HP NETA
National Education Technology Assessment

European cultural hub will transform its economy and education system through the *Digital Success Program*

Hungary
Magyarország

Digital Education Readiness Assessment

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Contents

Toward Digital Success for an Entire Nation

In December of 2015, the Hungarian government officially announced its Digital Success Program, a holistic strategy to improve the learning, economic and social future of the Hungary on behalf of its citizens. To support the development of the program, HP sent a team of education experts to embed in schools, government offices and businesses throughout the country, engaging directly with students, parents, teachers, principals, employers and other key stakeholders. The team set out with one central goal: to assess Hungary's readiness for Digital Success in its education system.

The team embedded within Hungary during April 2016, and with the help of the Ministries, IVSZ and AmCham, conducted online surveys for teachers, students, parents and employers throughout May 2016. This embedded effort stretched from Bogádmindszent (Pécs area) near the Serbia/Croatia border to Cegléd and Gyöngyös. The surveys were truly nation-wide with a staggering geodiversity of respondents (see data tables).

First and foremost, we wish to thank **Dr. Tamás Deutsch**, responsible of the Digital Success Program and Member of European Parliament, **Dr. Judit Czunyiné-Bertalan**, government commissioner in charge of digital curriculum development, **Dr. László Palkovics**, State Secretary for Public Education and **Peter Cseresnyes**, State Secretary for Vocational Education. All national leaders acted with transparency, allowing HP to lead the consulting team across the entirety of Hungary to conduct open and honest discussions directly with students, teachers and employers at all levels. We also wish to thank **Judit Szilágyi**, Policy Officer at AmCham Hungary, for helping us distribute surveys to the vital stakeholders in the business community. Also, we are indebted to **Dr. Steven Snell** of the Social Sciences Research Institute at Duke University for his work on the survey methodology and quantitative analysis. Finally, we would like to thank **Ádám Horváth** of **IVSZ**, whose vision for the future of education and dedication to the people of Hungary is truly inspiring.

We'd also like to acknowledge the incredible schools we visited based on the recommendation of NIIFI and the Ministries: **Karinthy Frigyes Gimnázium, Ceglédi Közgazdasági és Informatikai Szakközépiskola, Rákóczi Ferenc Katolikus Általános Iskola, Alapfokú Művészetoktatási Iskola, Óvoda, Kiskunfélegyházi Batthyány Lajos Általános Iskola és Alapfokú Művészeti Iskola, Kiskunhalasi Szakképzési Centrum Wattay Szakképző Iskolája és Kollégiuma, Vajszlói Kodolányi Általános Iskola és Szakképző Iskola Bogádmindszenti Általános Iskolája, Pellérdi Általános Iskola** and **Telepy Károly Testnevelési Általános Iskola és Gimnázium.** Their leadership in building Hungary's digital future was essential in creating this report.

The results of our inquiry yielded many compelling results and recommendations for Hungary's human capital strategy, all of which are contained herein. It is our hope that this effort helps enable the digital transformation of the Hungarian education system and increase its effectiveness through Digital Success.

Gus Schmedlen, June 2016

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A Digitális Siker felé vezető úton a Nemzet

2015. decemberében a magyar kormány hivatalosan bejelentette a Digitális Jólét Programot, egy holisztikus stratégiát a jövő oktatásának, gazdaságának és társadalmának megalapozására, Magyarország polgárai számára. A program támogatására a HP egy oktatási szakértőkből álló csapatot delegált, hogy iskolákban, munkáltatóknál, kormányzati irodákban közvetlenül a tanulókkal, tanárokkal, szülőkkel, igazgatókkal, munkavállalókkal és más érdekelt felekkel találkozzanak.
A csapatnak egyetlen célja volt: megállapítani Magyarország oktatási rendszerének felkészültségét a sikeres digitális oktatási reformra.

A szakértők 2016. áprilisában helyszíni bejárásokat és felméréseket végeztek számos településen, valamint 2016. májusában, széles körben, online kérdőívet küldtek szét a Minisztériumok, valamint az AmCham és az IVSZ segítésével pedagógusoknak, iskolaigazgatóknak és egyéb oktatási munkavállalóknak, illetve a szülőknek és a munkáltatóknak.
A helyszíni felméréseket mintegy 8 helyszínen végezték Bogádmindszenttől Gyöngyösig, míg az online kérdőívek valóban országosan lefedettséget biztosítottak tekintettel a beérkezett válaszok földrajzi eloszlására.

Elsősorban szeretnénk köszönetet mondani **dr. Deutsch Tamás** úrnak, a Digitális Jólét Program megalkotásáért felelős miniszterelnöki biztosnak és Európai Parlament képviselőnek, **Czunyiné dr. Bertalan Judit** digitális tartalomfejlesztésért felelős kormánybiztos asszonynak, valamint **dr. Palkovics László** felsőoktatásért és köznevelésért felelős államtitkár úrnak és **Cseresnyés Péter** szakképzésért és felnőttképzésért felelős államtitkár úrnak. Minden felelős nemzeti döntéshozó biztosította az átláthatóságot és támogatta a HP szakértőinek tevékenységét, mely által lehetőségünk volt országszerte lefolytatni a felméréshez szükséges őszinte és nyílt beszélgetéseket közvetlenül a diákokkal, tanárokkal és munkavállalókkal minden szinten. Szintén szeretnénk megköszönni **Szilágyi Juditnak** az AmCham részéről a munkáltatói kérdőívek terjesztésében nyújtott segítségéért. Köszönettel tartozunk továbbá **dr. Steven Snell** úrnak, aki a Társadalomtudományi Kutatóintézet munkatársa a Duke Egyetemen, a kérdőívek összeállításáért és a kvantitatív elemzésekért.
Végül, de nem utolsó sorban köszönetet szeretnénk mondani együttműködő partnerünknek, az **IVSZ**-nek is a projekt főkoordinációjáért és teljes körű támogatásáért, különösen **Horváth Ádám** oktatási igazgatónak, akinek víziója a jövő magyar oktatásáról és elkötelezettsége valóban inspiráló volt számunkra.

Munkánk során a **NIIFI** és a **Minisztériumok** által javasolt nagyszerű intézményekkel és intézményvezetőkkel találkozhattunk, hálásak vagyunk nekik az együttműködésért, mely alapvető fontosságú volt e jelentés elkészítéséhez: **Karinthy Frigyes Gimnázium, Ceglédi Közgazdasági és Informatikai Szakközépiskola, Rákóczi Ferenc Katolikus Általános Iskola, Alapfokú Művészetoktatási Iskola, Óvoda, Kiskunfélegyházi Batthyány Lajos Általános Iskola és Alapfokú Művészeti Iskola, Kiskunhalasi Szakképzési Centrum Wattay Szakképző Iskolája és Kollégiuma, Vajszlói Kodolányi Általános Iskola és Szakképző Iskola Bogádmindszenti Általános Iskolája, Pellérdi Általános Iskola** és **Telepy Károly Testnevelési Általános Iskola és Gimnázium.**

Vizsgálatunk eredményei alapján rengeteg gyümölcsöző megállapítás és javaslat tehető Magyarország humántőke fejlesztési stratégiájához, melyeket jelen tanulmányban szerepeltetünk, és ezúton megosztunk Önökkel.
Bízunk benne, hogy közös erőfeszítésünk segít és lehetővé teszi a magyarországi oktatás digitális átalakítását és eredményességének növelését a Digitális Jólét Programján keresztül.

Gus Schmedlen, 2016. június

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Independent Observer Certification

The HP NETA observer was invited by HP to augment insights, validate research methods and mitigate conflicts of interest in recommendations.

Independent Observer: **Jiaojiao Li, World Economic Forum**

Jiaojiao Li is a Global Leadership Fellow at World Economic Forum and leads the New Vision for Education project to bring in the private sector's voice to shaping future curriculum and to framing skill-based learning for elementary and secondary education. Prior to joining the World Economic Forum, Jiaojiao was a senior manager of strategy at Disney, leading the digital transition and market entry into the education space for the publishing business worldwide. Prior to Disney, Jiaojiao was an associate director of corporate strategy at Razorfish, a subsidiary of Microsoft and subsequently Publicis, to lead the company's global expansion and mergers and acquisitions.

3rd Party Independence Certification for HP National Education Technology Readiness Assessment: Hungary Digital Success Program; Hungarian Ministry of Education

Certification: PASSED
22 April 2016
Budapest, HU; Geneva, CH; Palo Alto, CA USA

Data tabulation and research outcomes were not influenced by HP.

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1791 – 1860


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Forward

Jiaojiao Li, World Economic Forum

Building 21st Century Skills

Twelve years after my first visit to Hungary right before it acceded to the European Union, I returned as the country was getting ready for Digital Success. In five days with the HP delegation, I visited three middle schools and two elementary schools in rural Hungary as well as in Budapest. Wherever we went, teachers were overwhelmingly warm and welcoming. The desired use of technology to help with administrative efficiency was well demonstrated, and teachers' enthusiasm of experimenting with technology to innovate curriculum was exceedingly high. Expectedly, coming with the enthusiasm was a mix of concern and hope that digital media would not distract but rather strengthen students as they learn.

As digital transformation sweeps across the globe, hopes and doubts on how it can change the way students develop skills, and what skills, have been on the top of mind for teachers and parents in every nation. While the benefits of technology on teaching and learning quantifiable foundational literacies have been well understood, the role of technology for social and emotional skills and vice versa, the importance of social and emotional learning in helping students succeed in the digital era, are less known nor talked about. In observing the process of evaluating Hungarian education's readiness for technology, I was most impressed by Hungarian students' sophisticated knowledge of the new priority of skills and technology's potential to make it happen.

When students were asked what they think technology could do to facilitate learning, an 18 year old girl replied in an instant, "with technology, we should be learning critical thinking, problem solving, collaboration and creativity, not just language or math." And her peers in the room resonated. Her precise choice of these competencies made me realize children today are probably far more aware than we were decades ago that the world is changing. As non-routine interpersonal and non-routine analytical skills have taken over the labor market demand for routine cognitive and manual skills in the past half century2, knowledge alone can no longer serve individuals well in the long run nor sustain a nation's competitiveness or economic growth. With old jobs being replaced and unexpected new jobs emerging, the higher-order competencies and character qualities that are transferable across job contexts have become critical for education to address and prioritize.

The girl's aspiration for critical thinking, creativity and collaboration skills seemed quite timely at the dawn of Digital Success Program and education reform in Hungary. Compared to its performance in foundational literacies (literacy, numeracy, scientific literacy and ICT literacy), which, on a global level, ranked from 59 to 69 percentile, Hungary's performance in social and emotional skills, including critical thinking and problem solving, creativity and curiosity scored less well, with critical thinking and curiosity both ranking 26 percentile globally, and creativity ranking 41 percentile1. How education can balance the emphasis of all 21st century skills – a mix of cognitive skills and social and emotional skills – will be critical for sustainable economic development, and the advent of digital technology can level the ground of competition, favoring nations where policies and infrastructure would empower education to leverage technology in seeking that balance.

A 9-year-old boy yelled out Scratch as one of his most frequently used digital applications when students were chiming in answers of their use of digital apps. Scratch, a free child-friendly programming language and online community where children can create their own interactive stories, games and animations, was a fresh addition to the familiar social media properties we heard. How did you know about Scratch, we asked. "I learned about it through a friend. I was curious, and so I searched." In his book *How Children Succeed: Grit, Curiosity, and the Hidden Power of Character*, Paul Tough articulated that curiosity, among other character qualities, is more important to children's success than academic results. I'm glad the boy was curious about Scratch, knowing that the right digital tools and the right use of digital tools could further his curiosity in seeking broader knowledge, understanding, wisdom and truth as life goes on.

The same girl who sought critical thinking, creativity and collaboration skills shared her career aspiration with us and the class, "I want to be the leader of the world." I reflected on the week long observation of conversations with teachers and students, and I'm confident that Hungary, as the country of some of the greatest minds in the history of literature, math and science, will in the new era create a generation of global citizens and leaders. I hope technology plays a positive influence in education as education continues to power these children forward into the future.

Jiaojiao Li
New York | Geneva
2016

Macroeconomic Context & the Case for Digital Education

Growth is on the horizon for Hungary. How much and how fast depends critically on education and skills development.

After the national consultation on Internet and digital developments (InternetKon) was completed in late 2015, a set of proposals was developed to catalyze progress towards the Digital Success Program. Infrastructure development, e-Government services, digital child protection measures and economic development combine to constitute a holistic strategy. Education and skills play a critical role, and the consultation specifically calls for a *Digital Education Strategy*. It is the express goal of this paper to inform this strategy with qualitative and quantitative data gathered within Hungary. However, Hungary's macroeconomic context - within Central/Eastern Europe and throughout the OECD - should also inform this strategy.

Employment in Hungary is rising faster then the Eurozone, but these may not be the jobs of the future. In fact, Hungarian employers reported a significant lack of skills in their new hire and early-stage-career employees, with the majority having to re-train workers frequently, especially in technology fields. With traditional comparative advantages of labor cost and cost-of-living being eroded by teleworking and other ICT innovations, Hungary should seize the opportunity now to leverage its relative low-cost and high quality-of-life to attract businesses and employees.

