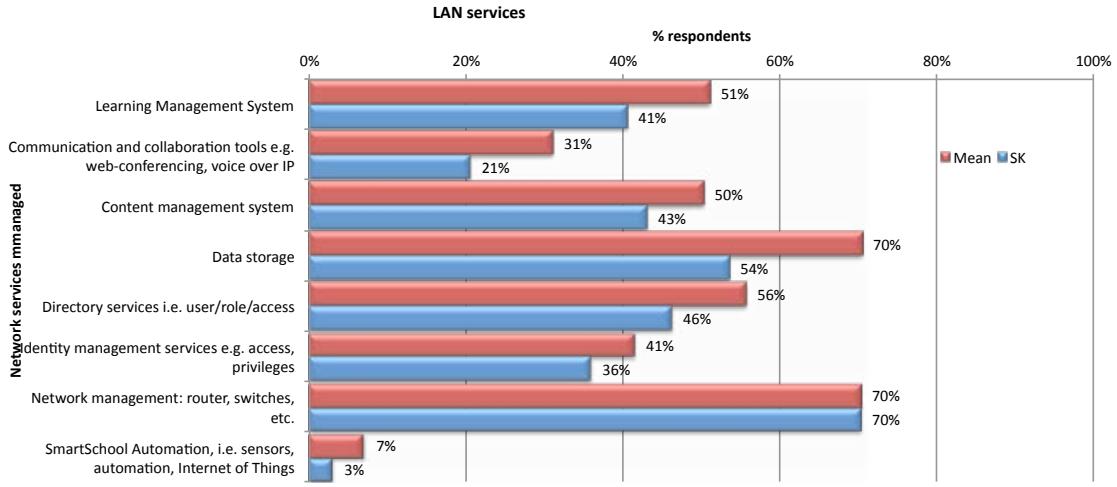

Figure 62 Network services provided: Slovakian answers compared to the EU mean

- 90 per cent are in schools where these services are hosted locally at the school (EU 61 per cent)
- 73 per cent of IT Administrators are in schools where students and teachers may bring their own devices (EU 75 per cent), 33 per cent are in schools providing services for such devices (EU 38 per cent)
- IT Administrators typically have higher levels of autonomy than other countries in choosing equipment (90 per cent compared to the EU mean of 79 per cent), and network operations (91 per cent, EU 74 per cent) but slightly more in connectivity provision (65 per cent, EU 62 per cent)

Profile of the IT Administrator

- 95 per cent of respondents have teaching duties as well as IT management (EU 89 per cent); 97 per cent also have other responsibilities (EU 84 per cent), most commonly support for colleagues and running a web site
- 42 per cent teach ICT (EU 46 per cent), 38 per cent science or mathematics (EU 23 per cent)
- 64 per cent have an ICT qualification (EU 60 per cent)
- Slightly more IT Administrators than EU means have had no training at all, but more have obtained formal certification (fig. 63)
- In a typical week most time is spent on duties not related to the IT Administrator role (e.g. teaching) and technical issues

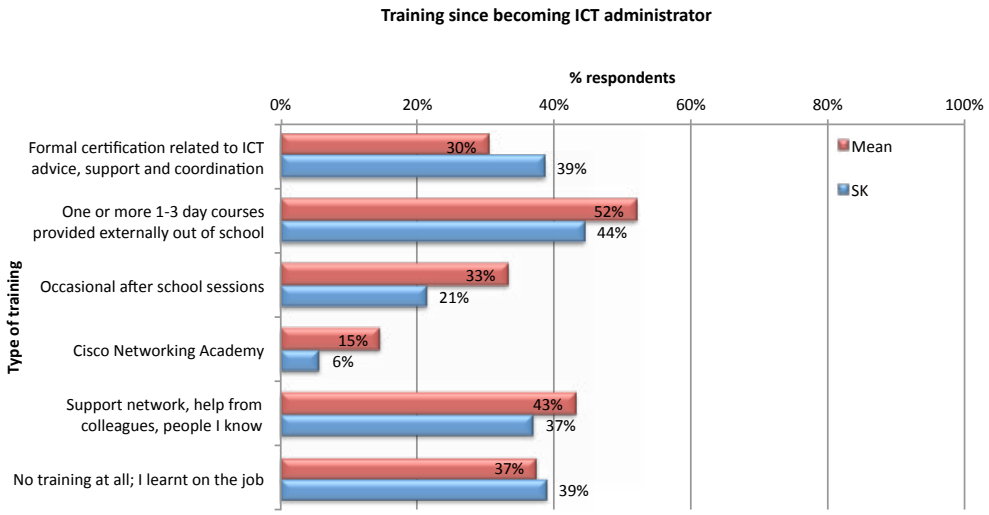

Figure 63 Training undergone: Slovakia compared to EU mean

IT Administrators' challenges and training needs

- A low 18 per cent of IT Administrators are likely or very likely to be interested in EU-wide online training in English (EU 52 per cent), but 75 per cent in their own language, with colleagues in their country (EU 80 per cent)
- The most mentioned challenges, in rank order, are new tools and services, security and hardware and software management
- The highest ranked training needs are (in order): new tools and services, network operations and security

