

# DESIGNING THE FUTURE CLASSROOM

Issue 4 – January 2016



## Chromebook Research and Professional Development Programme

Evaluation Report

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## ABOUT THE PUBLICATION

The report is created by the European Schoolnet based on the 'Chromebook Research and Professional Development Programme' that was supported by Acer and Google for education. Read more at [fcl.eun.org/chromebook-pilot](http://fcl.eun.org/chromebook-pilot). The content of this report does not necessarily reflect the official opinion of Acer or Google, and responsibility for the information and views expressed in the report lies entirely with the authors.

## PICTURE CREDITS

Filey Junior School (front cover, p.18,19); Oleksiy Mark/Shutterstock.com (p.1); European Schoolnet (p.2); Corlaer College (p.9,10); Elgoibar Ikastola (p.13,14); Compton CE Primary School (p.16)

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## Introduction



The Chromebook Research and Professional Development Programme was a collaboration between European Schoolnet, Acer and Google for Education, with funding and equipment provided by Acer and Google. It ran in 2015 and involved six schools in the Netherlands, Spain and the United Kingdom in which teachers followed a professional development programme and used Acer Chromebooks and Google Apps in the classroom. This report compiled by European Schoolnet outlines the process and results and includes case studies and issues to consider in adopting a similar approach to that used in the project.

The aim of the evaluation was to explore the impact of Acer Chromebooks and the associated Google tools, such as the management console, on both pedagogical and administrative processes in the classroom and school. The evaluation was supported by a professional development programme, whose aim was to provide the foundation for such impact by training teachers to use the technology in a pedagogically effective manner.

Thanks are due in particular to the students and parents in the schools participating in the project and to the head teachers and teachers for their enthusiasm, commitment and professionalism throughout the programme.



# Methodology

Acer, with the help of their country representatives, selected the schools to take part in the project: two schools from the Netherlands, three schools from the United Kingdom and one school from Spain.

All the schools already had Chromebooks and each was given an additional five midway through the project. There was no need for initial installation of these additional devices, as the schools already knew what to do.

Five of the six schools (10 teachers, including two head teachers) attended the first two-day workshop at European Schoolnet's Future Classroom Lab in March 2015.

The sixth school was unable to provide a representative owing to staff illness, but was represented at the second.

The workshop was led by Bart Verswijvel of European Schoolnet, with the assistance of Cindy Crannell (Google for Education certified trainer) who ran a session on Google tools and helped coordinate technical assistance around the set-up of the Google management console for the schools. The workshop focused on creating scenarios and learning activities using the *Future Classroom Toolkit*<sup>1</sup>. This helped schools focus on benchmarking themselves on a maturity scale, identifying areas for development and imagining how



**1st workshop at European Schoolnet's Future Classroom Lab**

improvements could be made. By the end of the workshop, the schools had drafted future learning scenarios to be developed and implemented during the project.

At the workshop, schools were asked to start writing a blog with information about the project and links to pictures and videos, and to share practice and comments in the Google+ community. In a follow-up conference call, schools updated each other on what they had been doing following the workshop. Each school published its scenario created in the workshop before the summer break, a 'big picture' of intentions.

A second workshop took place in September 2015, again led by Bart, with support from Cindy, with the focus on the next stage of the future classroom scenarios process: developing learning activities to trial in the schools.



**2nd workshop: Designing innovative learning activities**

At the workshop, each school presented an update on their work, covering progress on bringing about change in the school and what they had written in their blogs. As each school had a different focus, it was decided to ask them to produce a case study in addition to the blog, in order to fully capture activities and experiences.

Following the workshop, schools implemented the planned learning activities supported by the project team, kept notes of progress in their blogs and posted news on the shared space.

In the last weeks of the project, participants completed a second online questionnaire, produced mini-case studies and presentations, and described their experiences and successes in a dissemination webinar in early December 2015.

<sup>1</sup> <http://fcl.eun.org/toolkit>



# Evaluation

The evaluation of this small-scale project was undertaken by Anja Balanskat and Roger Blamire of European Schoolnet and aimed to explore the role of Acer Chromebooks, the associated Google tools and the related professional development programme play in:

- Supporting innovation in learning
- Impacting on pedagogical practices
- Solving whole school and technical challenges.

Given the small number of schools in the project, the evaluation approach was qualitative rather than quantitative, with the aim of capturing and analysing change in practices and perceptions as a result of the project. Evidence came from a wide range of sources, beginning with a baseline and final questionnaires in [April](#) and [November 2015](#) and including blogs, interviews, mini-case studies, statements during webinars and workshops, video clips and the scenarios and learning activities created at the workshops.

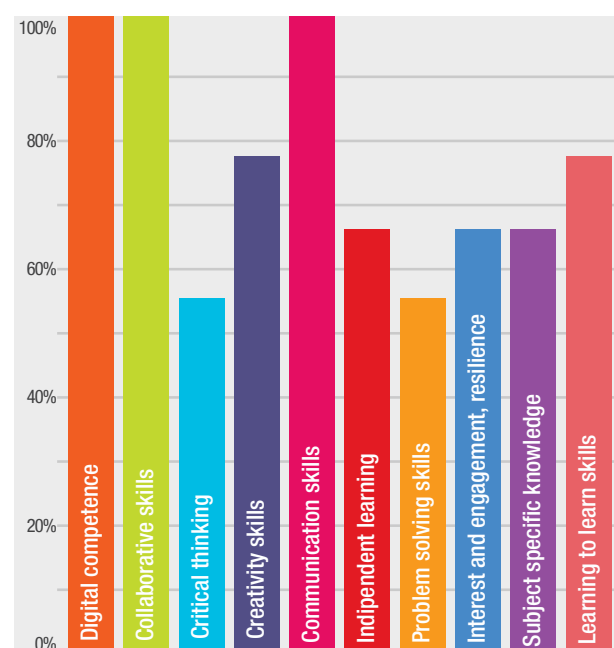
The six schools in the project were diverse in their governance and vision and they covered the full age and ability range, with students in primary, lower and upper secondary schools. The schools were nominated by Acer to take part in the project and already had a number of Chromebooks in use. According to the April 2015 baseline survey, most of the ten 'lead teachers' in the schools taking part in the project were experienced teachers, eight having taught for more than 20 years (but two fewer than five). In addition, most considered that their school provided good leadership support and encouraged and supported innovation and experimentation. Six of the ten teachers had used ICT for more than ten years and all ten already worked with students using Chromebooks. Most had benefited from substantial professional development. Moreover, the teachers considered that they had good wireless connectivity and good access to hardware and software in their classrooms. In short, the teachers were fortunate in enjoying favourable conditions for innovation: having good access to technology, being well supported and working in schools that were open to change.