However, the current "cost first" approach to attracting investment has caused wild swings in Foreign Direct Investment. This needs to be stabilized. Providing a reliable supply of skilled information workers can help, along with the other reforms outlined in the Digital Success plan. It is nearly impossible to accurately plan revenue and spending when the standard deviation of net FDI inflows is 17. The Digital Success Program and its commitment to human capital development can help tame this variability through a steady supply of skilled labor to fill better jobs, leading to steady, predictable growth for Hungary.

Hungary is situated in an intensely competitive and economically vibrant growth region. Its Human Capital Index of 0.825 (UNDP 2015) already exceeds many of its regional neighbors including Croatia, Bulgaria and Romania. However, without a sustained focus on sustainable development, Hungary runs the risk of perpetuating dependence on non-value added goods and lower-wage support services for its economic growth. Instead, a balance should be struck: sustain traditional industries while investing in innovative entrepreneurship and aggressively attracting investment through a superior workforce and business-friendly environment.

The key to a superior workforce and entrepreneurial ethos is the education system across primary, secondary and tertiary levels. Our observed data and survey responses clearly indicate wide recognition of the need to make school more relevant for the jobs of today and tomorrow. Hungary's students showed great enthusiasm to have school reflect their lives outside of school regarding technology, research and communications. However, Hungary's employers expressed dissatisfaction with the readiness of graduates to enter the workforce and the relevance of the current curriculum. Teachers and parents expressed a mix of optimism and anxiety regarding education reform and instructional innovation.

Digital Education can create dynamic learning experiences that reflect real life. When properly implemented, it can provide tools to teachers to enable differentiated instruction while accommodating students who are ahead or behind their classmates. It can open up a myriad of other learning opportunities to enable students to build both technical and collaborative skills for the jobs of tomorrow. To achieve these goals, teachers must be trained and parents must be included in the planning and implementation. Outcomes must be tracked and measured consistently and transparently.

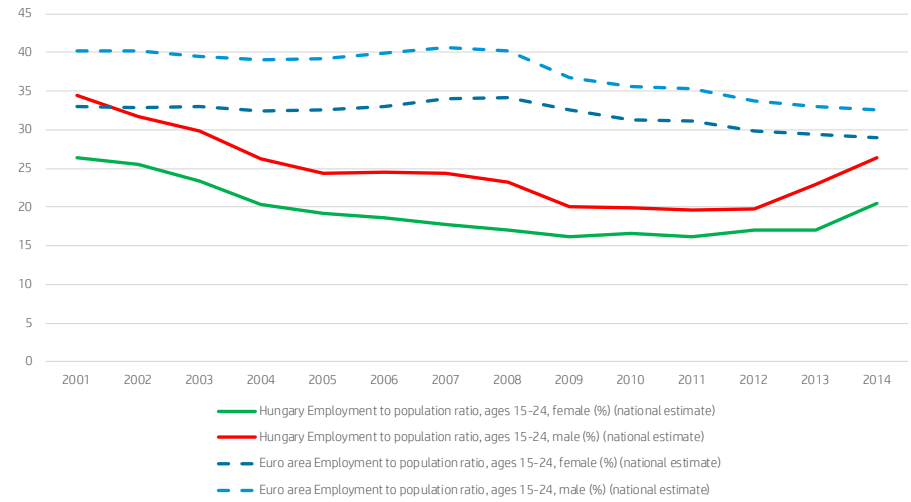
Technology **must not be the goal of Digital Success. The goals should be** ***measurable learning, economic and social outcomes.***

"Technology is the only way to dramatically expand access to knowledge. To deliver on the promises technology holds, countries need to invest more effectively and ensure that **teachers are at the forefront of designing and implementing this change.**"

- Andreas Schleicher, OECD Directorate for Education and Skills

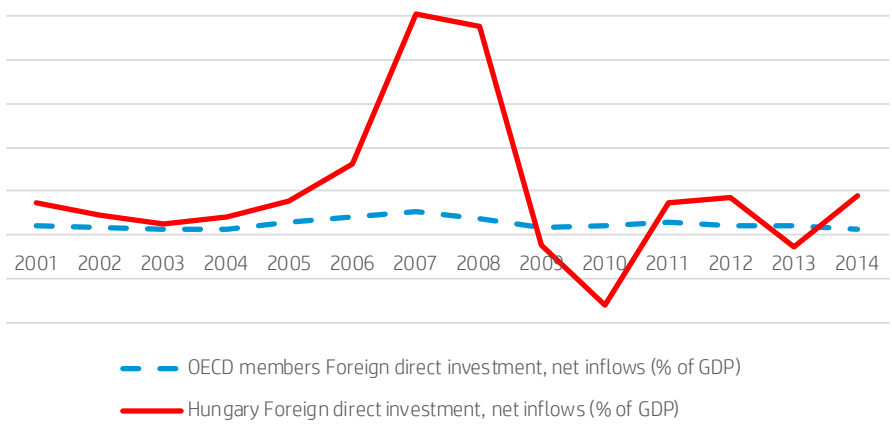
Slingshot Effect? Outpacing the Eurozone on Employment

Employment for 18-24's Euro Area vs. Hungary



FDI Turbulence: Tax Policy, Labor or Externalities to Blame?

OECD STDEV = ~1 Hungary STDEV = ~17



Regional Context
The evolution of Eastern Europe

From turbulence to prosperity and beyond.

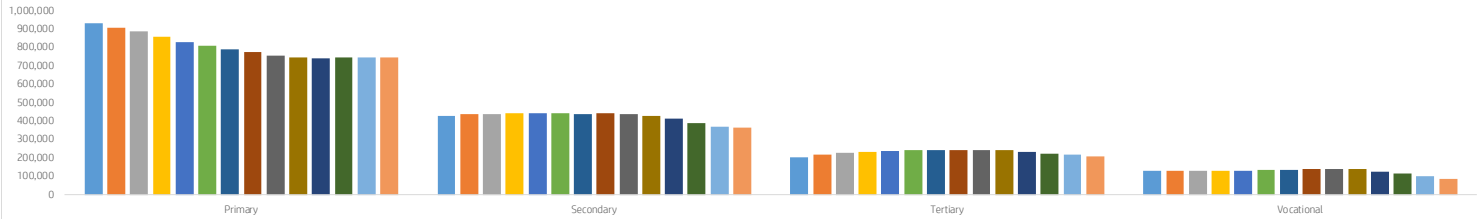
Education in Hungary and in Central & Eastern Europe, in general, underwent turbulent times. With the end of the Cold War - including Hungary's significant role, opening the borders to Austria in 1989 - all Central & Eastern European societies went through disruptive changes in the political and socio-economic landscapes. The education system was an integral part of the government field of influence and, hence, was affected by these changes. It is remarkable how teachers in this region kept their focus and continued with their mission: educating the students for gaining knowledge and competencies no matter what storms of change occurred within government corridors.

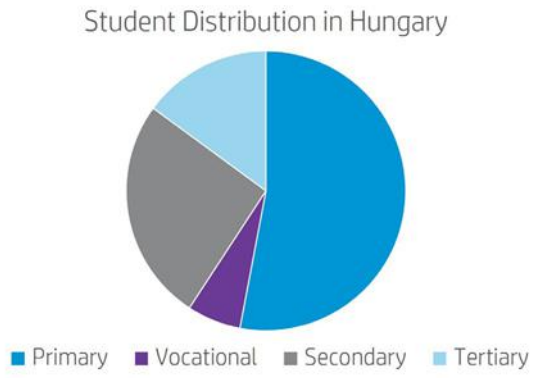
Hungary joined NATO in 1999 and became a full member of the European Union in 2004. With the pre-accession/cohesion program, substantial funding was provided to Hungary to invest into the infrastructure and, specifically, into education. More than ten years after EU accession, EU programs are still of significance to mobilize investments for modernizing the education sector. While you can still find schools (as in practically all countries in the world) that were not part of a modernization wave, by now there are many great examples where schools leapfrogged and integrated technology to the learning experience, forever changing the way teaching is conducted.

Several central initiatives drove towards an inclusive and diverse teaching and learning experience. With Sulinet (*www.sulinet.hu*), Hungary was among the leading Central & Eastern European nations in providing a "one stop shop" for educators and learners to focus on 21st century skills through content repository, infrastructure and information system. This provided a platform for content creation, long before the current OER movement went viral. Today, there is still no single common platform used for educational content.

Hungary was also a driving force in partnering with the private sector in bringing innovation into the school system. Many multinational ICT companies worked with the Hungarian government to explore new opportunities for learning success and to improve student outcomes. Not public private partnership projects were profound in their effect, but each offered good lessons for teachers and the system in general. With the openness of the Hungarian society towards European and international experiences, there is a high probability that the Hungarian education system can learn from the past and build on that to achieve great learning outcomes for the students: creating a system that prepares them not only for jobs, but help shaping an entire generation of well-educated individuals who contribute to the success and sustainability of Hungarian society.

Student enrollment since 2002/2003





Key Statistics

1,888,111 students in Hungary (2015/2016)
110,000+ Primary & Secondary Teachers

745,323 Primary Students
87,639 Vocational Students
363,495 Secondary Students
210,103 Tertiary Students

Selected national demographic and education statistics sourced from KSH STADAT

KSH KÖZPONTI STATISZTIKAI HIVATAL

Public Private Partnerships

Moving forward, some general cornerstones of a successful public private partnership strategy are recommended to be examined closely:

1. Globally Consistent, Locally Relevant

Picking the best solutions from all over the world instead of creating something proprietary from scratch helps reducing the cost of a project and drives transparency and success metrics. Using what is already existing and customizing it for the need of the national education system is faster and can adapt better to changing realities compared to "homemade" solutions. No matter how globally eclectic the solution is – it has to be relevant for the local circumstances.

2. Scale = Validity and Relevance

With the beginning of the new millennium many pilot projects started and lead to the intended results (e.g. '10 schools have whiteboards hanging at their walls'). The aim should be to have the transformational impact in sight and thrive for it. Pilot projects usually land quickly and unfortunately have no lasting impact. In order to become relevant they have to reach a critical mass of users and be easy to use so that they become part of the organizational DNA and will stay even if the pilot project is over.

3. Think from the End State

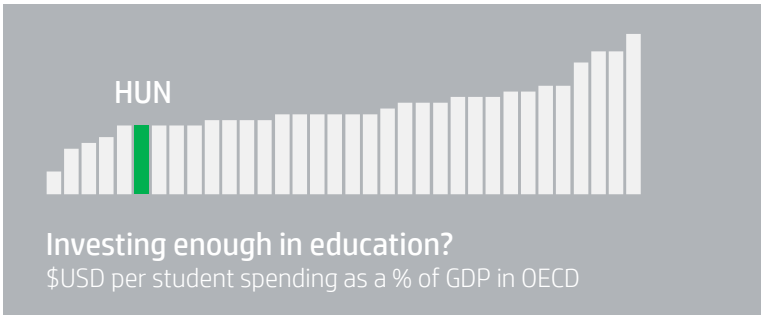
Where shall the intended intervention lead to? And what are the steps to get the educational system there? These typically business-like approach helps educational transformation initiatives to make sure that there is an agreement how to measure success and to have milestones agreed when to reach what stage and after each step to re-ensure that things are moving in the right direction. The process driven implementation is a major contribution of private sector for educational reform programs.

4. If you want to go fast, go slow

There is nothing worse than a plan that is executed but does not take the stakeholders' needs, expectations, and fears properly into account. Instead of rushing off with a master plan it is mission critical to get all stakeholders on board and spend time with them to work on the best solution. Moderated workshops and consultative processes take a lot of time and resource but they are necessary to achieve mission success. The more time is spent in the proper preparation the faster the implementation can happen. This is no excuse for allowing people to block the way for the sake of blocking. It is about making sure that no relevant stakeholder is left behind.

5. Failure is not an Option

When an educational system decides to get on a modernization pathway many things can go wrong and lead to unintended results. That is part of the organizational learning and needs to be incorporated in transparent and honest review cycles. These reviews are there to ensure progress. Because modernizing the education system is a journey that does not allow to be a failure. Failing here would create devastating prospectives for the society – no option to pursue.



Perspectives from school visits

Qualitative observations from Hungary's schools

Visiting Hungarian schools during normal academic week-days gave a unique opportunity to witness a live and unfiltered snapshot of the countries education system: from Budapest city centre locations and its beautiful architecture, to smaller schools in countryside locations with big classrooms and lively children.

From the cross section of schools visited, we found that the teachers - young or old - were not afraid to push new styles of learning and ensure that their students have the best possible experience. In some cases, teachers are funding devices by themselves, sourcing content from the internet or sharing a phone internet connection in the classroom to allow online access to pupils or let the students create a small movie to present to their classmates as homework.

The school headmasters (principals) are also playing a key role in running and managing these schools, being the ultimate decision makers. They also manage the delicate balance among a centrally-defined curriculum, local community needs and socialization. They each create a purposefully-blended approach to education that supports students beyond the mandatory state and international assessments, indeed preparing students to be active participants in society.