Free text comments of note:

- *It would be good to create a central European team of teachers from schools or some platform where it will go directly to teachers, not private companies, non-profit organizations, say special laboratories, where they prepared a new regular training for teachers*
- *It is quite difficult, if in addition to full-time teaching, to be expected to be in charge of a server, a computer network 20 tablets, 60 old computers and laptops for 5 per cent of the salary of supposedly IT professionals*
- *IT Administrators are excluded from many training courses and the validation of competences because of majoring in computer science. Nobody considers the fact that since leaving school plenty of time has passed and that you can't educate yourself.*
- *I am a teacher with 23 hours a week teaching workload and I am responsible for everything about computers, networks and the like. Obsolete computer equipment (computers older than 7 years), Windows Vista regular fails.*
- It is necessary to create a post as administrator at each school and pay him accordingly, the current situation is intolerable and complicated.

Slovenia

There were 144 respondents to the Slovenian version of the survey, of whom 31 provided email addresses.

The typical school

- 76 per cent of respondents are in schools with 201-1000 students (EU mean on this measure: 66 per cent)
- 87 per cent are in schools with 11-50 classrooms (EU mean: 73 per cent),
- 80 per cent are in schools where students leave aged 14-16 (EU: 35 per cent)

The school's technology infrastructure

- 49 per cent are in schools with 50-100 computers / tablets (EU: 50 per cent), and a similar percentage are in schools where these computers are networked (EU 28 per cent)
- 99 per cent are in a school using the Windows Operating System (EU 97 per cent)
- 41 per cent are in schools with fewer than 25 network access points (EU 42 per cent); 64 per cent are in schools with fewer than 10 switches and routers (EU 50 per cent)
- 48 per cent are in schools in which over 75 per cent of classrooms have wifi (EU 37 per cent)
- Slightly higher proportions of respondents than the EU average are responsible for identity and content management services, data storage, and communication tools (fig. 64).

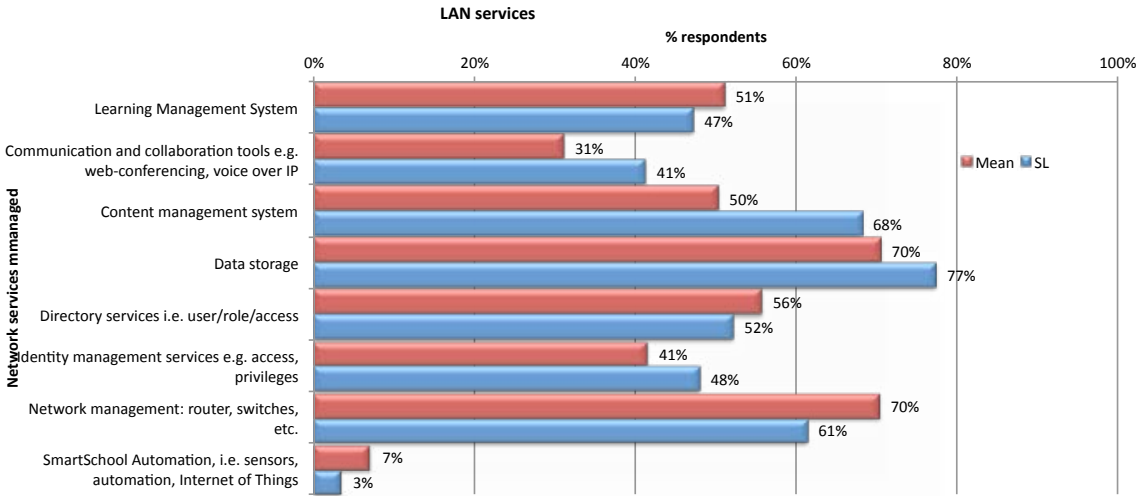

Figure 64 Network services provided: Slovenian answers compared to the EU mean

- 66 per cent are in schools where these services are hosted externally (EU 40 per cent), second only to Finland in this regard
- 78 per cent of IT Administrators are in schools where students and teachers may bring their own devices (EU 75 per cent), 29 per cent are in schools providing services for such devices (EU 38 per cent)
- IT Administrators typically have among the highest levels of autonomy compared to other countries in connectivity provision (93 per cent, EU 62 per cent), purchasing equipment (94 per cent compared to the EU mean of 79 per cent), and network operations (98 per cent, EU 74 per cent)

Profile of the IT Administrator

- 96 per cent of respondents have teaching duties as well as IT management (EU 89 per cent); 94 per cent also have other responsibilities (EU 84 per cent), most commonly support for colleagues and running a web site
- 40 per cent teach ICT (EU 46 per cent), 49 per cent science or mathematics (EU 23 per cent)
- 72 per cent have an ICT qualification (EU 60 per cent)
- More IT Administrators than EU means make use of peer support networks, after school and out of school training and formal certification (fig. 65); Slovenia has the lowest percentage of IT Administrators who have had not training at all.