All schools aimed for more widespread use of technology across the whole school, not only in the classrooms of the lead teachers actively involved in the project. However, across the whole school, unlike the lead teachers' classrooms, the picture reported by the teachers was not as positive, and is representative of many other schools. The lead teachers identified a range of challenges in their schools which they aimed to use the project to help

address. These included:

- Teachers' competence and attitudes
  - ▶ Low IT skills of some teachers
  - ▶ Lack of time to familiarise themselves with new devices and applications
  - ▶ Unwillingness to experiment with technology
- Pedagogy
  - ▶ Differentiating and personalising learning
  - ▶ Changing the role of the teacher
  - ▶ Promoting collaboration and creativity
- Students
  - ▶ Increasing engagement in learning
  - ▶ How to give students more control over their learning

The schools in the project were ambitious in their intentions to address these issues, and in particular to develop student competences. As can be seen in fig. 1 (derived from the baseline survey), all aimed to develop students' digital competence and communication and collaborative skills, and at least half wanted project activities to support the development of other so-called 21<sup>st</sup> century skills: critical thinking, creativity, independent learning, problem-solving, engagement with learning, learning to learn, and subject-specific knowledge, skills and understanding (for example in science).



**Figure 1: Percentage of teachers intending to develop key competences**

The two face-to-face workshops were designed to help the teachers design scenarios and activities that tackle the challenges and enable students to develop these skills. Online post-workshop surveys showed that both workshops were highly appreciated.

**Subject:**

**Re: Chromebook workshop -  
feedback from workshop 1**

Hi

I wanted to make a few comments about the course in Brussels.

Firstly, a massive thank you to the whole team who have made this happen. As a busy headteacher I felt this was a brilliant use of my time and gave me the space to engage with other professionals and be enthused by ways forward in using technology to enrich learning. The whole team were really great and I am so honoured to be part of this project.

Secondly, leading on from the above I just wanted to state that we are really committed here at school in using the learning from the course and the subsequent study to raise the standard of learning and teaching in our school. There is a real drive and I hope we will be able to make you feel it was worthwhile involving us.

Many thanks once again and really looking forward to getting things going back at school.

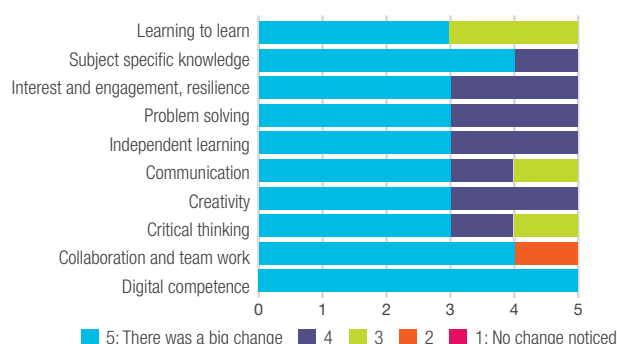
All the best, Steve

*Unsolicited email from Steve Cleave  
(Head Teacher from Compton, UK)*

## Learning

As seen above, the project teachers wanted students to develop a wide range of competences, working with others for example. In an online follow-up survey, five of the six schools estimated to what extent the project developed student competences. Figure 2 shows the results, with all reporting a 'big change' in digital competence, four in collaboration and subject knowledge, and three noting improvement in all other competences. Teachers' comments reinforced this perception: "Collaboration of pupils is much better than before," said one, "They can easily work in teams, using the instant synchronization feature."

To what extent did students develop the following skills/abilities?



**Figure 2: Competences developed by students**

As well as intended outcomes, there were some unintended results such as new ways of working (even if not perhaps expected by teachers?): "You can stay at home doing the homework with the group" said a Spanish student, and a parent noted that "thanks to the laptops, they don't need our help to do their homework." Another is hinted at in this observation by a teacher: "Children are getting good at evaluating each other's work", an important comment that begins to reveal how students' working practices in the project opens up interesting possibilities for supporting new forms of peer assessment and constructive formative feedback.

Several teachers thought that learning became more efficient by the end of the project, in large measure because of the convenience, ease of use and speed of Chromebooks. A parent observed that students "don't have to carry books back and forth", a teacher that "everything they need is handy", one student that the Chromebook "isn't a very big computer, and I can do my homework without worrying, because the computer goes very fast" and another that "You have all the information that you need in a computer."

## What was the result of this process in schools?

We found that the project impacted significantly on learning, teaching and the whole school.

## Teaching

Teachers adopted new roles, ‘letting go’ of learners and giving them more choice. In a Dutch school, *‘our teachers have learnt to change their role from teacher to coach’* and a teacher in another school observed that *“students acquire more autonomy”* using Chromebooks and learning resources in the cloud. When students have their own device and can access their work wherever they are, innovative approaches proved to be quite easily achieved: *“Students are learning to use digital follow-up: flipping the classroom is no longer scary”* in the words of one of the project teachers. Such seamless learning – and ubiquitous all-seeing teachers – was welcomed by at least one student: *“On the Chromebooks the teachers can see what you are doing, whether you are in class or at home”*. It was notable that barriers to sceptical or reluctant technology users among the school staff were low, and so whole-school diffusion of innovation was high. According to one of the lead teachers in the Netherlands: *“A lot of teachers who normally have a problem with using ICT are now trying a lot of programs,”* a sentiment echoed by one of the teachers whose views probably represent those of many others: *“I’m not innovative. My attitude is wait and see. When I see that something new has its uses and it works properly then I switch.”*

## Whole school innovation

The ‘future classroom scenario’ approach behind this and other projects at European Schoolnet enables schools to bring about institutional level change. The Future Classroom Toolkit and process helps teachers think outside the day-to-day reality of their school, to imagine possible futures based on trends, challenges and opportunities. Then to plot where they are in terms of teaching, learning and technology against a maturity model and design and implement learning activities to make the scenario happen, supported by technology – in this case Acer Chromebooks and tools by Google and others. Above all, the approach puts teaching and learning in forefront, not technology and ensures that activities support desirable educational outcomes, in particular collaboration, creativity, the flipped classroom and independent learning. Face-to-face workshops are an important, admittedly expensive, element in the process, as the teachers recognized.

The scenario-led thinking enabled schools to prioritise educational objectives over technology. They focused on the ‘big picture’, for example a school would select apps that helped teachers move along the Substitute-Augment-Modify-Re-engineer continuum towards digital

maturity<sup>2</sup>, rather than those that simply substituted technology for pencil and paper. Google Classroom was found to be particularly powerful in this respect, as it made the move towards modifying or even re-imagining classrooms more achievable. Another example is a school that was concerned about the unwillingness of teachers to adopt technology where it chose to use apps that teachers readily pick up and use, in particular Kahoot. As one of the Dutch teachers said, *“Plan carefully, set goals and only then procure”*. The approach also helped schools to direct and concentrate effort rather than try to change everything, for example focusing on one or two curriculum areas (e.g. English), and a small number of applications: *“focus on just three apps at first”*. The apps that proved most popular – among many used – among teachers in the project were:

- Google Classroom, enabling teachers to create different groupings within the same grade, plan tasks, help students acquire organising skills and take responsibility for their learning
- Google docs, to make it possible for students to work collaboratively ‘anytime anywhere’, to use the over worn cliché
- Kahoot, for creating games easily, with interactive, competitive elements
- Screencastify, to record voice, screens and images
- Storybird, for editing stories created by students

Scenario thinking and planning alone do not bring about change however; action is also essential on people and resources.