There is also a clear consensus from the teaching corps on areas for improvement. The #1 request is for training, or *Continual Professional Development* (CPD). Many teachers are self-funding their CPD and they have asked for more regular funded training, both related to their own pedagogical areas and on the usage of technology within the classroom.

The teaching community is asking for more equipment to enable them to make lesson planning more efficient. Some of the comments we received were that "more technology equals more effective teachers" and another teacher warning that "technology will not replace teachers." The willingness and candor in sharing teachers' passion were also clearly expressed. One cinematography tutor described in vivid detail how she would equip her ideal classroom to engage and empower students.

During our informal conversations and focus groups, students agreed that they would like to use more technology, and stated that they prefer using a device vs. books for three basic reasons:

1. It reduces the weight of their schoolbags
2. The content is relevant and up-to-date
3. They find it easier to learn and complete assignments

Access to IT equipment and skills are widely considered as the primary education differentiators that will support the overall development of Hungarian Human capital. In some of these key fundamentals there are improvement areas, especially in reducing the refresh cycle of the IT equipment and in offering high-speed connectivity to all schools' locations. During one visit, we received the comment that due to their limited connectivity it takes "one month to upload their annual reporting requirements to NIIFI." (*Ed. Note - the team was very pleased learn later that this connectivity issue is being addressed by NIIFI via the Sultinet+ project*). At another school, we saw a smart board without any projector to enable it usage.

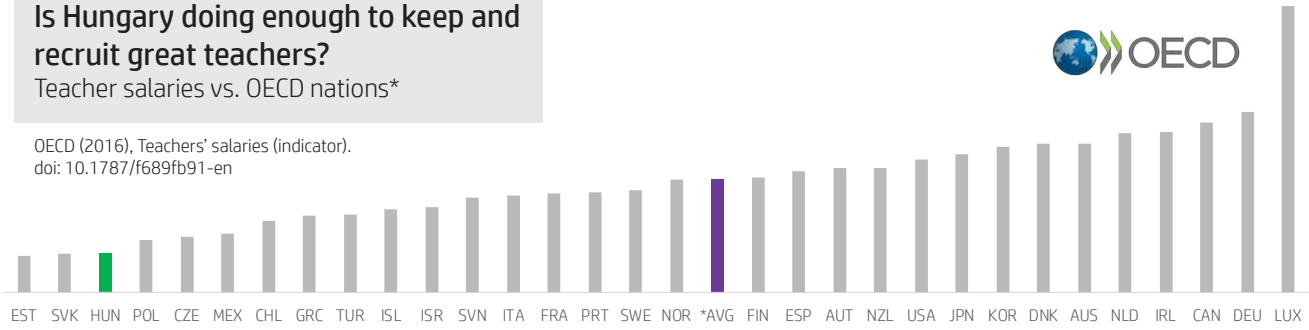
Unsurprisingly, personal mobile phone usage and student device ownership in Hungary were at similar rates to any Western Europe country. However, at the schools that we visited, there were strict non-usage policies in effect. With clear usage policies, schools should be able to integrate students' learning preferences into the environment, and with the correct content ecosystem, offer a means to improve the engagement and performance. However, teachers must be prepared for this cultural and technical shift. Through CPD and enabling technologies which allow them to monitor, control internet access and block non-academic apps at school, they can be empowered to incorporate relevant, helpful digital tools to improve student success without distraction or inappropriate use.

Cultural change is often more difficult than technical change. This will be a central challenge to the Digital Education team.

Is Hungary doing enough to keep and recruit great teachers?

Teacher salaries vs. OECD nations*

OECD (2016), Teachers' salaries (indicator).
doi: 10.1787/f689fb91-en



The professional teacher

Low wages and high workload are neither attracting nor retaining the best possible teachers

The teachers our team interviewed were vocal, passionate and committed to their students and schools. We were especially impressed with their candor - they had strong opinions about what could be improved in their schools and the entire education system. The sidebar outlines common themes from our focus groups and 1:1 interviews.

It should also be noted here that Hungary salaries for teachers are quite low compared to other OECD nations. They are in line with Slovakia and Poland, but far eclipsed by most Western European nations, including its neighbor Austria who pays its teachers almost three times as much on average ($42,994 vs. $13,520). This data is somewhat old, having been recorded by the OECD in 2012, but it should compel those authoring the Digital Education Strategy to take a close look at teacher compensation as a recruitment and retention tool.

Time

Teachers consistently noted that operational & administrative tasks took time away from teaching. In addition, teachers wanted to take more time to differentiate instruction

Training

Teachers who were trained were much more likely to use technology in their classes (see teacher survey). Those who weren't trained repeatedly requested both training and support staff to help them integrate new instructional methods.

Technology

The team heard from two types of teachers: one group was disappointed to have to book technology classrooms weeks in advance. The other group either self-funded their own technology or had parents group donate it. Universal access is an essential condition for Digital Education. Unfortunately, "BYOD" (Bring your own Device) programs often perpetuate inequity by favoring wealthier families and schools. Ironically, this can actually add to a digital divide and cause technology incompatibility issues.

***Definition of Teachers' Salaries / OECD Definition**

Teachers' salaries are the average gross salaries of educational personnel according to official pay scales, before the deduction of taxes, including the employee's contributions for retirement or health care plans, and other contributions or premiums for social insurance or other purposes, but less the employer's contribution to social security and pension. Salaries are shown in USD covering primary and secondary teachers with minimum qualification at the beginning of their career, after 10 and 15 years, and at the top of the scale. Trends in salaries are shown as an index with base year 2005.

Quotes from the field

"The best part of my job is seeing students graduate and succeed."

Head of School, Cegléd

"The private sector is not involved and market forces are creating new schools. This is making current school obsolete."

Employment Agency, Budapest

"My students know technology better than any of us."

Teacher, Pécs

"Minecraft."

Student response when asked "What do you do when you're not at school?

"I am not hiring anyone without English fluency."

HR Manager, Budapest

"I want more freedom in the content I teach"

Teacher, Budapest

"The tech sector is no longer a male-dominated world of checkered shirts and high-caffeine sodas. We can double our candidate pool if we can change this perception and attract females to tech jobs."

Executive at IT Firm founded in Hungary

"Technology is a means, not the end. Good teaching should be amplified by technology, not replaced by it."

Teacher, Budapest

"The parent organization bought all of these."

Head of School's response when asked about computer lab funding.

"I have three."

Student response when asked "Do you own a mobile phone?

"Schools are teaching things that are different than what the market needs."

Sales Manager, Budapest-based Firm


944


AINAK EMLÉKMŰVE

Observations, Methods & Data

Clear support for Digital Education and Digital Success

Unprecedented response to nationwide surveys yields a clear voice of the Hungarian people and teachers regarding Digital Success.

With over 23 on-site activities, over 300 live student responses, 8,000 teacher responses and 9,000 parent responses, the HP NETA Readiness Assessment for Hungary exceeded our internal heuristic for respondent sample size. This indicates strong partnership with IVSZ and the Government of Hungary, but also clearly shows that Hungary's teachers, parents and employers each care deeply about the future of this great nation. At every school visit, we were impressed with the clearly apparent dedication of teachers and principals.

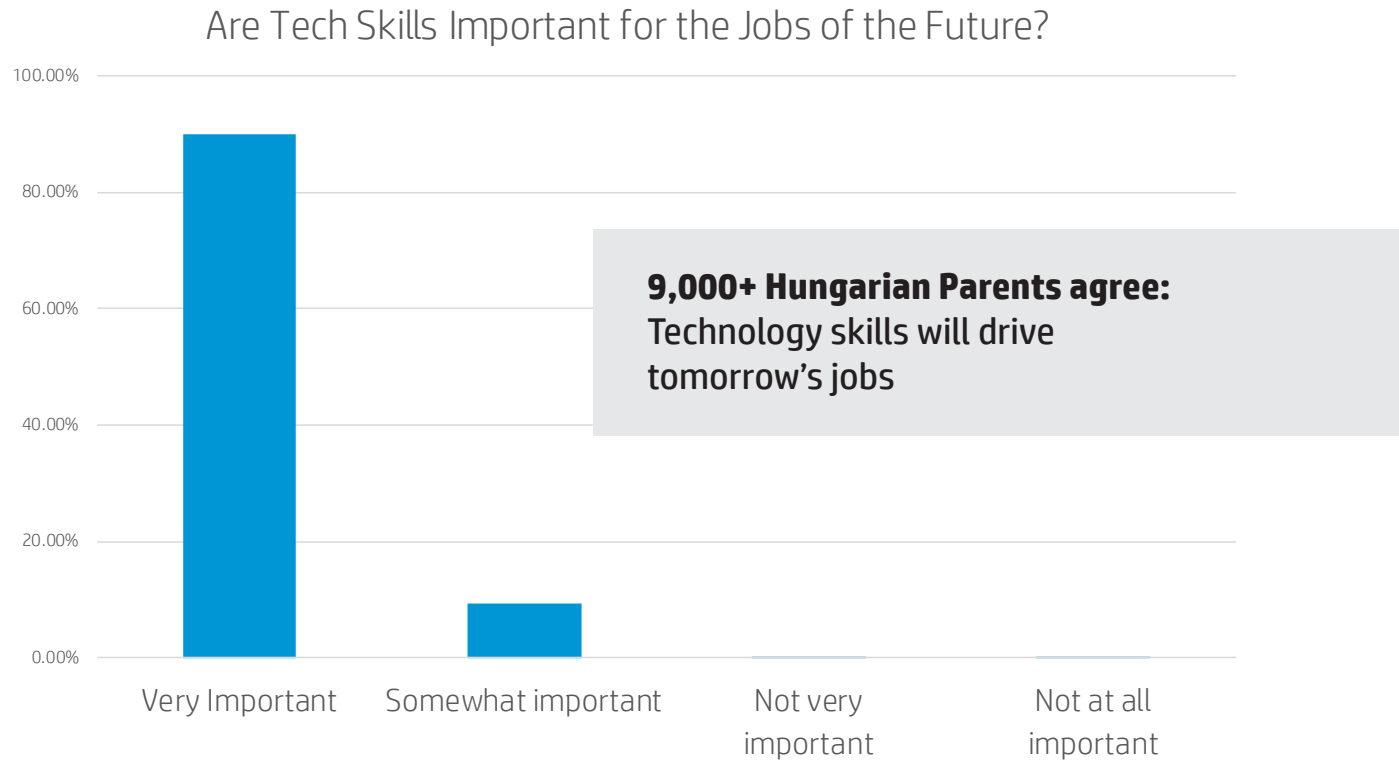
Positive Attitudes toward Digital Education.
Overwhelmingly, respondents agreed that technology will be essential to the jobs of the future. While parents felt mixed about technology's prominence in instructional settings, employers were clear: they want graduates with IT and collaboration expertise. Students themselves reported great comfort and very frequent use of technology in their personal lives, and Hungary's education system risks become irrelevant to students if this external force is ignored. *Digital Success starts with students.*

Bi-variate analysis shows interesting facts about Hungary's students and teachers. In addition to the summary statistics, the NETA process analyzes relationships among responses and respondents. Below are three standout correlations.

Students who use technology the most are most likely to say they plan to go to college. It was very clear that students who used technology daily or several times per day were more likely to plan to go on to tertiary education. Technology savvy seems to indicate notions of social mobility and achievement.

Teachers who get trained on technology are much more likely to use it in the classroom. Those who reported adequate or better training also reported usage inside and outside of the classroom.

Younger teachers are more comfortable using technology for instructional innovation. They reported more and varied uses for technology in teaching and learning, and many younger teachers reported similar technology usage to students.



HP NETA Methodology

HP's National Education Technology Assessment [NETA] methodology blends traditional survey methods, focus groups, instructional rounds with a macroeconomic review of human capital capabilities for communities. In Hungary, qualitative insights were gathered from school visits, teacher focus groups, student focus groups, interviews with business and community leaders, and a deep partnership with the Government of Hungary, officials from their facilities, research, IT and instructional departments, as well as principals and assistance principals at five diverse schools.

All data collection (onsite and online) and analysis was monitored/observed by a trusted third-party with a non-profit mission - in this case, the World Economic Forum. Official certification appears near the beginning of this paper.