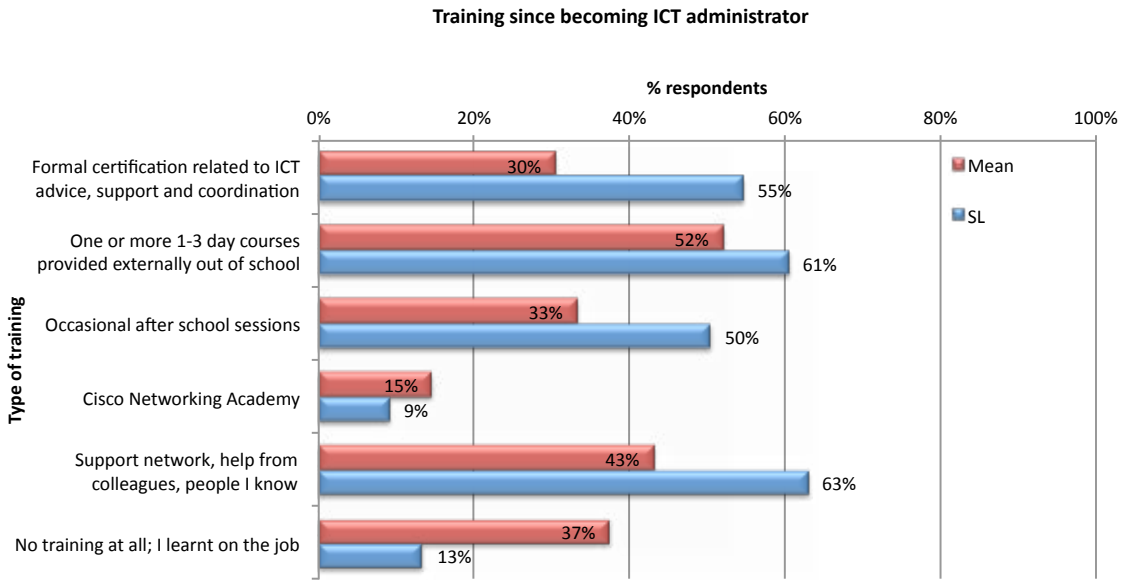

Figure 65 Training undergone: Slovenia compared to EU mean

- In a typical week most time is spent on duties not related to the IT Administrator role (e.g. teaching), technical issues, and pedagogical ICT support

IT Administrators' challenges and training needs

- 62 per cent of IT Administrators are likely or very likely to be interested in EU-wide online training in English (EU 52 per cent), and 91 per cent in their own language, with colleagues in their country (EU 80 per cent)
- The most mentioned challenges, in rank order, are security, central services deployment, and new tools and services
- The highest ranked training needs are (in order): new tools and services, security and central services deployment

Free text comments of note:

- *For 55 per cent of my work commitment (22 hours per week) I am in charge and responsible for the operation of over 100 computers (average age 6 years), support over 50 professionals and 500 students*
- *It is a shame that we are in the information society, in which ICT permeates everything, but jobs are defined as of 20 years ago, when everything was still in its infancy*
- *I wish to add only this: it is high time to regulate the status of computer experts at the schools*

Spain

There were 190 respondents to the Spanish version of the survey, of whom 61 provided email addresses.

The typical school

- 59 per cent of respondents are in schools with 201-1000 students (EU mean on this measure: 66 per cent)
- 61 per cent are in schools with 11-50 classrooms (EU mean: 73 per cent),
- 82 per cent are in schools where students leave aged 16 or more (EU: 50 per cent)

The school's technology infrastructure

- 60 per cent are in schools with 100-500 computers / tablets (EU: 42 per cent), and a similar percentage are in schools where these computers are networked (EU 37 per cent)
- 98 per cent are in a school using the Windows Operating System (EU 97 per cent) but 69 per cent also run the Linux OS (EU 23 per cent), the highest of all countries surveyed
- 39 per cent are in schools with more than 100 network access points (EU 26 per cent); 61 per cent are in schools with 10-50 switches and routers (EU 44 per cent)
- 38 per cent are in schools in which over 75 per cent of classrooms have wifi (EU 37 per cent)
- Higher proportions of respondents than the EU average are responsible for most services, particularly learning management systems (fig. 66).