Schools in the project worked on people affected by change, not only supporting teachers with targeted, on-site, relevant pedagogy-led professional development but also involving school leaders (with weekly progress meetings in one case), parents (evening hands-on meetings), and students – notably a ‘Google Expert’ scheme. For further detail, please refer to the school case studies.

Schools made sure the technological infrastructure worked to provide teachers and learners with the necessary reliable devices, tools and connectivity. Wireless networks were generally fast and reliable in all schools, and homes too. Some schools moved all resources from individual computers and local networks to the Cloud: *“Everything now stored and shared using Google Drive”*, as one teacher said. One school noted the absence of a built-in camera in Chromebooks, but was pleased to find that an external one can easily be connected via the USB port.

<sup>2</sup> PuenteDura, RR, Learning, Technology, and the SAMR Model: Goals, Processes, and Practice.  
[www.hippasus.com/rpweblog/archives/2014/06/29/LearningTechnologySAMRModel.pdf](http://www.hippasus.com/rpweblog/archives/2014/06/29/LearningTechnologySAMRModel.pdf)

According to the head teacher leading the project at Filey Junior School, the use of the Chromebooks, combined with the Google management console and Google docs brought significant benefits to the administration of the school, as well as to teaching and learning. Providing instant access to both curriculum and administrative data in the cloud, the management console facilitated analysis to inform the leadership team. For example, the schools' accident log is now kept online enabling management to monitor and analyse trends: what year, what class, what time of day accidents happen, and the nature of the accidents. Similarly for behaviour, to identify where it is not so good. The use of online forms for monitoring staff 'learning walk' reports enabled the leadership team to see at a glance how often each member of staff observed something of interest, what was learnt and achieved. The immediacy and easy access to this level of data is a significant benefit for the school.

The Chromebooks themselves were appreciated, in particular because of their speed of operation and the fact that they "*always work*". Students liked their small size and rapid start-up.

Some schools did not allow students to take school Chromebooks home, while others did. In Corlaer College and Filey Junior School, students were allowed to take school-bought Chromebooks home whenever they wished. At Elgoibar Ikastola, with both school- and parent-bought devices, students were free to take them home, whoever the owner. On the other hand, Compton Junior School did not allow the school's Chromebooks to be taken home.

What was noteworthy in this project was the technology became invisible, taken for granted. The cloud-based Acer Chromebooks and Google management console and education applications simply worked.

There was a marked absence of common complaints about technology frequently made by teachers in other projects, for example equipment failures, unreliable operation of software, the need for technical support for the technology to be used in lessons, short battery life of tablet computers. In this project, the technology simply worked, as it should.

Overall, the project had a significant impact on the participating schools, on teachers' and teaching and on learners and learning. The widespread availability of Chromebooks and permanent access to learning resources created with Google tools played a major role in this successful outcome.

The following sections aim to help other schools considering *cloud-based learning* and the use of Chromebooks and describe what happened in each school and the impact of the project on the school, teachers and students.



# Analysis and recommendations

Chromebooks have rapidly established themselves as a popular purchase in schools in some countries, particularly because the total cost of ownership is low (enabling schools to reach 1:1 user-device ratios) and little time is needed to configure and manage them. They now make up more than half of all devices in U.S. schools<sup>3</sup>, although in Finland and the UK the figure is around nine per cent<sup>4</sup>.

It is clear that the schools in the project found the experience of using Chromebooks and Google apps very positive, and that their use impacted on students, teachers and parents. The devices are well suited to the school environment, being robust, fast, small and lightweight, and apps proved easy to use and well suited to educational aims. Learning became more efficient according to teachers in the project, extended beyond the classroom, and students were near unanimous in their enthusiasm for the new way of learning.

A number of key recommendations to schools considering adopting the approach in this project emerge from the project:

1. Involve school management and all stakeholders, including parents, in planning and implementation
2. Ensure there is a funding model in place for procurement and to fund and sustain the necessary connectivity, especially broadband and wifi.
3. Use the Future Classroom Toolkit or similar change management tools to think about the educational purpose and learning outcomes of the project
4. Have a school policy on privacy and data protection issues, provide information and advice to teachers, students and parents<sup>5</sup>; consider applying for the e-safety label<sup>6</sup>

5. Initially, narrow the focus to one or two curriculum areas and a small number of apps to support them
6. Provide technical support to teachers (even though Chromebooks proved reliable and easy to use)
7. Consider exploring how data captured at students used the devices and tools can personalize learning more and improve school management and decision making
8. The many schools that have already invested in learning platforms could consider a visit to a school using Chromebooks to ask questions and decide if the Google Apps for Education solution is for them.

This advice is in line with more extensive guidance published by European Schoolnet in BYOD: Bring Your Own Device, a Guide for School Leaders<sup>7</sup>. The guide is designed to provide school leaders, local education authorities and other decision makers with information on BYOD trends, options and examples from schools in European countries and in other parts of the world.

In a future project more comparisons could be introduced by increasing the number of schools and countries involved, possibly over a longer period, and including some that have already invested in a learning platform (Moodle, itslearning, Fronter, etc.) but are considering switching to Chromebooks and GAFE, and some that have no experience with Acer Chromebooks and GAFE or any other learning platform. Such a project could include a strand investigating how learning analytics could add value within the Google ecosystem, to improve teaching and learning and support management, at school level and possibly at an aggregated level by education ministries.

<sup>3</sup> [www.nbcnews.com/tech/innovation/education-101-google-chromebooks-multiply-u-s-classrooms-n473731](http://www.nbcnews.com/tech/innovation/education-101-google-chromebooks-multiply-u-s-classrooms-n473731)

<sup>4</sup> Futuresource data.

<sup>5</sup> The seamless operation of Chromebooks and Google Apps for Education is possible because, by default once logged in, Chrome Sync tracks usage, e.g. web pages visited and search terms used (even if navigating outside the GAFE suite) and passwords saved. Users can disable Chrome Sync or choose what **information to sync in settings whenever they choose** – see <https://support.google.com/chromebook/answer/2914794?rd=1>

<sup>6</sup> [www.esafetylevel.eu/](http://www.esafetylevel.eu/)

<sup>7</sup> [http://fcl.eun.org/documents/10180/624810/BYOD+report\\_Oct2015\\_final.pdf](http://fcl.eun.org/documents/10180/624810/BYOD+report_Oct2015_final.pdf)



## Case studies

The case studies in this section are based on mini-case studies produced by the lead teachers themselves, supplemented by material from the scenarios, learning activities, video clips, blog entries, presentations and interviews produced during the project. The full set of resources can be found on the Future Classroom Lab website<sup>8</sup>.