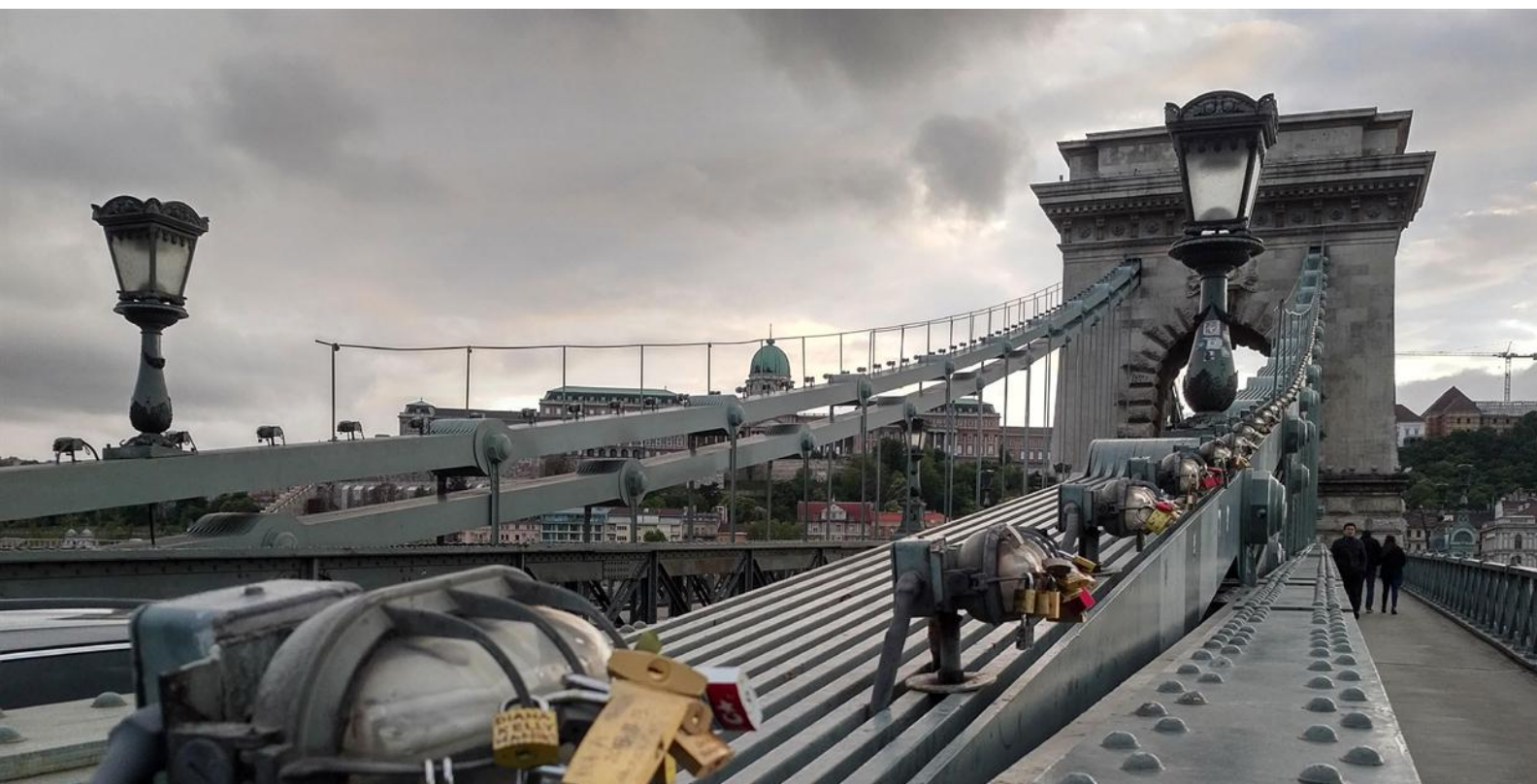
Managing Data Validity & Survey Bias among Stakeholders

For the student and teacher surveys, the research team had the following concerns: 1) student populations who did not have internet access away from school may not be able to complete the survey in the time allotted. 2) student populations may not take the survey seriously 3) student populations may feel "watched" and have their answers used to evaluate them at a future date. Thus, the decision was made to distribute and collect the student surveys live, in situ, while the parent, teacher and employee surveys were conducted online.

The ramifications of this decision are reflected in the higher number of teacher respondents. We also believe that administering the student surveys live has yielded more accurate results, considering our concerns listed above. Overall, we had thousands of teachers and parents respond to our online surveys, and we collected over 300 surveys completed by students just before our focus group conversations.

At each school visit, a teacher focus group was held to discuss the pressing issues and opportunities of digital and personalized learning. Teacher responses and conversations largely reflected the online survey results. The most common focus group challenges cited was teacher time and staying on top of the seemingly relentless flow of new technologies (particularly software and online tools). The most common positive discussion topics focused on the new ability to provide differentiated instruction, automating tasks (like distribution of assignments) and increased student engagement.

In addition, at least two student focus groups were held at each school site. As noted later, these conversations delighted the research team due to the subjects' engagement, candor and free-flowing opinions from almost every student group.



The Voice of **Teachers**

Teachers responded to the surveys at a rate unprecedented in the history of the HP NETA process., With a current population of 110,000, a sample of 332 would have achieved the baseline √n. The population sample for this survey was **more than twenty-five times** this amount. This indicates very clearly that Hungary's teachers want their voice to be heard. The average years of teaching service for respondents is estimated at 18 years. 75% of respondents were female, and the average age was approximately 46.

Survey Information

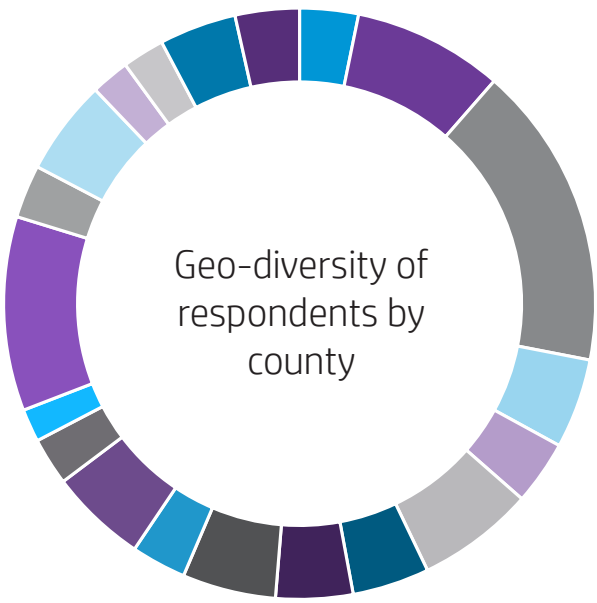
"Hungary Teacher Survey on Education Technology"
n = 8,419
Language: Hungarian
Survey Conducted: May 2016

Teacher Survey Highlights

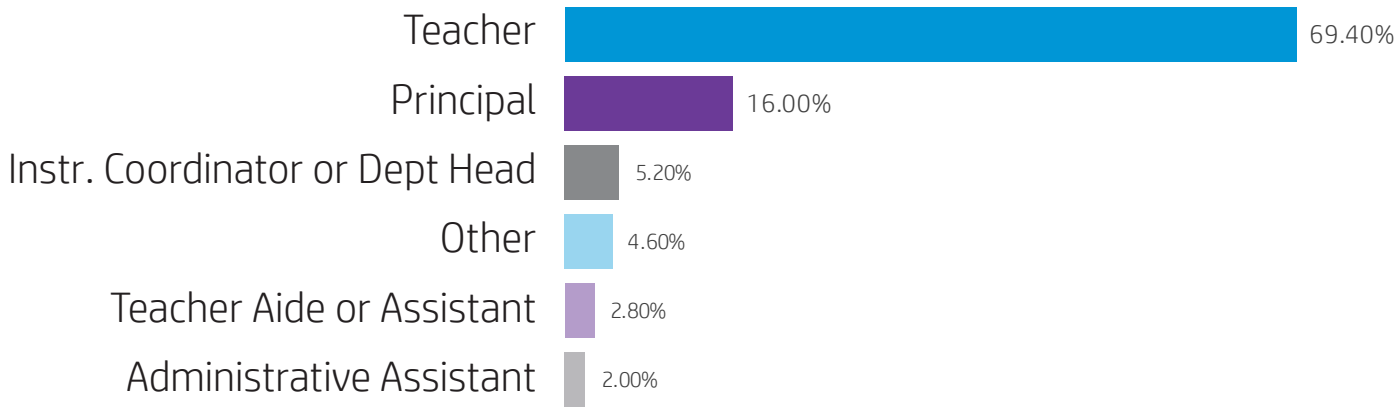
86%
rate their school positively as place for students to learn

92%
feel supported by their school administrative team

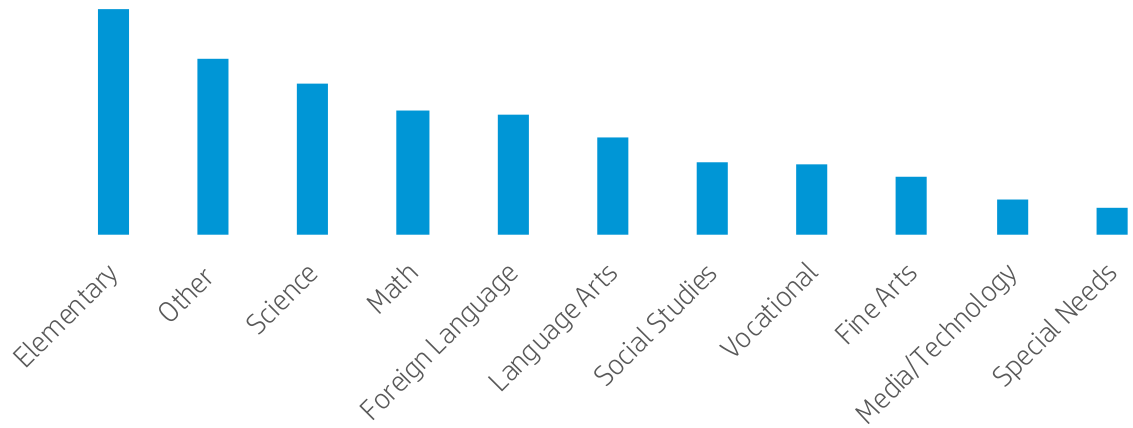
76%
say technology should play a larger role in the classroom



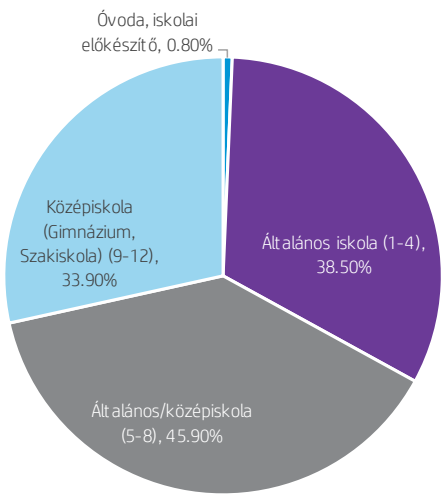
T1. Which of the following best describes your current instructional role?



T2. What subject(s) are you currently teaching? Please mark all that apply.

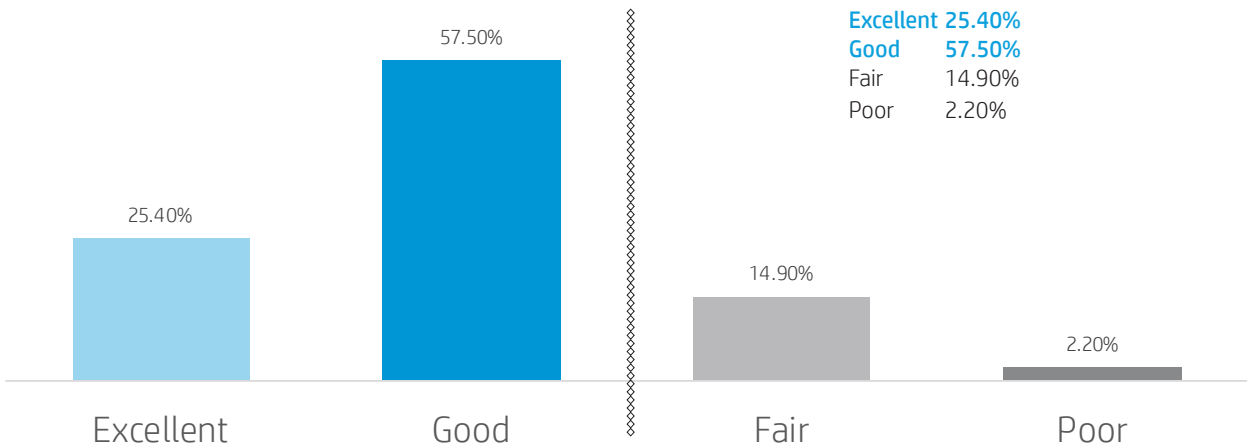


T3. What level(s) are you currently teaching? Please mark all that apply.

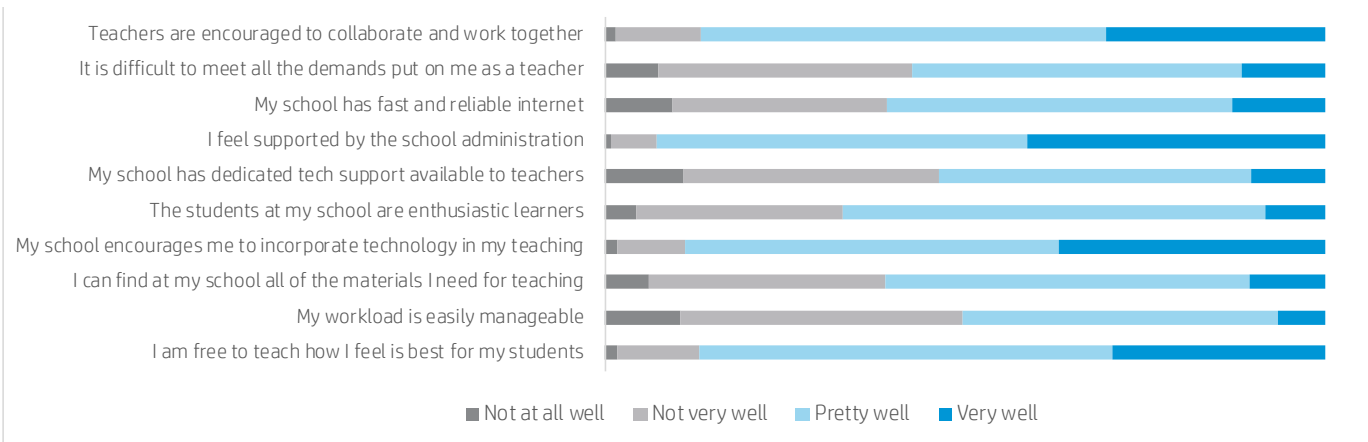


The Voice of Teachers (cont.)