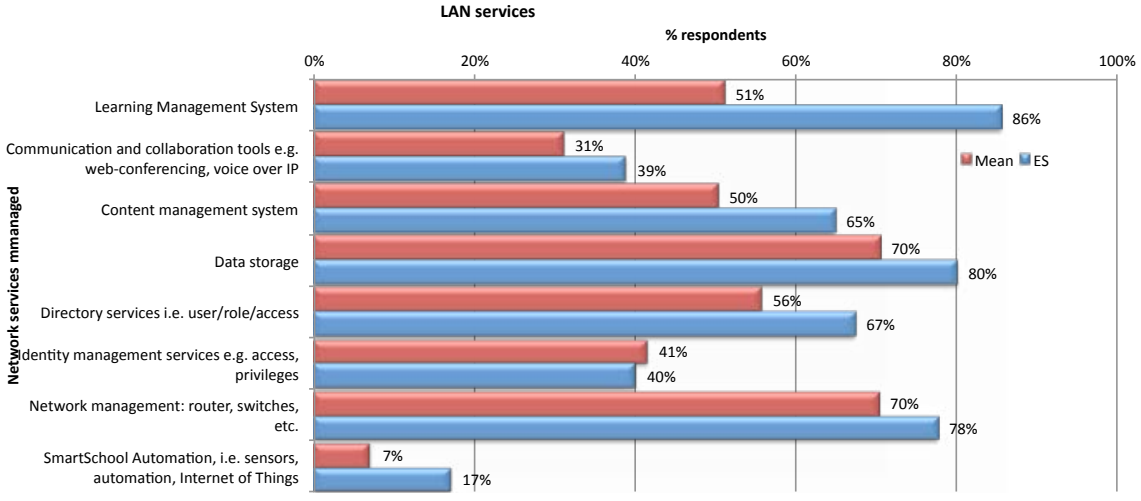

Figure 66 Network services provided: Spanish answers compared to the EU mean

- 57 per cent are in schools where these services are hosted externally (EU 40 per cent)
- 83 per cent of IT Administrators are in schools where students and teachers may bring their own devices (EU 75 per cent), 48 per cent are in schools providing services for such devices (EU 38 per cent)
- IT Administrators typically have among the highest levels of autonomy compared to other countries in connectivity provision (84 per cent, EU 62 per cent), purchasing equipment (91 per cent compared to the EU mean of 79 per cent), and network operations (90 per cent, EU 74 per cent)

Profile of the IT Administrator

- 96 per cent of respondents have teaching duties as well as IT management (EU 89 per cent); 84 per cent also have other responsibilities (EU 84 per cent), most commonly managing a computer lab and other non-IT management work
- 56 per cent teach ICT (EU 46 per cent)
- 87 per cent have an ICT qualification (EU 60 per cent)
- Considerably more IT Administrators than EU means have had Cisco Network Academy training and after-school sessions (fig. 67)

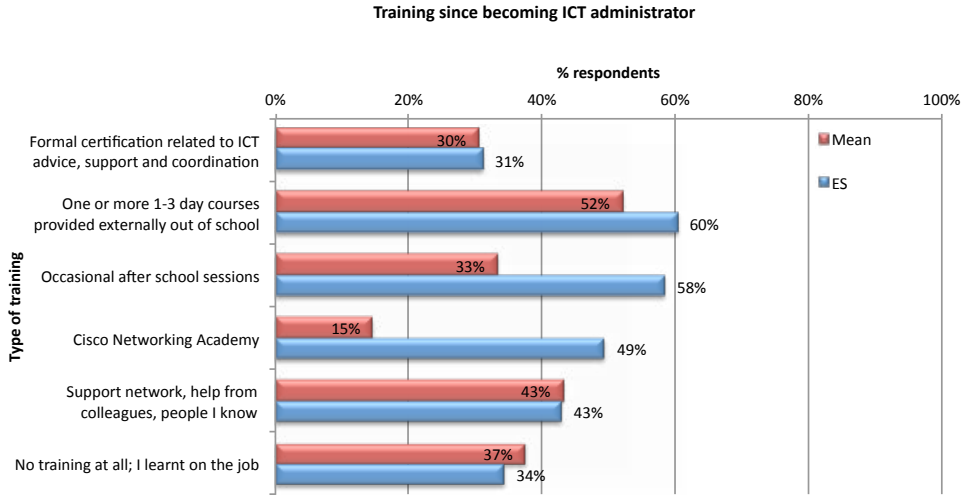

Figure 67 Training undergone: Spain compared to EU mean

- In a typical week most time is spent on duties not related to the IT Administrator role (e.g. teaching), technical issues, and technical support for teachers

IT Administrators' challenges and training needs

- 51 per cent of IT Administrators are likely or very likely to be interested in EU-wide online training in English (EU 52 per cent), and 88 per cent in their own language, with colleagues in their country (EU 80 per cent)
- The most mentioned challenges, in rank order, are pedagogical ICT support for staff, software management, security and cloud computing
- The highest ranked training needs are (in order): new tools and services, security and cloud computing

Free text comments of note:

- Need for online training and get certified to certify our students in areas such as CISCO Networking, Linux, ...
- Our main challenge would be to work the contents of school using new technological resources (tablets, ...) with the objective of achieving a more cooperative work and a comprehensive approach to teaching that bring us closer to a European context.