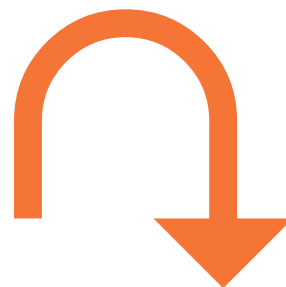
The case studies tell the story of how the schools moved in just eight months from the baseline maturity level established at the first workshop in March 2015 to the aims they set themselves, showing how learning-led change was supported by technology. The approach and focus of each school was different, as was how they reported progress – hence the different tone in each case study. What all have in common however, is a successful outcome, in particular:

- Corlaer College: Building teacher and student digital competence, personalizing learning
- CSG De Waard: Innovation across groups of schools, cloud services, wireless networking classrooms, developing resources
- Elgoibar Ikastola: Engaging with the head teacher and parents, creating the 'digital school', listening to students
- Compton: Motivating students through a 'Google Expert' scheme, involving parents through evening sessions, using scenarios to transform teaching and learning
- Filey: Embedding change across the whole school, curriculum and management, self and peer assessment processes.

It was not possible to produce a case study for Tadcaster Grammar School (United Kingdom) owing to changes in personnel which reduced the level of participation in the project. In the school all 13-14 year olds have their own Chromebook, and they are used in economics and geography lessons for older students. Google Classroom and Mail were introduced across the school. At the same time, all teachers are participating in professional development programmes at three levels: beginners (apps and using email), intermediate (Google Classroom) and expert (other apps, going further).

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<sup>8</sup> <http://fcl.eun.org/chromebook-pilot>



## CORLAER COLLEGE, THE NETHERLANDS

### Teacher competence building

In Corlaer College in Nijkerk, Netherlands, the priority of project coordinator Berend Jan de Groot was to provide professional development and support for teachers. As he writes in his blog<sup>9</sup>:

“We work in a group of 20 teachers on Chromebooks for 21st century skills. We are also thinking about what the students need. What do they need in the future, what do they want at this moment? You want to use the Chromebook but, is it useful? Has the computer a really added value? Otherwise, it’s unfortunate and they don’t need it. After school the students lose a lot of time with phones, Playstations and computers. That’s why we think it’s convenient to use the Chromebook only if there is added value.”

Teachers’ attitudes and competence levels varied considerably before the project but Berend felt that all knew more by the end of the project, often learning from each other. The biggest change noticed during the project was students’ digital competence and subject knowledge and a move by teachers towards personalizing learning: *“A big advantage of the Chromebook is that students have the opportunity to work on different things,”* said one. Berend was particularly pleased to see that *“a lot of teachers who normally have a problem with using ICT are now trying a lot of programs (like Kahoot etc.).”*



During the project teachers met to explore together different educational apps – 73 are mapped against ten media literacy competences in a useful open document<sup>10</sup> created by Berend and the teachers. They chose apps to develop their skill level identified using an online tool Competentieniveaus van de 10 mediawijshedencompetenties<sup>11</sup>.

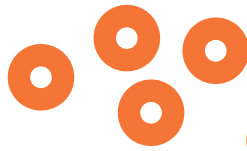
Chromebooks had been in use in the college for three years and an early decision was made by the college management and staff to allow students to take devices home ‘*whenever they want*’ according to Berend.

<sup>9</sup> <http://chromebookcorlaer.blogspot.be>

<sup>10</sup> <http://tinyurl.com/tools-en-act>, available under Creative Commons licence.

<sup>11</sup> [www.mediawijzer.net/wp-content/uploads/Competentieniveaus.pdf](http://www.mediawijzer.net/wp-content/uploads/Competentieniveaus.pdf)

Teachers – of Dutch, German, geography, biology and history – were positive about the training experience and the new tools to which they were exposed. Importantly, the training transferred to classroom practices; as one experienced teacher – typical no doubt of many in his attitude – said: *“I’m not innovative. I’m not the one to volunteer to use something new. My attitude is wait and see. When I see that something new has its uses and it works properly then I switch.”* Others liked the fact that everything is in the cloud: *“I can watch what students are doing without interrupting, live,”* according to one, while another said *“Teaching has become easier. I have way more resources and I don’t have to carry separate books for each class. I can just use my tablet or my own Chromebook to teach.”* The fact that students too do not have to carry

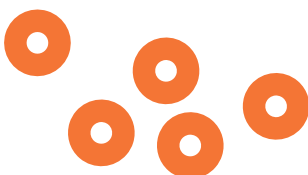


books around seemed to help teachers give them more responsibility for their learning. A science teacher, an experienced user of interactive whiteboards, felt that students learnt more effectively: *"Watching video in biology works better on Chromebooks than on the smartboard."*

Looking forward, Berend said, *"In 2016 we want to work with publishing houses and use digital methods that are modern and progressive. We want to invite them to come to our school and see the added value of digital learning."*



*"Teaching has become easier"*



## CSG DE WAARD, THE NETHERLANDS

### Effective learning time has increased

Klaas Russcher and Jip van der Pols manage ICT for the school board CSG de Waard, a cluster of rural schools in 12 different villages in The Netherlands with a total of 3,000 students aged four to 12. They describe the schools as *"traditional Dutch primary schools; open-minded, cosy."* Their role is to advise and support schools.

Pupils are learning to make the most of Google education possibilities and, in all the schools, a priority is to develop collaboration and personal learning. According to Klaas *"the possibilities of Google education tools are excellent for 21<sup>st</sup> century skills."* Their aim in the project is to move from paper to digital: to develop the schools' technical infrastructure to support Chromebooks and to develop digital competences, personalised learning and class management using Google applications.

Each school now has a resilient wireless network, wired networks being due to be phased out in 2019. Before this project, working in the cloud and sharing documents was not possible. All schools have Acer Chromebooks (600 in total) and use them every day. By 2019 the aim is to have a Chromebook for each pupil from grade 5 to 8 (Age 9 - 12) and for the younger pupils enough for a class (about 25 to 30). Klaas and Jip have started a blog for ICT and built Waardnet, an intranet for the school board, giving easy access to text books, lesson plans and sharing experiences and URLs. They are pleased with progress: *"Things have really changed; Chromebooks always work."*

The schools are piloting Muiswerk to support personalised learning in maths, reading and Dutch and testing it in collaboration with the developers. In addition, they are using Nieuwsbegrip<sup>12</sup>, a digital platform that uses news stories to improve student reading comprehension, and trialling it in Google Classroom.

The most popular apps are Gmail, Google Drive, Google Classroom and Kahoot. Kahoot, a game-based learning platform, is a particular favourite with students in grade 6 (9-10) or 7 (10-11), as it fosters good collaboration and an enthusiasm for sharing the resulting games. Access to Google+ is blocked by the management systems *"because of the age of the students,"* according to Klaas.