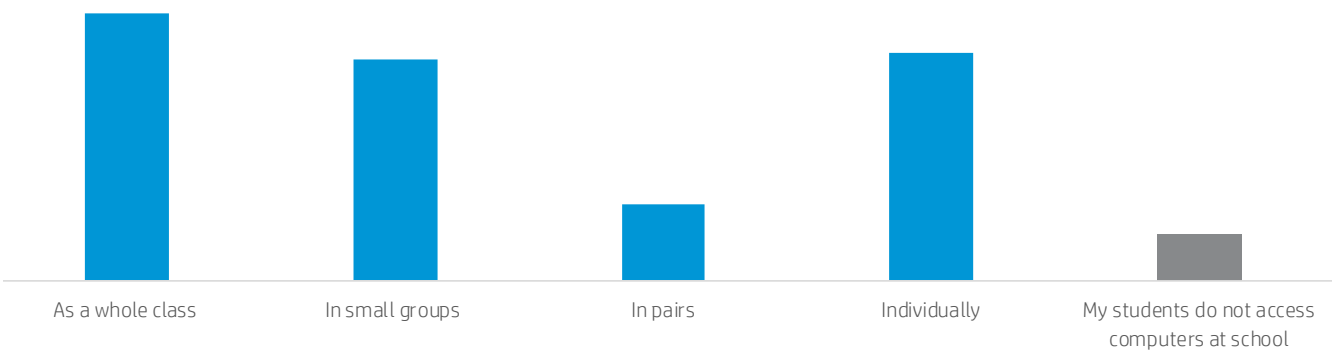
T4. Overall, how would you rate the school where you work as a place for students to learn?



T5. How well does each of the following statements describe your experience teaching at your current school?



T6. How do your students access computers at school? Please mark all that apply.



T6. Which statement comes closer to your own view?

76.3%
Technology should play a larger role in the classroom

23.7%
Students already spend too much time in front of computers and screens

T7. Technology Access at Home

	YES	NO
Do you have at least one computer at home?	99.4%	0.6%
Do you use the Internet at home?	99.2%	0.8%
Do you own a smart phone?	68.6%	31.4%

T8. How often do you use the Internet?

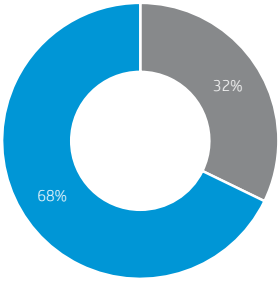
Several times per day	87.9%
About once per day	8.9%
A few times per week	3.0%
Less than once per week	0.2%

T9. How confident are you in your ability to do each of the following?

Upload a video on a video-sharing site (such as YouTube©)
Create or maintain a personal web page
Download video files to view on your computer later
Create or maintain a blog or online journal
Find useful information through an online search engine
Use email effectively

T10. When you have a choice, do you prefer to write things out by hand or use a keyboard?

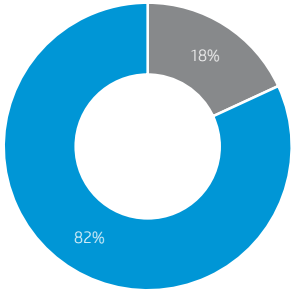
68%
Write things by hand



32%
Write using a computer

T11. Do you prefer to look things up in a book or online?

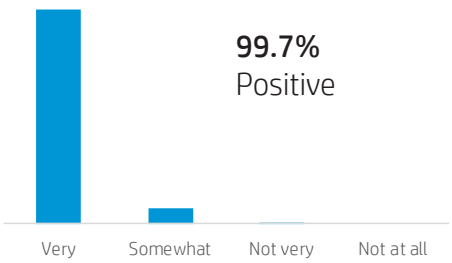
82%
Look things up online



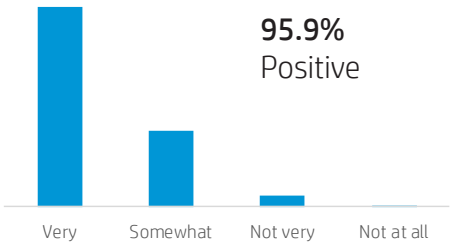
18%
Look things up in books

The Voice of Teachers (cont.)

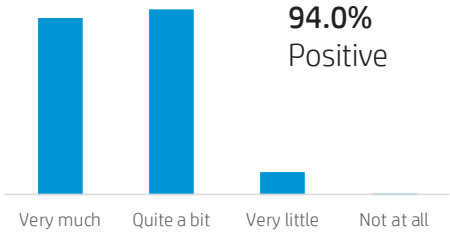
T12. How important do you think computer skills will be for jobs of the future?



T13. How much do you think computers and technology enhance learning?

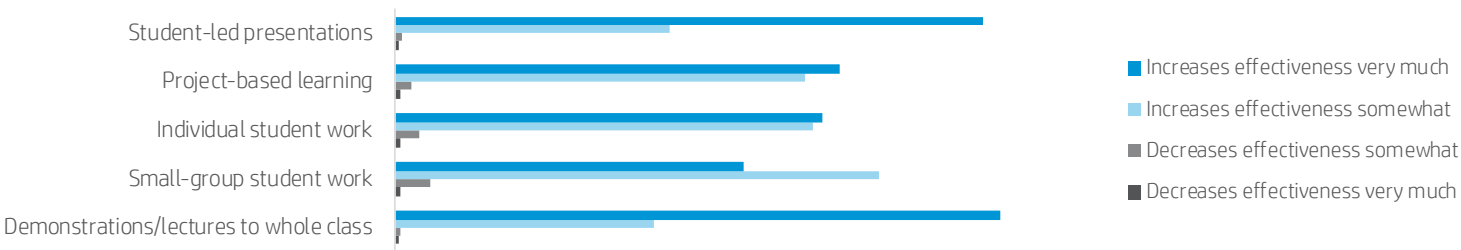


T14. How important is it for your school to teach computer skills?

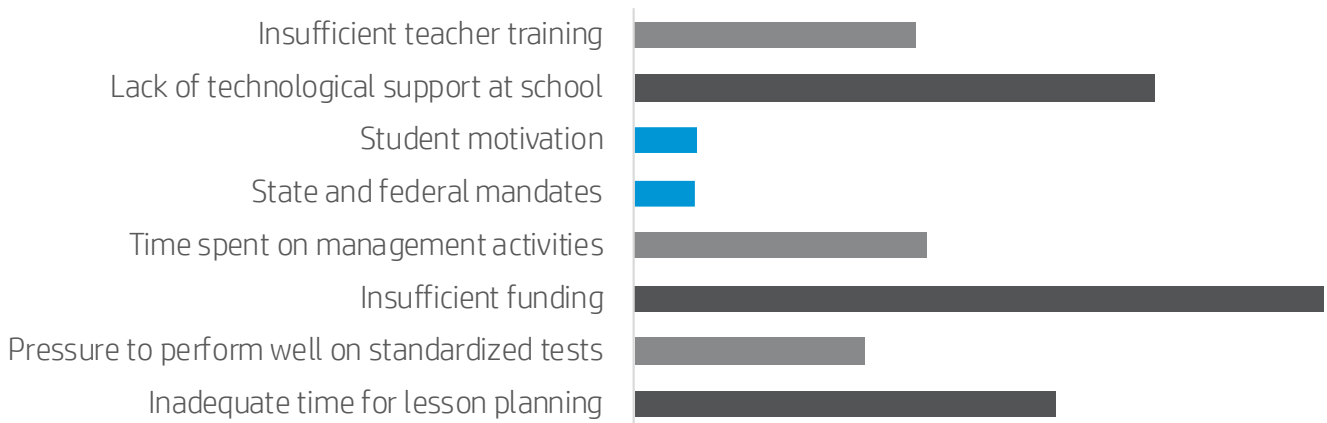


In order to preserve privacy, we have not binned some responses by grade level. We suspect the importance of education technology increases in line with grade level.

T15. Do you think technology increases or decreases the effectiveness of each of the following instructional methods?



T16. What are the primary barriers to more effective integration of technology into the classroom and instruction at your school?




CSERHÁTI
SÁNDOR
1852 – 1909

The Voice of **Parents**

Parents from across Hungary took the time to submit thousands of surveys, indicating strong interest in school policies and student achievement. With a current population of 9,821,318 citizens, a sample of 3,133 would have achieved the baseline √n. The population sample for this survey was almost three times this amount, indicating strong validity.

Survey Information

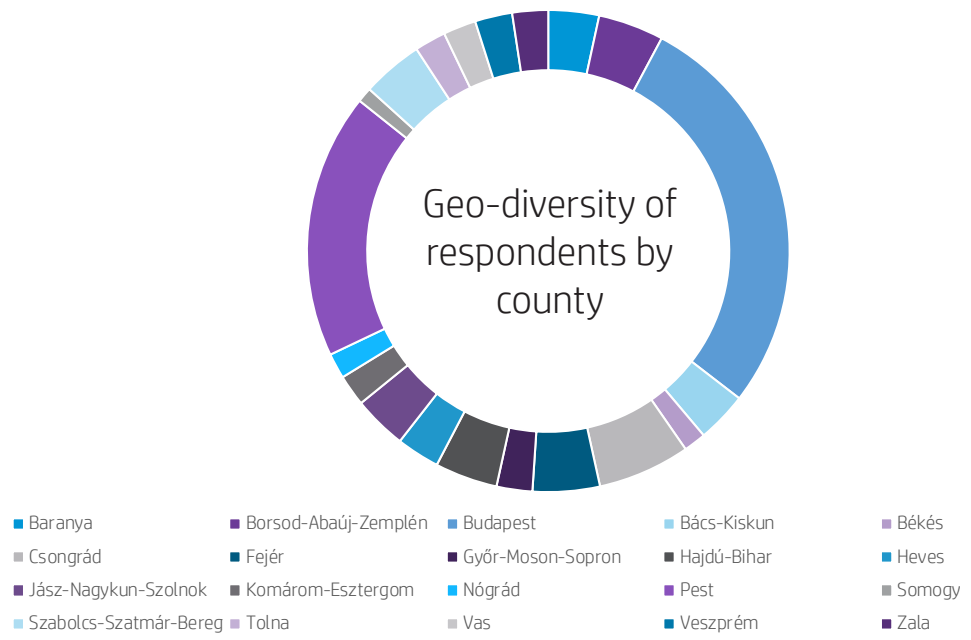
"Hungary Parent Survey on Technology Use at School and Home"
n = 9,125
Language: Hungarian
Survey Conducted: May 2016

Parent Survey Highlights

90%
believe technology enhances learning

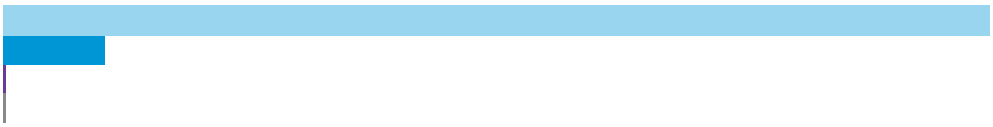
99%
use Internet services and email at home

84%
prefer to look things up online vs. in a book



P1. How important do you think computer skills will be for jobs of the future?

Very important	**90.1%**
Somewhat important	**9.3%**
Not very important	0.3%
Not at all important	0.2%



P2. How much, if at all, do you think that computers and technology enhance learning?

A great deal	**48.4%**
Quite a bit	**42.4%**
Very little	7.9%
Not at all	1.2%

P3. Technology Access at Home

	YES	NO
Do you have at least one computer at home?	**98.6%**	**1.4%**
Do you use the Internet at home?	**99.2%**	**0.8%**
Do you own a smart phone?	**90.1%**	**9.9%**
Does your family have access to broadband at home?	**94.0%**	**6.0%**

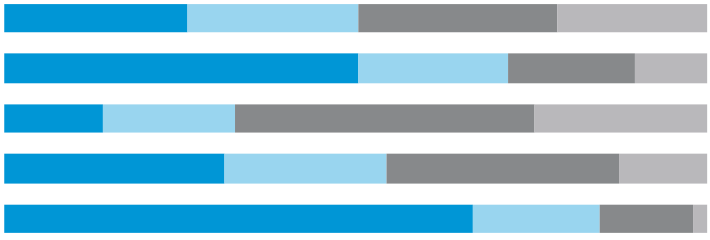
P4. Which statement comes closer to your own view?