Sweden

There were 38 respondents to the Swedish version of the survey, of whom 13 provided email addresses. Results for Sweden should be interpreted with caution as the sample is relatively small.

The typical school

- 62 per cent of respondents are in schools with 201-1000 students (EU mean on this measure: 66 per cent)
- 54 per cent are in schools with 11-50 classrooms (EU mean: 73 per cent),
- 53 per cent are in schools where students leave aged 16 or more (EU: 50 per cent)

The school's technology infrastructure

- 50 per cent are in schools with more than 1000 computers / tablets (EU: 8 per cent), by far the highest of all participating countries, but only 15 per cent are in schools where more than 100 computers are networked (EU 3 per cent)
- 85 per cent are in a school using the Windows Operating System (EU 97 per cent) and 59 per cent run the Mac OS (EU 19 per cent), the second highest (to Denmark) of all countries surveyed
- 53 per cent are in schools with more than 100 network access points (EU 26 per cent); 42 per cent are in schools with fewer than 10 switches and routers (EU 50 per cent)
- 96 per cent are in schools in which over 75 per cent of classrooms have wifi (EU 37 per cent), the highest of all countries surveyed
- considerably higher proportions of respondents than the EU average are responsible for directory services and learning management systems (fig. 68).

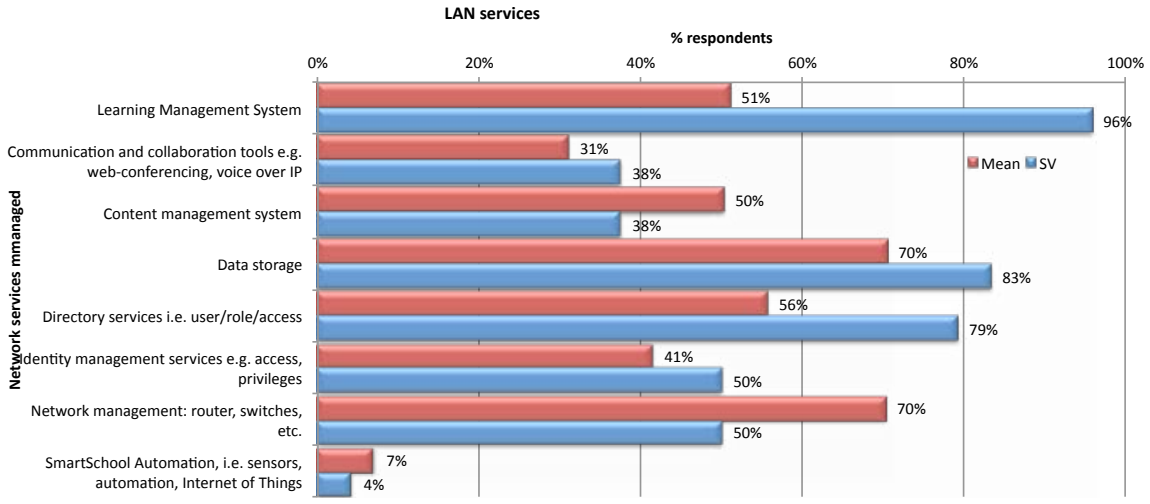

Figure 68 Network services provided: Swedish answers compared to the EU mean

- 57 per cent are in schools where these services are hosted externally (EU 40 per cent)
- 80 per cent of IT Administrators are in schools where students and teachers may bring their own devices (EU 75 per cent), 60 per cent are in schools providing services for such devices (EU 38 per cent)

- IT Administrators typically have lower levels of autonomy compared to other countries in network operations (28 per cent, EU 74 per cent) but higher for purchasing equipment (89 per cent, EU 79 per cent)

Profile of the IT Administrator

- 94 per cent of respondents have teaching duties as well as IT management (EU 89 per cent); 67 per cent also have other responsibilities (EU 84 per cent), overwhelmingly related to supporting other staff
- 29 per cent teach ICT (EU 46 per cent)
- 37 per cent have an ICT qualification (EU 60 per cent)
- More IT Administrators than EU means have had no training at all and less training than the mean on all measures is reported (fig. 69)