*"Everyone is enthusiastic,"* says Klaas, *"Parents appreciate this new development."* He finds that *"effective learning time has increased enormously and the collaboration of pupils is much better than before."* There is evidence that students show more concentration and work at their own level. *"Children are open minded*

*and getting good at evaluating each other's work,"* says Jip. Teachers too have changed how they teach and manage learning, building on the possibility of learning outside school: *"Our teachers have learnt to change their role from teacher to coach, 'letting go' of the students. They are learning to use digital follow-up: flipping the classroom is no longer scary. Pupils work outside the classroom."* They have learnt to use Kahoot in class by creating Kahoots for themselves first, a process Klaas calls *'reciprocal teaching'*. Teachers also share documents more than previously.

Klaas and Jip would like to see further developments: *"We need more Dutch apps and hope that Google Chrome makes it soon possible to use Android and maybe Apple apps."* Reflecting on progress, they advise other schools to *"take time for changes: plan carefully, set goals and only then procure Chromebooks. Don't go too fast. Make time to reflect and look forward. Involve stakeholders. Work on three good apps."*

<sup>12</sup> <http://www.nieuwsbegrip.nl/>

## ELGOIBAR IKASTOLA, SPAIN

### Learning in and out of school

Elgoibar Ikastola is a comprehensive school in the Basque region of Spain with 982 students aged from kindergarten to 16, established in 1962 to promote the Basque language and culture among the citizens of Elgoibar and the surrounding area. With the objective of offering a progressive education, the school runs projects in different areas, adding the use of ICT in education and in daily life. The school is run as a cooperative, where apart from professionals, the involvement of parents and students is promoted and guaranteed.

In the project, the school's aim was threefold: to train teachers, to enable easier sharing of work between teachers and students, and to train and involve parents.

From the beginning of the project, the two lead teachers, Miren Arrate Arrieta and Nuria Revuelta, were supported by head teacher Jabier Larrañaga – highly important in this kind of project involving whole school change. They involved other teachers by training them in the use of Classroom, Kahoot, Screencastify, Lucidchart and Storybird. Teachers used them in class and shared evidence in the blog created for this project. Classroom is now used in almost all grades from upper primary upwards<sup>13</sup>. Students work on learning activities produced by teachers using Learning Designer, such as Film Week and creating stories for nursery children using Storybird and Screencastify.

For three years the school has been piloting the EKI project<sup>14</sup>, which enables the school to develop new material that considers the person as a whole – practices and skills that are useful for both subject learning and in life. Learning materials for the six core subjects are digital and more useful than text books (the traditional EKI resource) as they offer pedagogical benefits as well as sustainability: the strategies, procedures and working habits underpinned by this approach are dramatically different compared to the previous method. No textbook has been used for three years. In lower secondary school, resources for the six core subjects are hosted on Moodle and in the cloud. Chromebooks have therefore become a fundamental tool in the implementation of the EKI project and are used every day.

The head teacher, Jabier Larrañaga and teachers Miren Arrate Arrieta and Nuria Revuelta are enthusiastic:

“Students now have a new learning method thanks to the use of Chromebooks both at school and at home. As soon as the Chromebooks are switched on (they start up quickly), students are more motivated and enthusiastic. As their work is stored in the cloud, they can work wherever they have web access. They can easily work in teams, using the instant synchronization feature. As they use different applications everyday, they are acquiring and internalizing digital competences.”

In the second year of secondary school, each student's family buys their own Chromebook. They buy in the second year and not in the first because it was thought (mistakenly) that the eight-hour battery life would diminish over the four years the devices were expected to be in use. “For us the Chromebook is another didactic resource (like textbooks),” says Miren, “so it is important that while students are with us, the Chromebook must be “protected”. We have obtained three years of insurance cover.” Students sign a contract, with the school, in which the details of how the devices are to be used are set out.

Students in the primary classes use the school's Chromebooks, and in this case are not allowed to take them home. When the students buy their own Chromebook, they sign with their families – not the school – a contract or agreement in which they say that they have to look after it, charge the battery, and bring it to school everyday.

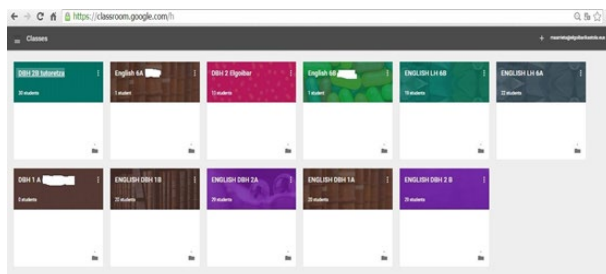
The use of apps has also benefited those students who have learning difficulties by differentiating and personalizing learning activities. Google Classroom offers many possibilities for making groups, so the teacher

<sup>13</sup> Blog describing the implementation process: [http://elgoibarikastolachromebookpilot.blogspot.com.es/2015/06/chromebook-implementation-steps\\_30.html](http://elgoibarikastolachromebookpilot.blogspot.com.es/2015/06/chromebook-implementation-steps_30.html)

<sup>14</sup> <http://eki.ikasgune.com/?lang=en>

can create groups that do not necessarily correspond to grades. Monitoring students has become much easier as Chromebooks are compatible with the school management information system. Connecting teachers and students with school subject resources and activities can be done digitally in a practical, easy and fast way.

Besides being a useful tool for teachers to organise and share their work, Chromebooks enable more teacher-student and student-student communication. The digital notebook and the activities can be organized and shared very easily and quickly. Furthermore, that functionality and speed improves the quality of work and learning. *"With our teaching material digitized, it can be used in different apps and students can monitor and regulate their learning,"* says Nuria.



**Different groups in each grade**



**Digitised resources for English on the EKI platform**

Families need to be informed about the project and how the Chromebooks are used, and so, three years ago, the school started training parents at the beginning of the school year. The school has been training parents for three years, teaching them how to use Chromebooks and applications and how students are using them. Families appreciated it and said that now they know better what their kids are doing<sup>15</sup>: *"It's a methodology for reflection and it activates the dynamic of making the students think,"* said one. Parents like the fact that everything needed is in the Chromebook, assuming there is wifi at home of course. As one parent said: *They don't have to carry books back and forth, and thanks to the laptops, they don't need our help to do their homework. It looks like it's not difficult to work with them."*

Three years ago, the school selected the devices for the EKI project, based on criteria including switching on speed, easy-to-read screen, physical keyboard battery



**Training session for parents, October 2015**

autonomy. After having analyzed many, they chose two Acer Chromebooks: the 720 in the 5th and 6th grades of Primary and in the first year of Secondary School and the 720p in 2nd and 3rd grades of Secondary. In second grade of Secondary, the students buy the devices, so they can take them home. Other devices are bought by the school and can only be used at school. Secondary school teachers use Chromebooks in their daily routine, and every teacher has their own device. They're also used in grades 5 and 6 every day, in almost every subject. Thanks to Chromebooks, students can work calmly and normally and teachers can take advantage of the lesson without any kind of disruption.