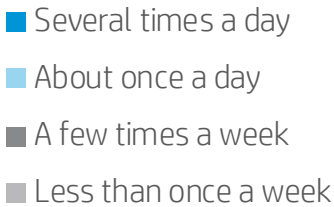
Technology should play a larger role in the classroom	**62.2%**
Students spend too much time in front of screens	37.8%

P5. Generally speaking, about how often do you use the Internet (at home, at work, etc..)

Several times per day	**86.3%**
About once per day	**9.3%**
A few times per week	3.8%
Less than once per week	0.6%

P5. How often do you use the Internet for each of the following activities?



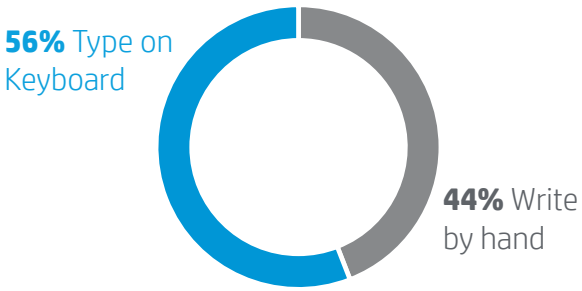


	Often	Daily	Sometimes	Rarely
Look up information	66.8%	18.0%	13.2%	2.0%
To learn something new about a home project or hobby	31.2%	23.3%	33.0%	12.6%
To help a child with school work	13.9%	18.9%	42.8%	24.4%
Communicating with friends and family	50.4%	21.2%	18.3%	10.1%
For entertainment	26.0%	24.4%	28.3%	21.4%

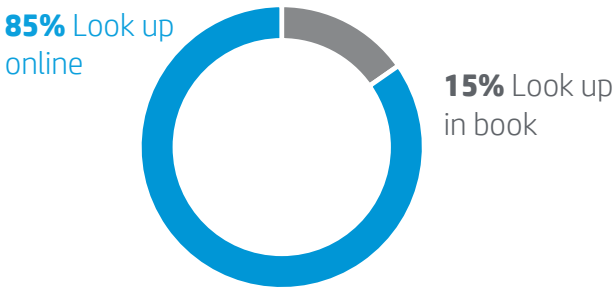
The Voice of Parents (cont.)

P6. How well does each of the following statements describe you?

	Not At All Well	Not Very Well	Pretty Well	Very Well
I like to look things up online	2.6%	9.7%	53.0%	34.7%
I struggle to keep up with changing technologies	19.5%	52.7%	23.4%	4.4%
I am very comfortable using a computer	2.7%	9.9%	56.8%	30.5%
I think technology makes life more fun	5.0%	31.8%	50.3%	12.9%

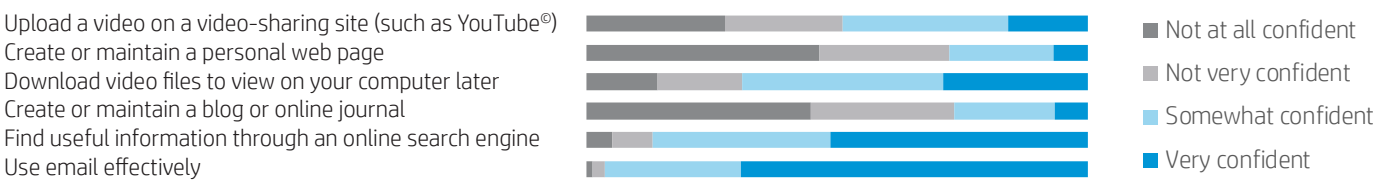


P7. When you have a choice, do you prefer to write things out by hand or on a computer?



P8. Generally speaking, do you prefer to look things up in a book or online?

P11. How confident are you in your ability to do each of the following?

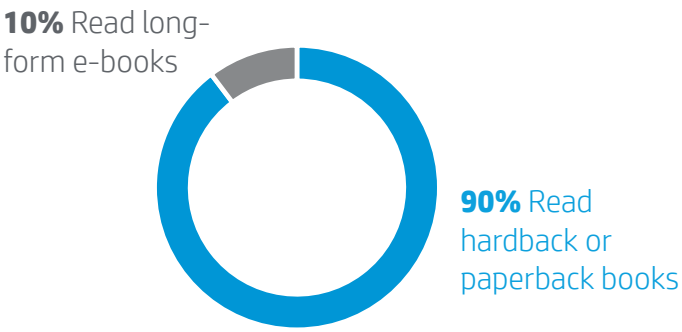


P12. Children sometimes know how to use computers better than adults do. What's your opinion?

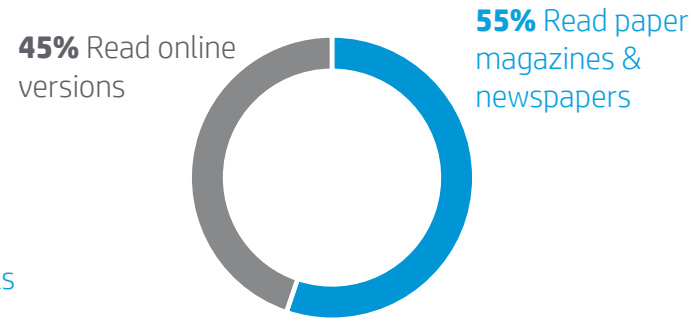
Yes	**78.0%**
No	22.0%

P13. Does your family have any rules about how your student(s) uses the Internet?

Yes	**70.7%**
No	29.3%



P9. In which format do you prefer to read books?



P10. How about newspapers or magazines? Which format do you prefer?

The Voice of **Students**

Hungarian students were very engaged in our focus groups across the vocational, IT-specialty, sports-specialty and general education schools we visited across the country. Schools were chosen across vast distances in a combination of urban and rural settings with a wide demographic diversity. The responses and subsequent conversations show that students are well ahead of parents in adopting digital technologies. *Please note that we only conducted student surveys live and in-person (see introduction).*

Survey Information

"Hungary Student Survey on ICT use in and out of school"
n = 12 schools
n = 311 students, 55% Male | 45% Female
Language: Hungarian & English
Surveys Conducted: April 2016

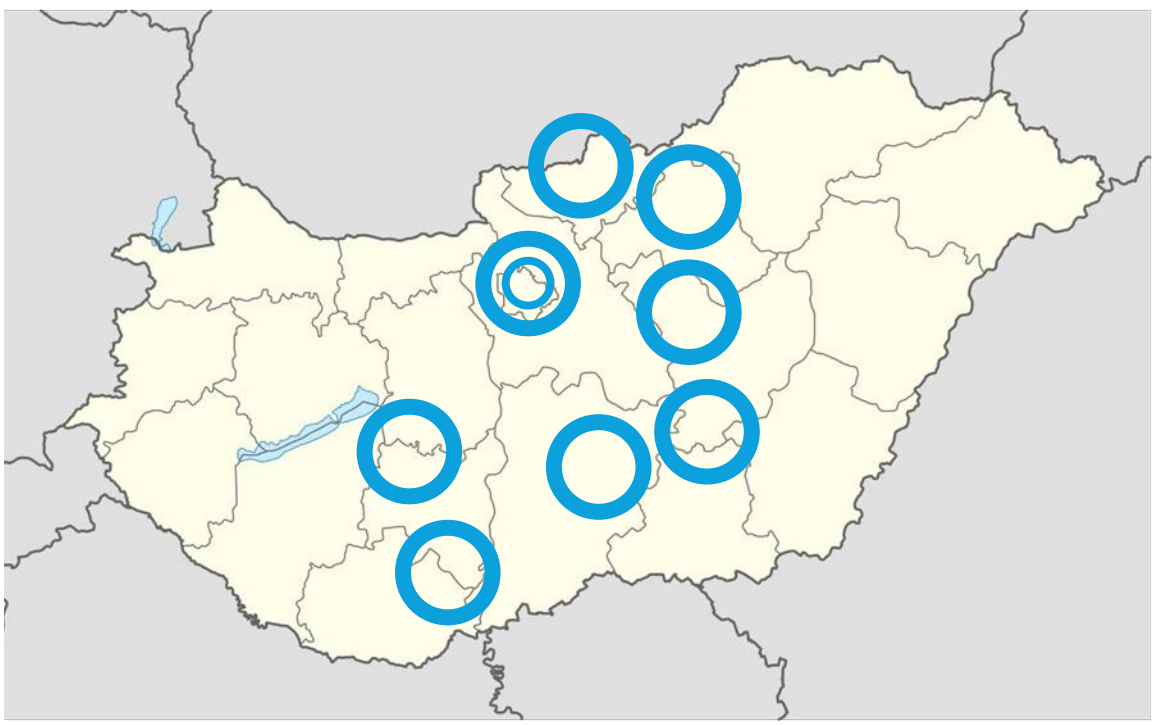
Student Survey Highlights

96%
say technology in the classroom makes it easier to learn

97%
use Internet services and email at home

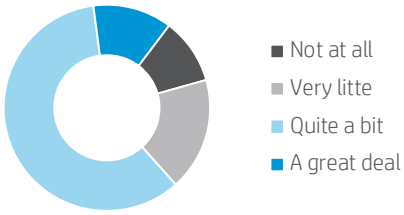
85%
say teachers help them when needed

School sites visited. *Note: multiple visits in Budapest metro area*

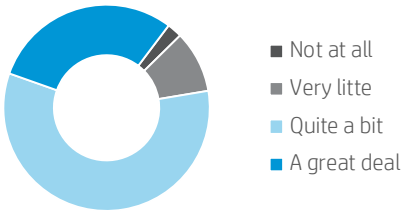


S1. - S6. Student Engagement, Motivation & Attitudes

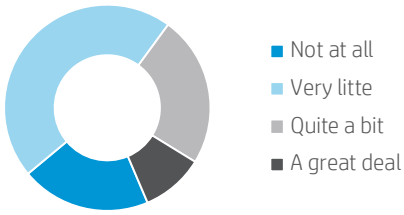
Do you like school?



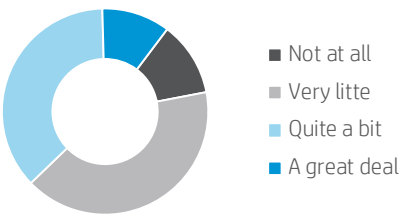
I like to learn new things



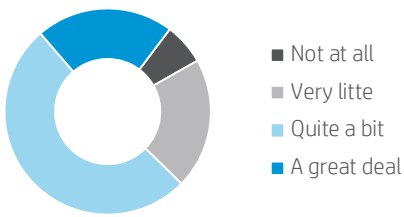
I think school is boring



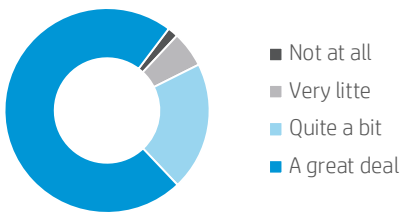
I think school is fun



I care about what we do in class



I have good friends at school



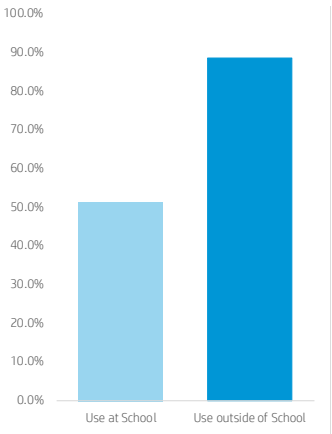
S7. Overall, how would you rate your school as a place to learn?

S8. The things I learn at school are important to know

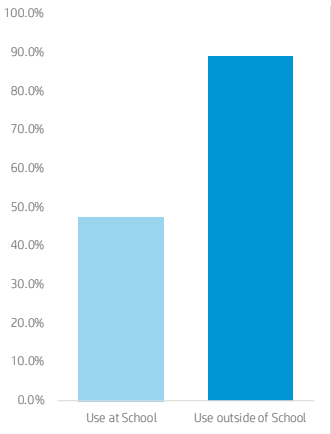
S9. My teachers push me hard to learn

The Voice of Students (cont.)