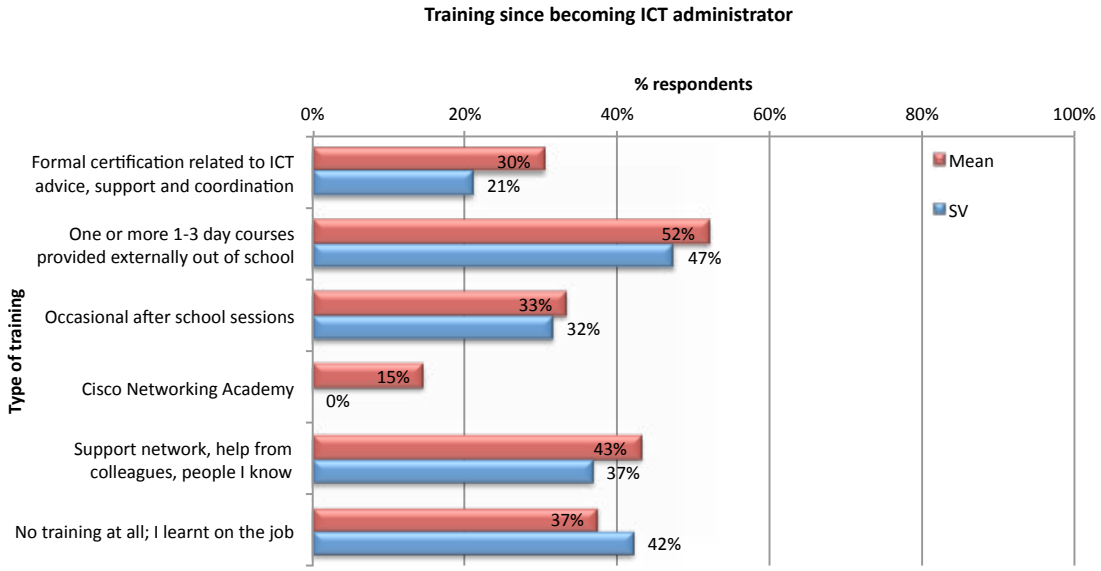

Figure 69 Training undergone: Sweden compared to EU mean

- In a typical week most time is spent on technical and pedagogical ICT support for teachers, relatively little on technical matters.

IT Administrators' challenges and training needs

- 61 per cent of IT Administrators are likely or very likely to be interested in EU-wide online training in English (EU 52 per cent), and 83 per cent in their own language, with colleagues in their country (EU 80 per cent)
- The most mentioned challenges, in rank order, are pedagogical and general ICT support for staff, management and new tools and services
- The highest ranked training needs are (in order): new tools and services, pedagogical ICT support for staff, and curriculum and assessment

Free text comments of note:

- *More didactics than technology!*
- *We are happy with in future projects where we can both be of use to others with our experiences and models we built up but also where we can be with and learn from others working on the same things.*

Turkey

There were 556 respondents to the Turkish version of the survey, the highest of all countries. 124 provided email addresses.

The typical school

- 62 per cent of respondents are in schools with 201-1000 students (EU mean on this measure: 66 per cent)
- 83 per cent are in schools with 11-50 classrooms (EU mean: 73 per cent)
- 46 per cent are in schools where students leave aged 14-16 (EU: 35 per cent), but 28 per cent are in primary schools where students leave aged 10 or under (EU 5 per cent)

The school's technology infrastructure

- 68 per cent are in schools with fewer than 50 computers / tablets (EU: 23 per cent) and 72 per cent are in schools with fewer than 50 connected devices (EU 26 per cent)
- 95 per cent are in a school using the Windows Operating System (EU 97 per cent)
- 69 per cent are in schools with fewer than 10 network access points (EU 24 per cent); 81 per cent are in schools with fewer than 10 switches and routers (EU 50 per cent)
- 56 per cent are in schools in which under 10 per cent of classrooms have wifi (EU 28 per cent)
- Lower proportions of respondents than the EU average are responsible for LAN services (fig. 70).

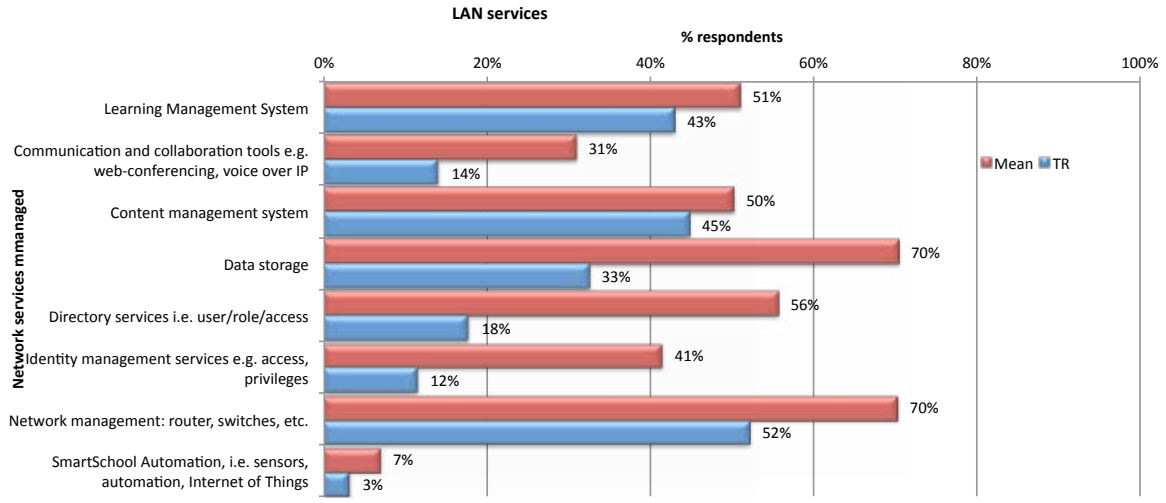

Figure 70 Network services provided: Turkish answers compared to the EU mean

- 84 per cent are in schools where these services are hosted locally at the school (EU 61 per cent)
- 74 per cent of IT Administrators are in schools where students and teachers may bring their own devices (EU 75 per cent), 25 per cent are in schools providing services for such devices (EU 38 per cent)
- IT Administrators have higher levels of autonomy than those other countries in choosing internet connectivity (68 per cent compared to the EU mean of 62 per cent), equipment purchasing decisions (67 per cent, EU 79 per cent) and operating the LAN (85 per cent, EU 74 per cent)