The most used apps are:

- Classroom: to make different groups in the same grade and to plan tasks. Students acquire organising skills and they take responsibility
- Kahoot: good for practising grammar
- Lucidchart: for making diagrams
- Screencastify: easy to use for recording voice, screen and image
- Storybird: in language classes, to edit stories created by the students
- Canva: to make posters in technology classes, a valuable tool for students to look for pictures offering a greater variety of images than Google.



<sup>15</sup> Blog: [http://elgoibarikastolachromebookpilot.blogspot.com.es/2015/10/parents-training\\_28.html](http://elgoibarikastolachromebookpilot.blogspot.com.es/2015/10/parents-training_28.html)

Teachers are enthusiastic; as one said:

“Students are motivated because the material we use is very visual. They get very excited when we use programs such as Kahoot: its interactivity and competitive elements encourage them and they learn very quickly. When they have to look for information on the Internet or they have to watch a video, everything they need is handy and they don’t lose time switching the laptops on and off. Also teachers can easily access students’ work and can interact with them very easily, especially using Drive and Classroom.”

The use of Chromebooks and Google apps has contributed to innovation in the school. According to one teacher they *“made communication faster and the material is more visual and interactive, whereas before it wasn’t like that. Students acquire more autonomy and other competences that are only possible to acquire by using digital platforms.”* They have enabled the progressive digitization of the entire school: school planners both for teachers and students, marks, digital books, teacher-family feedback, teacher-student feedback, administrative tasks, invoices sent by e-mail.



The school organized a student survey and found high levels of enthusiasm about Chromebooks<sup>16</sup> – provided the wifi worked:

- Very useful because it is very easy to use
- Useful and good, because it is comfortable
- Very fast and easy
- Sometimes the wifi goes and we can’t do anything
- It has applications that makes it easier to do your homework
- It switches on very fast
- Writing in the computer is more comfortable than writing on paper
- Very useful, because it isn’t a very big computer, and I can do my homework without worrying, because the computer goes very fast.
- You have all the information that you need in a computer. And you can share information with other people.



Students were asked to compare Chromebooks with printed textbooks:

- Chromebooks have more options to do things, you can forget the books at home but not Chromebooks
- The book takes up a lot of space, but the Chromebook doesn’t
- On the Chromebooks the teachers can see what you are doing, if you are in class or at home, but not with the paper books
- Communication is easier because you have hangouts and you can compare the document to do in groups and you can stay at home doing the homework with the group

But reservations were expressed:

- With paper books we had more variety of work, more different activities than with Chromebooks
- Sometimes I prefer paper books, because, if the wifi doesn’t work you can do your homework and with the paper books you can do your homework anywhere.
- Paper books are better, because we spend six hours

<sup>16</sup> Raw data: [https://docs.google.com/spreadsheets/d/1BX0sCVM-BbveN73S4SOURZ-\\_WXn78bmxSwjDI8HtKLU/edit#gid=1036396941](https://docs.google.com/spreadsheets/d/1BX0sCVM-BbveN73S4SOURZ-_WXn78bmxSwjDI8HtKLU/edit#gid=1036396941)

a day on the computer, and this isn't healthy for the eyes.

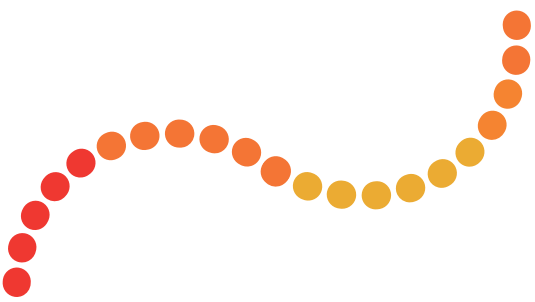
- Chromebooks are better, but not speaking for my pleasure. It would be speaking about the environment
- I prefer the paper books because I've been more time with books, and I'm used to them. But I think I can get used to Chromebooks.

Google Classroom meets with students' approval:

- "When you have homework, the teacher can see automatically who doesn't do the homework, the time when you finish."
- "You can see when you have to send the work. The teacher can see what you are doing and when you do it. When you have to write a text, a short work, sometimes you can see what the others write to have an idea."
  - "You can do the work and send it when you want to in the period, and the teacher can send you a note or put a note saying the mistakes on the work when he/she wants."

The teachers offer the following advice to others wanting to make changes in their school:

“It's essential to guarantee sustainability when planning the project and making it public, especially in a project like ours, which is implemented in different grades and involves students, families and teachers. In other words, it's important to know that the applications that are being used will be available year after year, and if not, that alternative or even better ones would be available. Furthermore, it's crucial to know that, in the future, the devices will retain the basic features and that we will be able to acquire more at a similar price.”





## COMPTON CE PRIMARY SCHOOL, PLYMOUTH, UK

### Engagement and enjoyment in learning, in and out of the classroom

Compton Church of England Primary School<sup>17</sup> in the south of England has 423 children aged four to eleven. Vicky Lambert and Matt Stace describe the school as caring, happy, inclusive and child centered, offering a safe secure environment in an atmosphere of respect: *"We aim to make learning interesting and enjoyable and seek to ensure that children, staff, and parents work as a team to promote learning."*

The school has 120 Chromebooks, used daily across the whole school and in all curriculum subjects but especially in History, Geography, English and Mathematics. They belong to the school and are not taken home by students. All teachers have access to a Chromebook they can take home to research and practise their skills.

The school's aim in taking part in the project was to use ICT more widely across the school curriculum, and so move from simple substitution to more advanced re-engineering models of technology use. *"We have come on in leaps and bounds, and are now using a wide range of apps independently and in conjunction with each other to create innovative learning activities. We are supporting children to become independent, creative thinkers with the confidence to design their own learning activities, using a range of applications,"* says Matt.

Designing good learning comes first in this project and, using the Future Classroom Toolkit and Learning Designer<sup>18</sup>, the school created a scenario to increase collaboration across the school in cross-curricular learning activities and carried out different learning activities to achieve this. For example, seven to nine year-olds used Google Keep to research aspects of Anglo-Saxon life, sharing notes between partners. Says Vicky: *"We wrote scripts for our own documentaries about Anglo-Saxon life, collaborating through Google Docs and used Screencastify to record the documentaries and shared these with families using the Google Classroom. In another activity, nine to eleven year-olds used Storybird and Screencastify to record children's performances of their own narrative poem."* Activities like this motivated students with low level writing skills (especially boys), giving them a purpose to write, and thereby improving their communication skills and digital competence.