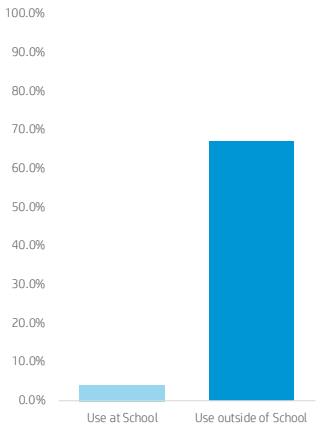
S10. - S14. Home use vs. school use of technology



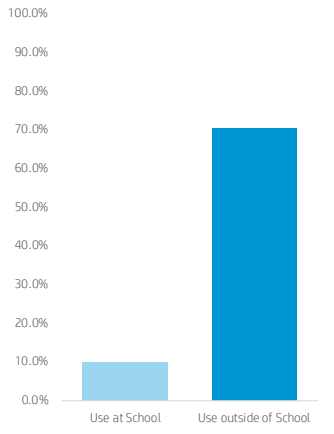
Smart phone



Desktop or Laptop

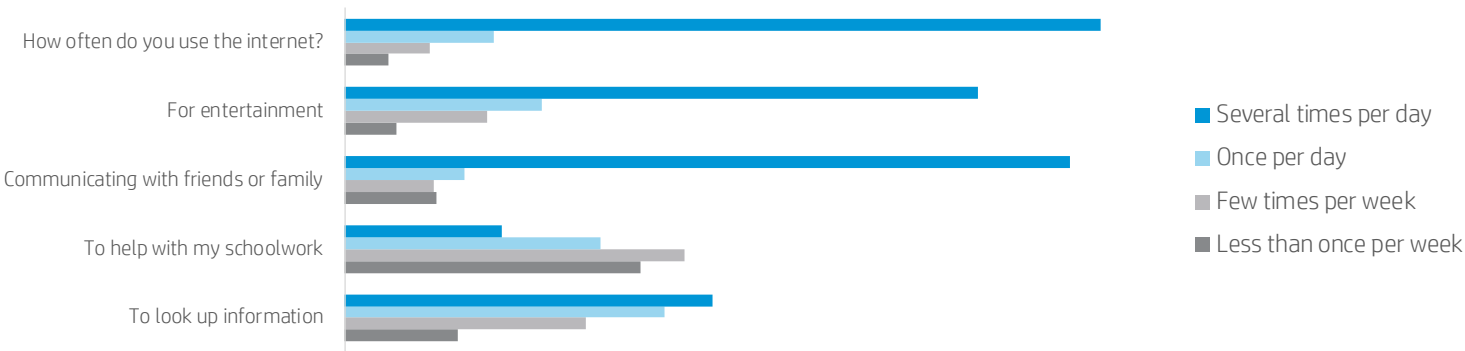


Gaming System

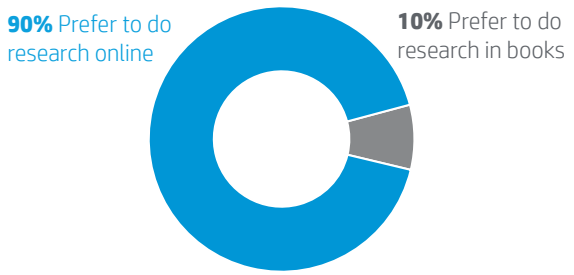


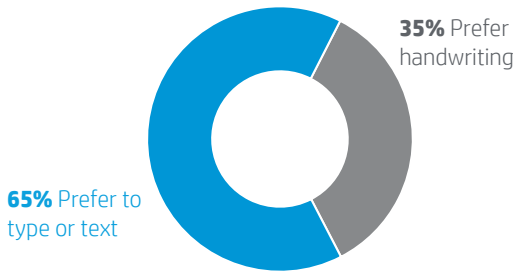
Tablet

S15. Internet usage and frequency *(all locations: home, school, other)*

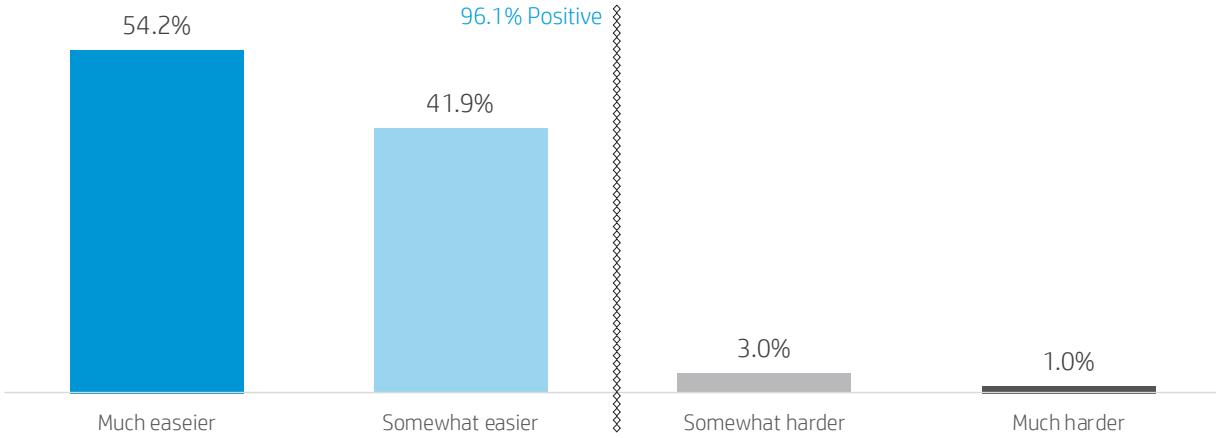


S15. - S16. Technology preferences





S17. Do you think that computers and technology in the classroom make it easier or harder to learn?

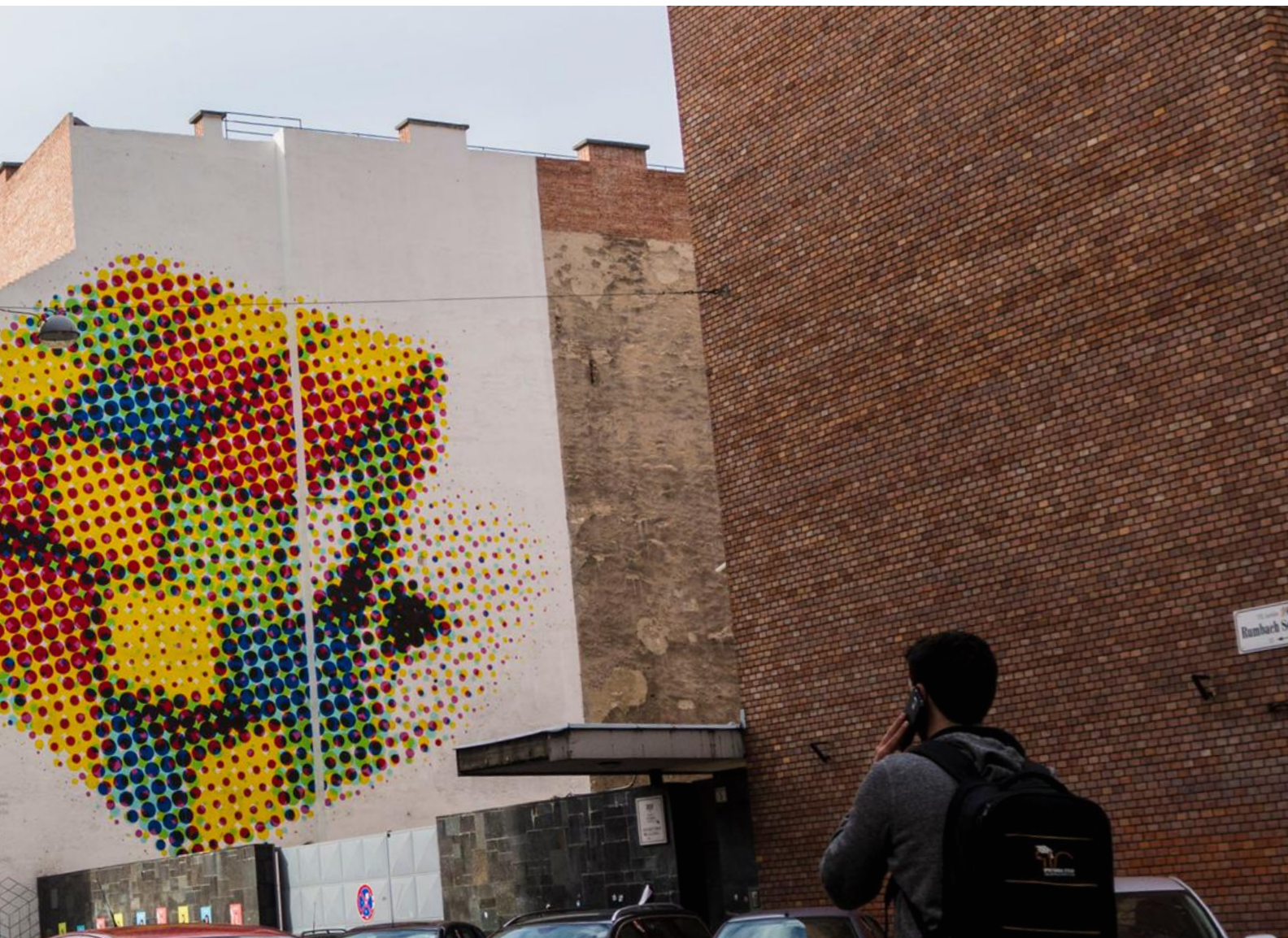


S18. How important do you think computer skills will be for jobs of the future?

Very important	61.1%
Somewhat important	35.2%
Not very important	3.6%

"Retraining new employees costs Hungary millions of dollars per year. [Employers like us] have to retrain virtually everybody."

- Budapest-based business executive *(from focus group)*



The Voice of **Employers**

Employers create jobs, revenue and attract additional investment. They rely on qualified people to start, grow and maintain businesses throughout Hungary and beyond. Hungary's students today represent the available workforce of tomorrow: employers are a key stakeholder in the human capital ecosystem. We surveyed employers to elicit opinions on the available supply of labor matching their current demands for skills.

Survey Information

"Hungary survey on employability and skills"
n = 58 61% Male | 39% Female
Language: Hungarian & English
Survey Conducted: May 2016

We thank AmCham Hungary for distributing the survey to its member firms.

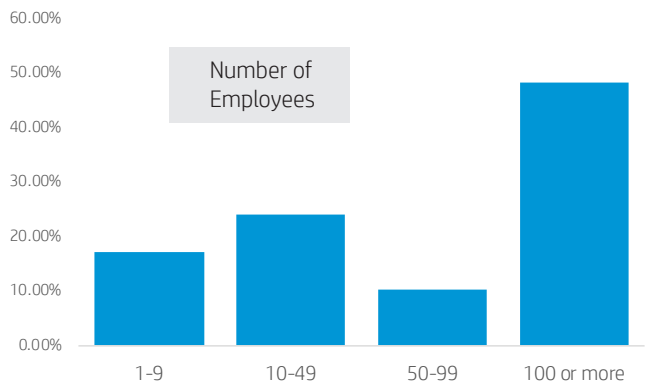
Employer Survey Highlights

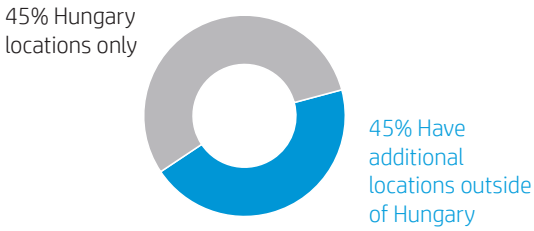
58% have to re-train employees once hired

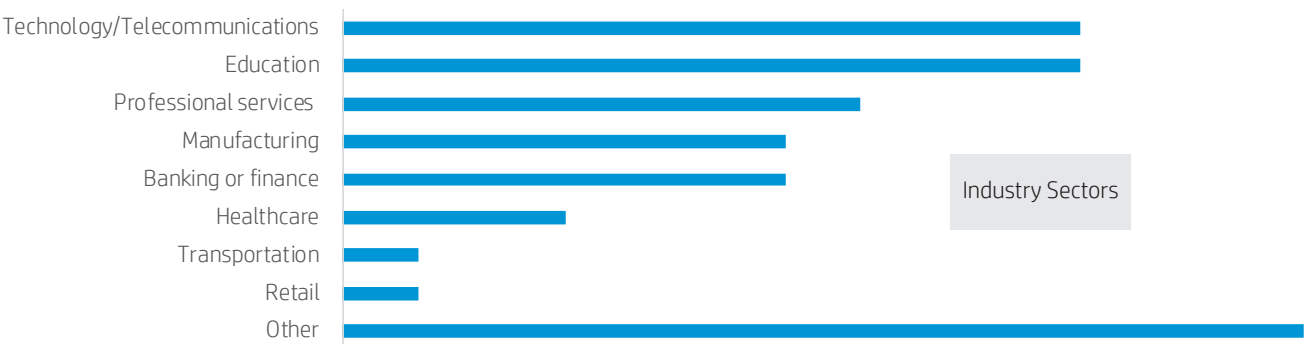
98% say technology is critical to their daily operations

98% say technology is important for the jobs of the future

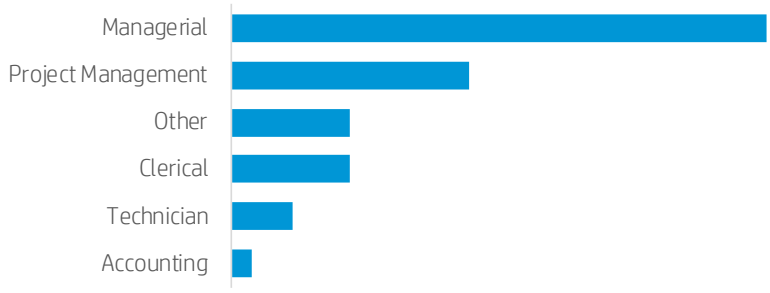
E1. Describe your organization



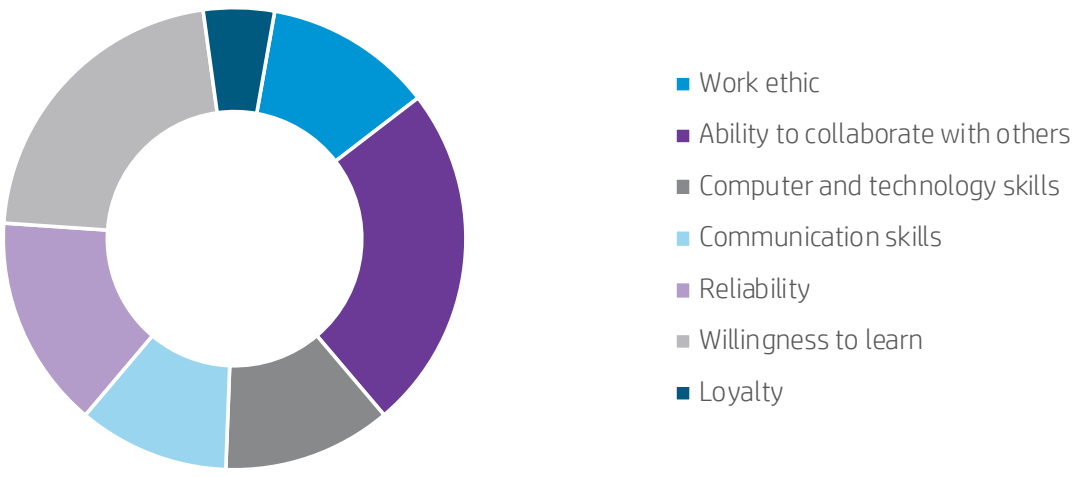




E2. Which of the following best describes your professional role?