Profile of the IT Administrator

- 93 per cent of respondents have teaching duties as well as IT management (EU 89 per cent); 90 per cent also have other responsibilities (EU 84 per cent), most commonly managing a computer lab and a school web site
- 80 per cent teach ICT (EU 46 per cent)
- Only 14 per cent have an ICT qualification (EU 60 per cent), the lowest proportion of all countries surveyed
- More IT Administrators than EU have had no training since appointment and fewer have undertaken any type of training (fig. 71)

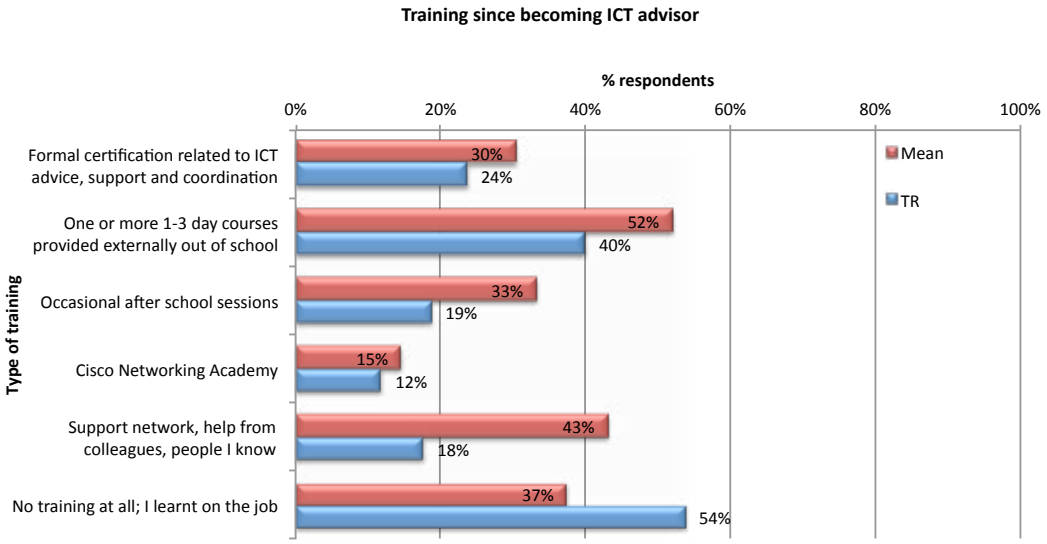

Figure 71 Training undergone: Turkey compared to EU mean

- In a typical week most time is spent on duties not related to the IT Administrator role (e.g. teaching) and providing technical support to staff

IT Administrators' challenges and training needs

- A high 87 per cent of IT Administrators are likely or very likely to be interested in EU-wide online training in English (EU 52 per cent), higher than any other participating country. 94 per cent are likely or very likely to be interested in training in their own language, with colleagues in their country (EU 80 per cent)
- The most mentioned challenges, in rank order, are hardware and software management, network operations and security
- The highest ranked training needs are mainly of a technical nature (in order): new tools and products, hardware management and curriculum and assessment

Free text comments of note:

- *Lack of IT trainers is becoming a distressing situation*
- *I was very pleased to make my voice as classroom teacher heard. Thank you for this work.*
- I *would like to have more training in IT*
- *I was quite successful as a graduate in IT; unfortunately, I have been working in schools with rather inadequate hardware.*
- *Am I an engineer or a teacher? I'm still confused ...*
- *IT teachers in schools are seen as the administration's management mechanic. This situation trivializes the IT teacher*
- *The education we received from universities in IT should be revised because it no longer meets expectations placed on us now*

Questionnaire (English version)

IT Administrator Questionnaire

European Schools IT Administrator Survey – Autumn 2014

Thank you for taking part in this short survey undertaken of school IT Administrators to understand their future training needs. The survey is organised by European Schoolnet.

An IT Administrator is the person in the school who oversees the technical development and implementation of IT, for example providing technical support to teachers, administering the network (and maybe the virtual learning environment), managing devices in the school and addressing security issues.

Your anonymity is assured.