In the school blog Matt and Vicky describe other lessons in which a wide range of apps were used effectively (teachers shared the apps they found useful in a Google doc shared by the whole school):

*"The children have loved using Google Maps and My Maps to explore their local area and compare aerial images to street view and their own experiences. They have learnt to take screenshots and share their maps through Google Slides and are beginning to use the collaborative aspects of the Google suite to share their learning. In our English lessons, we have been writing play scripts based on Charlie and the Chocolate Factory on Google docs, collaborating with each other and sharing them with partners for peer feedback. I will soon be introducing the children to the wonders of screencasting; we will then be recording our own scripts over the top of excerpts from the film, using Screencastify."*

*Storybird is a fantastic app that supports children in their writing; artists have donated a wide range of images to the app that can then be embedded into a book and used to ignite children's imaginations. They can use a wide range of images to help them structure and illustrate their writing, and the finished product can then potentially be bought as a published book by parents. Some of our 10-11 year olds have already experimented with writing poetry using this app and in November some of the 7-8 year old children will use it to help them write their stories set in familiar settings."*

*Our 7-8 year olds have been busy learning how to log in and access their new Google Classrooms which are becoming a more common part of teaching in some of our lessons as they provide an ideal start point - somewhere children can get quick and easy links to the*



Compton students at work

<sup>17</sup> <http://www.compton-cofe-primary.org/>

<sup>18</sup> <http://fcl.eun.org> | <http://learningdesigner.org>



*websites they need to complete their work, as well as a forum to ask for more help and support. Some of the classes have already completed home learning tasks set through the Google Classrooms and it is hoped that this will become a normal routine in due course."*

The school has initiated its own 'Google Experts Scheme'. The children have all started working towards their Bronze Google Expert award, which entails them demonstrating they can logon independently, help someone else to login, access the Google classroom from home and submit an assignment through the classroom. The vast majority of children in the classes involved have already achieved this level and are now working towards their Silver award. Some have even started on their Gold awards: *"Impressive considering we only launched this two weeks ago!"* notes Vicky.

The reaction of the children to the project has been overwhelmingly positive:

- "It usually is very FUN!!!!!" (age 8)
- "Chromebooks help you because you are learning but you are also having fun. My favourite app is Google Keep" (age 9)
- "Chromebooks help us because we're learning but having fun at the same time. I think it's always best to have a bit of fun so it seems like you're just playing but you're actually working." (age 8)
- "Google Classroom allows me to ask my friends for advice if I get stuck on homework. I've always got the instructions and it's easy to hand in, as well as talk to you." (age 8)

Matt and Vicky observe that teachers have moved from substitution models of technology innovation to more re-defined activities, promoting collaboration, independence and resilience in learners (the widely used SAMR model of technology innovation<sup>19</sup>): *"The Chromebooks and Google tools have been instrumental in creating change in our classrooms. Google Classroom is a personalised learning platform enabling us to engage teachers, parents and pupils in creating a 21<sup>st</sup> century school."* They noted the high level of students' engagement in poetry writing activities using Storybird and ScreenCastify and were *"surprised by the extremely high standard of work inspired by the high quality artwork available."* Overall, they note, *"We have seen a very positive impact on our pupils. They work much more collaboratively and independently. They are competent users of technology and confident to experiment and try out new ideas."*

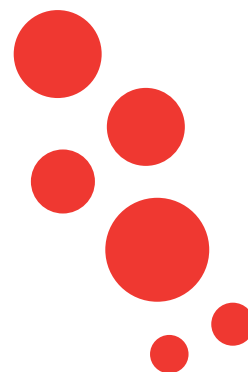
As the project progressed the school wanted to keep

parents informed and engaged. A successful 'Google evening' took place on October 2015. As Matt and Vicky write in their blog, parents' interest was high:

*On returning from Brussels we came back with a real drive to share what we were doing with our parents. We wanted them to know and understand not only what we are doing in our classrooms with the technology, but more importantly, why we are doing it and how they can support their child's learning at home. As a result, we have invited our parents into school to use the Chromebooks, to look at some of the apps we have been using and to see the impact it is having on their learning across the curriculum. We are extremely pleased to see the uptake of this goes far beyond that of any other similar evening put on by the school and shows how keen the parents are to understand the work we are doing. All the places have been filled and we expect to run a similar session in the spring term due to the high level of demand.*

As well as further awareness events for parents, the school hopes to start an action research project on outstanding practice, and to continue rethinking teaching and learning; as Matt and Vicky note: *"We hope to continue to build on using the SAMR model to redefine our teaching, linking back to our maturity levels and our focus on improving collaboration between our pupils. We feel we have made very significant progress towards this and will strive to continue to do so."* The school aims to continue to develop collaboration beyond the school itself, working with Newly Qualified Teachers and colleagues across the city.

Matt and Vicky's advice for colleagues: *"Just go for it - don't hold back, don't be afraid... What's the worst that could happen?"*



<sup>19</sup> Puentedura, RR, Learning, Technology, and the SAMR Model: Goals, Processes, and Practice. [www.hippasus.com/rpweblog/archives/2014/06/29/LearningTechnologySAMRModel.pdf](http://www.hippasus.com/rpweblog/archives/2014/06/29/LearningTechnologySAMRModel.pdf)

## A 1:1 school



the youngest – has their own

**giving their Chromebooks**

i  
all  
cont  
classro  
the future

Harvey adopted a hands-on approach to leading the project in this school and explored the possibilities of the devices and the apps for himself, sharing not only his enthusiasm and vision with colleagues new to Chromebooks, but also practical tips, for example how, in the absence of a built-in camera, an external one can simply be plugged into a USB port.

It was felt important to take small steps – easy tasks that engaged students and provided ‘quick wins’ in terms of the effect on learning. Chromebooks were distributed to the oldest students first (aged 10-11), followed by the younger classes in sequence. The school allowed all students to take their device home, but at first one in three families did not actually allow their child to take up

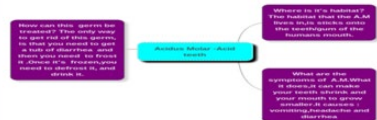
The scenario adopted by the school was 'collaboration partners', a scheme running across the whole school where every child has a partner with whom to share their work and to peer assess it (built into school policies at the start of the project). Teachers were usually involved only at the first draft and final version of students' work. A simple written proforma was used by all students, using a four-point TAME scale.


T - Target  
A - Almost  
M - Met  
E - Exceeded

An example of a completed form is below, including comments and suggestions from the teacher.


Friday: 28th November 2015					
Learning Objective: Structure a non-chronological report effectively.					
Self Assessment	Peer Assessment	Success Criteria	Teacher Assessment		
			First Draft	Second Draft	
M	M	<u>Subheadings</u>	M	M	
M	M	<u>Introduction - Main body - Conclusion</u>	A	M	
M	A	<u>Links within paragraphs.</u>	A	M	
A	A	<u>Multi-clause sentences</u>	M	M	
M	M	<u>P( ) : ; , ...</u>	T	T	
A	A	<u>Own target Link sentences within paragraphs.</u>		M	
T - Target A - Almost M - Met E - Exceeded					

T - Target; A - Almost; M - Met; E - Exceeded




 Mrs E Butler  
11:49 Today Receiving

NS: Focus now on up-leveling your vocabulary to make your report sound scientific.