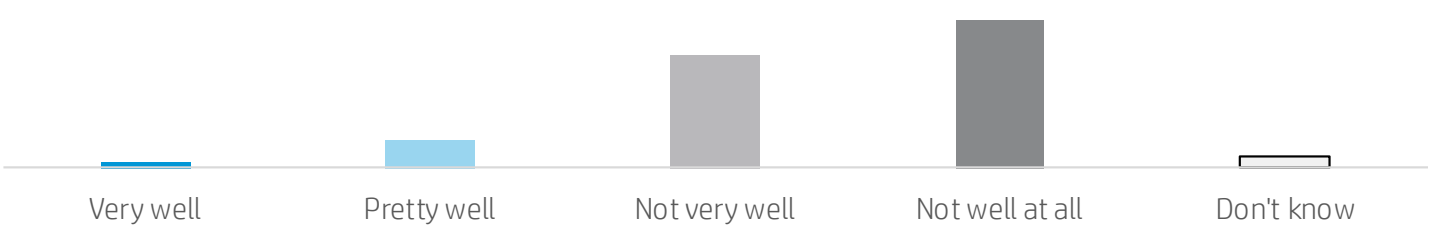


E2. Beyond technical skills, what are the most important traits you look for in new hires for your firm?



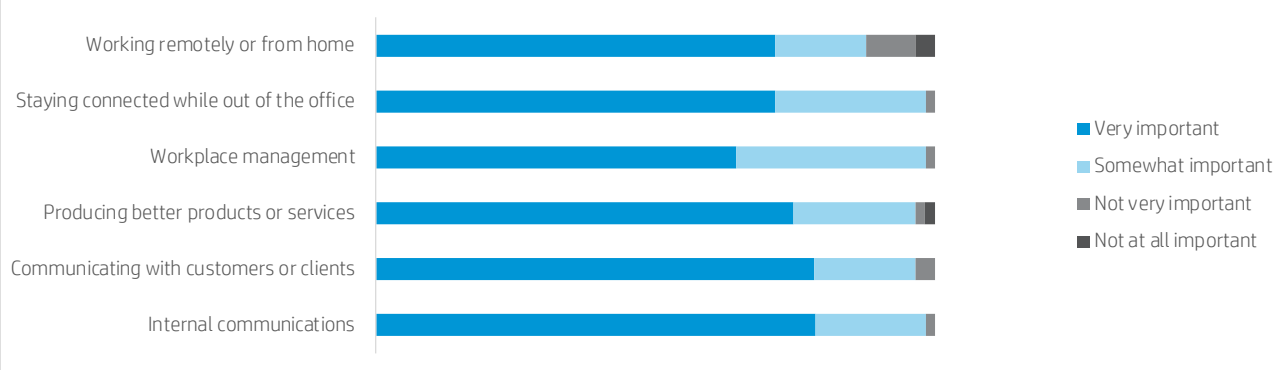
E4. How important do you think computer skills will be for jobs of the future?

E5. How well equipped are local schools to teach new technologies to their students?



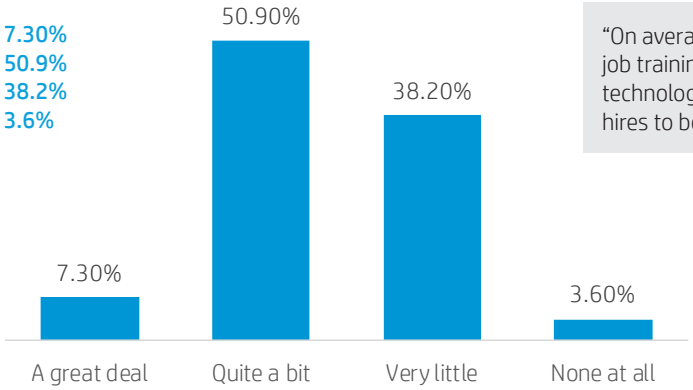
The Voice of Employers (cont.)

E6. How important are computers and technology for each of the following at your company or organization?



E7. Technology skills and retraining

A great deal	7.30%
Quite a bit	50.9%
Very little	38.2%
None at all	3.6%

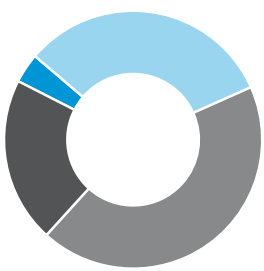


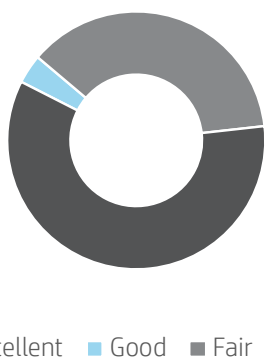
"On average, how much on-the-job training in computers and technology is necessary for new hires to be able to do their job?"

E8. Views on job readiness of graduates and school quality.

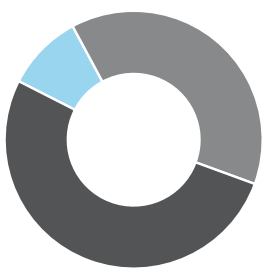
Local Schools Prepare Students for Workforce

Rate your Local School on Learning





Schools Prepare Students for your Firm



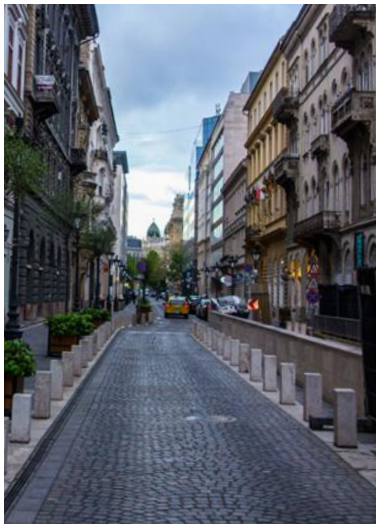
Conclusion and Recommendations

How should the findings inform the Digital Education Strategy?

The results on the prior pages paint a picture of a society already drenched in technology. There is strong consensus that education technology would benefit students in their academic and vocational endeavors, but with cautionary notes about over-dependence. Many parents reported that they are uncomfortable with "web 2.0" activities (e.g. uploading videos, managing web sites, blogs, etc...). Beyond education, the results show that the main tenets of the Digital Success Program align well with the desires and mores of Hungary's citizens. However, current private sector engagement is perceived as low. Businesses and organizations - the ultimate employers of students educated in Hungary's schools - are dissatisfied with the readiness of graduates, as well as the curriculum. Reforms should aim to mitigate these concerns, increase consultative private sector partnerships and accelerate human capital development in Hungary.

The consulting team saw three major strengths during our analysis. First, the access and transparency granted by the Hungarian government and education authorities. We conducted unproctored interviews, focus groups and surveys. We visited schools at all levels of performance and a variety of locations. Second, that the review of Hungary's national curriculum and the mitigation of the level of centralization for public education has already started and is making great progress under the leadership of Ministry of Human Capacities (EMMI). Finally, the brave and bold Digital Success Program has created a framework to modernize all public services and to empower the private sector - with human capital development as a key central theme.

The timing of the Digital Education Strategy and Digital Success Program are excellent: as Hungary's economy picks up and its reputation as an excellent place to do business grows, now is the time to enact policy and practice for Digital Education.



What's next?

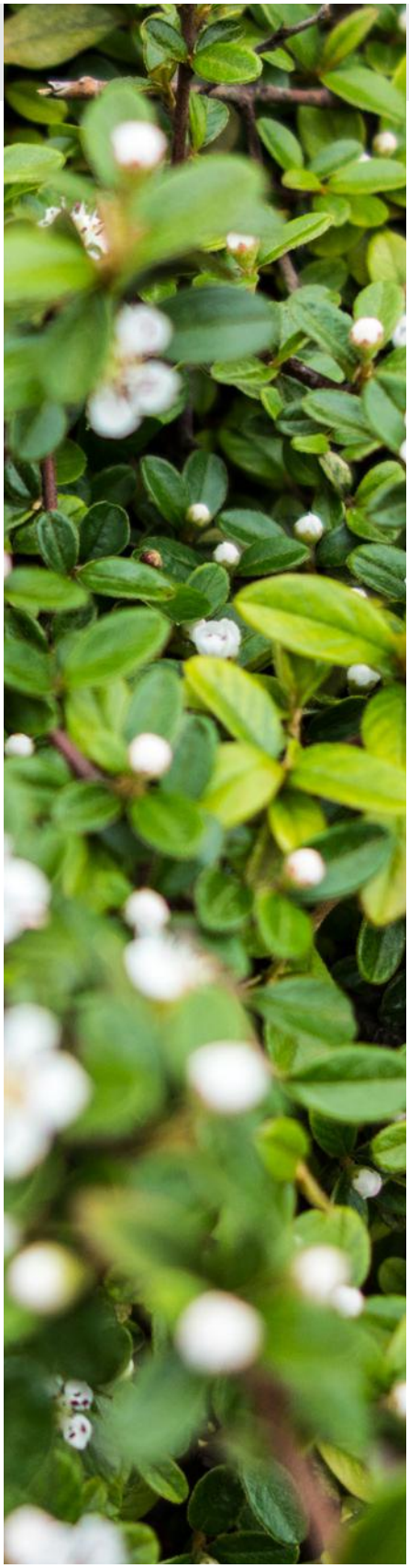
The facing page contains summary recommendations for enacting impactful reforms in Hungary's education, skills and employment ecosystem. These high-level recommendations take into account observations during site visits, discussions with school leaders, student focus groups, policy-maker discussions and, of course, the national surveys on education technology.

However, a deeper dive is necessary to enact the most effective programs. An essential part of the HP NETA process is a formal review with key stakeholders. During July and August 2016, the consulting team will analyze and present the findings and recommendations to Hungary's senior leadership.

Multiple voices should drive holistic policy

The observed data show clear differences in how schools in Hungary are perceived by teachers, parents, students and employers. Each has a major stake in the success of the education system, and each can contribute meaningfully to reform and improvement.

- Teachers
- Students
- Parents
- Employers



Top-line Recommendations for the Hungary Digital Education Strategy

1 Empower and enable teachers through a national professional learning network.

Hungary should consider building a national network for professional development, including the creation of the following: national MOOC for teachers; education technology certification program; national learning object repository in Hungarian and English; national teacher social network to exchange best practices and examples.

2 Engage employers and the private sector.

This will create a "closed loop" system and help ensure that the skills taught at school translate into real-world usage to make students - and the entire economy of Hungary - more globally competitive.

3 Ensure equitable access through *structured BYOD*.

Create a structured BYOD program which identifies "Hungary Digital Education Certified' configurations, certified by the central IT and education authorities to be compatible with Hungary's assessments, student information systems and applications frequently used by teachers and students. This approach to BYOD mitigates two key issues: equality and technical compatibility.

4 Include parents & adult learners in the Hungarian education ecosystem.

Provide opportunities for lifelong learning, particularly around digital and technical skills which will empower those out of school. Online, this could include basic digital skills online courses to advanced coding courses. In person, schools could host evening courses for parents interested in building their digital skills to either help their students or increase their own qualifications.

5 Modernize the curriculum and democratize instructional decision-making

While a strong national curriculum is essential to a successful education system, the consulting team believes Hungarian teachers should be given more control over *how* they teach: methods, pacing & planning. Teachers should have access to learning objects which are homologated by the central government, as well as a LRS (Learning Records Store) for individual student records. This will empower teachers while maintaining consistent outcomes and expectations throughout Hungary.

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