About the school

1. Please indicate the number of:
   a. Students in your school
   b. Classrooms in your school

2. What is the age at which most students…?
   a. Start school
   b. Leave school

Technical environment

3. What is the approximate total number of computers, including tablets, in the school?

4. What type of devices are in the school? Please click all that apply.
   a. Windows PC
   b. Linux PC
   c. Mac
   d. Tablets
   e. Printers/scanners
   f. Interactive whiteboard
   g. Multimedia equipment (audio/video studio…)
   h. Other (please specify)

5. How many of the following are in your school?
   a. Network access points
   b. Routers and switches
   c. Connected devices (both wi-fi and wired)
   d. Connected devices (wi-fi only)

6. What percentage of the following are in your school?
   a. Percentage of rooms (of any kind) with network coverage (both wi-fi and wired)
   b. Percentage of classrooms with wi-fi coverage

7. Which of these services are provided by the school? Please click all that apply
a. Learning Management System
b. Communication and collaboration tools (e.g. web-conferencing, voice over IP)
c. Content management system (e.g. website building, management, automation)
d. Data storage (for documents, photos, video repository, security, backups, cloud, Linux operating system)
e. Directory services (i.e. user/role/access management in the school network)
f. Identity management services (e.g. physical access, privileges)
g. Network management (router, switchers, etc.)
h. SmartSchool Automation (sensors, automation, single-board development, Internet of Things)

8. How are these school-provided services hosted?
a. Internally at the school
b. Externally - third-party provider, cloud

9. Mobile computing
a. Are students and teachers allowed to bring their own devices and connect to the school network?
b. Does your school provide services to students on their mobile devices?

10. Is your school responsible for decisions on
a. Providing internet and broadband access
b. Purchasing equipment (hardware and software)
c. Operating the school local area network

ICT adviser profile

11. Do you have other responsibilities other than ICT? Choose the answer that closest describes your role. If no, please proceed to question 17.
    a. I also have some teaching activities
        i. Teaching ICT
        ii. Teaching Science or Mathematics
        iii. Teaching other subjects, general teaching
    b. I also have other responsibilities
        i. Managing a resource centre, computer lab/s
        ii. Non-ICT related management and coordination
        iii. Support to colleagues generally
        iv. Specific support to colleagues involved in eTwinning projects
        v. Developing and maintaining school website
        vi. Pastoral (e.g. year coordinator)
        vii. Other (please specify)

12. In a typical week, how much time do you spend on
    a. Technical issues, maintenance, installation, network operation
    b. ICT budget and purchases
    c. Technical advice and support for teachers
    d. Updating school website, virtual learning platform
    e. General pedagogical advice and support for teachers
    f. Specific support for colleagues involved in eTwinning
    g. Developing and maintaining school website
    h. Work not related to IT Administrator role (e.g. teaching)

13. Do you have a post-school qualification in computer science or similar?(Yes/No)

14. Which training have you had since you became IT Administrator/coordinator?
    a. Formal certification related to ICT advice, support and coordination
    b. One or more 1-3 day courses provided externally out of school,
    c. Occasional after school sessions
    d. Cisco Networking Academy
    e. Support network, help from colleagues, people I know
    f. No training at all; I learnt on the job

Training needs

15. To what extent would you be likely to sign up for a free online training programme with a community of practice and exchange with other ICT advisers? (very likely, likely, neutral, unlikely, very unlikely)
    a. In English, with people like me from other countries
    b. In my own language, with people in my country only

16. What are the main challenges in your role? In order to perform your activities better, what are your training needs?
    (Main challenge in my role) (Training needs)
    a. Hardware installation and management (PC or Mac)
    b. Software installation and management (windows, Linux, Mac OS)
    c. Central services deployment
    d. Network operations (broadband, wired, wifi)
    e. Cloud computing
    f. BYOD management
    g. Security, data management, e-safety
    h. New tools, services and products
    i. Interoperability of learning resources
    j. Curriculum and assessment planning (e.g. introduction of new computer programming / coding courses)
    k. Management, ICT policy, European project planning, advising head teacher
    l. Budgeting (including for maintenance and replacement)
    m. Staff development: pedagogical ICT
    n. Staff development: technical
    o. Staff support
    p. Teaching computer science
    q. Operation of learning management systems
    r. Other (please specify)

17. Any other comments? Feel free to open up!

Thank you for completing the survey; your views are important and will help shape future training and support for IT Administrators.

The School IT Administrator

Analysing the profile, role and training needs of network administrators in Europe's schools

About European Schoolnet

European Schoolnet is a network of 31 European Ministries of Education, based in Brussels. As a not-for-profit organisation, we aim to bring innovation in teaching and learning to our key stakeholders: Ministries of Education, schools, teachers, researchers, and industry partners.

Since its founding in 1997, European Schoolnet has used its links with education ministries to help schools make effective use of educational technologies, equipping both teachers and pupils with the skills to achieve in the knowledge society.

European Schoolnet provides both Ministries and schools with: information and services relating to the innovative use of educational technology; outreach campaigns on specific educational topics such as maths, science and technology; and research activities.

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