 Mrs E Butler  
11:53 Today Receiving

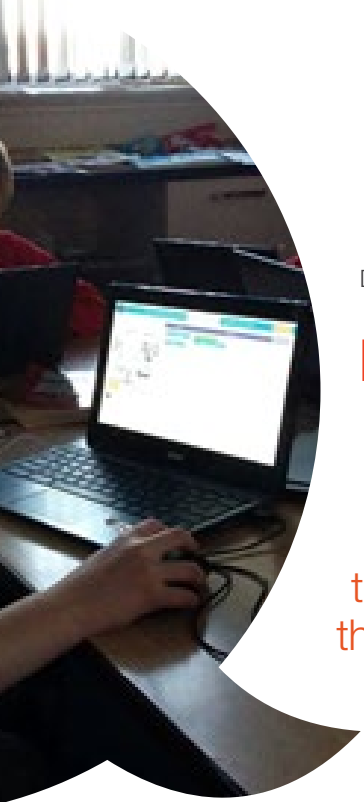
Well done Freya.  
\* Beginning to use more scientific vocabulary.  
*There are no other students*

[Show more](#)

 Mrs E Butler  
11:50 Today Receiving

Time to change your target. Well don

### Completed assessment form



During the project parents were kept fully informed and engaged in the initiative. In

“As you all know, we love our technology in school and we feel the next step is to get the children accessing their school work more from home. What would you like us to cover in Parent’s ICT Sessions? How to login? E-Safety? How to use Google Apps? Leave a comment to let us know your thoughts. In the meantime, take a look at how we use Chromebooks in school.”

the early summer 2015, parents were invited into school for ‘Parents’ ICT Lessons’, alongside their children. This was announced on the school blog:

**NI:** “How about some accredited learning so that parents gain a qualification as well?”

**CT:** “Could there be a session for parents who work please? All the maths lessons etc. in the past seem to have been before 5.30 which when both parents work is impossible to attend thank you.”

Interestingly, the post attracted two suggestions from parents:

In 2016, two more ‘Parent and Pupil Chrome@Home Training’ sessions for parents are planned, again announced on the school blog:

“Although we will be focusing on the use of Chromebooks, it’s important to point out that the tools and activities we will be looking at are available on practically all platforms - PC, iPad, phones etc. We would like to invite you and your children (so they can help out) to one of the events.”

By the end of the project Harvey felt that there had been a major shift from teaching to learning: “Less teaching, more learning,” as he put it, a change to more collaborative student work and more use of technology – in use at some point in most lessons. Teachers were “ready and enthusiastic about all aspects of innovation,” observed Harvey.

Harvey considers that the new ways of learning in the project impacted positively on learning outcomes, with a ‘big change’ in all skills (see fig. 4 above), the biggest reported improvement of all the schools in the project. In particular, student scores for writing were 20 percent higher than in previous tests. Students with special needs found aural feedback using the Read Write app particularly helpful.

In the coming year, there will be more focus on mathematics, a continued drive to innovate and a ‘Chrome@Home’ initiative to train parents.

The school’s advice to teachers thinking about embarking on a Chromebook initiative is ‘Jump in and embrace’, to other schools: ‘Go and see it in a school that has adopted it’ and to Acer and Google: “Push it more and flag the schools who are using it more.”



Collaboration in action

## Annex: primary sources

### General

School-by-school table of scenarios, learning activities, blogs and reports for each school: <https://goo.gl/H9IFCP>

You Tube interviews: [https://www.youtube.com/watch?v=P0rRpcC6Yeo&feature=em-subst\\_digest-g](https://www.youtube.com/watch?v=P0rRpcC6Yeo&feature=em-subst_digest-g)

Baseline survey (April 2015): <https://www.surveymonkey.com/r/3YJYSYB>

Follow-up survey (November 2015): <https://www.surveymonkey.com/r/QJ7WZJY>

### Corlaer College

Blog: <http://chromebookcorlaer.blogspot.be>

Learning activities: <http://goo.gl/ZjKryj> - <http://goo.gl/mbqV75>

Video of teachers talking about the project (sub-titled in English): [https://plus.google.com/\\_/notifications/emlink?emr=16832597586244130394&emid=CNCN8KqxnMkCFUQITAod8tMKBQ&path=%2F106078065110306724275%2Fposts%2FF7eVPiXMHKT&dt=1447932617919&ub=SQUARE\\_SUBSCRIPTION](https://plus.google.com/_/notifications/emlink?emr=16832597586244130394&emid=CNCN8KqxnMkCFUQITAod8tMKBQ&path=%2F106078065110306724275%2Fposts%2FF7eVPiXMHKT&dt=1447932617919&ub=SQUARE_SUBSCRIPTION)

### CSG De Waard

Blog: <http://ictcsgdewaard.blogspot.co.uk> (in Dutch)

Video (in Dutch) - children talking about working with Chromebooks in class: <https://youtu.be/q2C9rSO5U6Q>

### Elgoibar Ikastola

Blogs: <http://elgoibarikastolachromebookpilot.blogspot.com.es>

Video testimonials: how students use Chromebooks as well as their opinion, interview with the head teacher and the opinion of some teachers (in English and Basque with captions in English): <http://goo.gl/FjMsR9>

Learning activity 'Film Week': <http://goo.gl/oqMyFk>

Student survey: <https://goo.gl/F6eyul>

### Compton CE Primary School

Learning activities for 8-9 year olds: <http://v.gd/XVM8WM>; <http://v.gd/kgi4uL>

Video: school presentation: <https://goo.gl/7Mhfnr>

Future Learning Blog: <https://www.blogger.com/blogger.g?blogID=4522559276727600957#allposts>

School blog:

June: [http://comptonblogger.blogspot.co.uk/2015\\_06\\_01\\_archive.html](http://comptonblogger.blogspot.co.uk/2015_06_01_archive.html)

September: [http://comptonblogger.blogspot.co.uk/2015\\_09\\_01\\_archive.html](http://comptonblogger.blogspot.co.uk/2015_09_01_archive.html):

November: <http://comptonblogger.blogspot.co.uk/2015/11/here-comes-christmas.html>

### Filey Junior School

Web site: <https://sites.google.com/a/filey-jun.n-yorks.sch.uk/fjs-internal/>

FaceBook page: <https://www.facebook.com/Filey-Junior-School-383623651796211/>

Blog: <http://fileyjuniorchromebookblog.blogspot.co.uk/>

Video: <https://goo.gl/Du9Y9r> - <https://www.youtube.com/watch?v=fTiQnAPsp9M>

Presentations: <https://goo.gl/5atVew> - <https://goo.gl/4vPxWD>





Google for Education

*acer*



Future  
Classroom Lab  
by European Schoolnet

Google Education and Acer asked European Schoolnet (EUN) to conduct an evaluation programme on the use of Acer Chromebooks and Google tools in classrooms, together with a professional development programme for the teachers involved. 12 teachers were specially selected from the Netherlands, Spain, and the UK to take part in the evaluation.

Find out more at:

<http://fcl.eun.org/chromebook-pilot>



<http://fcl.eun.org>