# Stichting NIOC en de NIOC kennisbank

Stichting NIOC (www.nioc.nl) stelt zich conform zijn statuten tot doel: het realiseren van congressen over informatica onderwijs en voorts al hetgeen met een en ander rechtstreeks of zijdelings verband houdt of daartoe bevorderlijk kan zijn, alles in de ruimste zin des woords.

De stichting NIOC neemt de archivering van de resultaten van de congressen voor zijn rekening. De website www.nioc.nl ontsluit onder "Eerdere congressen" de gearchiveerde websites van eerdere congressen. De vele afzonderlijke congresbijdragen zijn opgenomen in een kennisbank die via dezelfde website onder "NIOC kennisbank" ontsloten wordt.

Op dit moment bevat de NIOC kennisbank alle bijdragen, incl. die van het laatste congres (NIOC2025, gehouden op donderdag 27 maart 2025 jl. en georganiseerd door Hogeschool Windesheim). Bij elkaar zo'n 1500 bijdragen!

We roepen je op, na het lezen van het document dat door jou is gedownload, de auteur(s) feedback te geven. Dit kan door je te registreren als gebruiker van de NIOC kennisbank. Na registratie krijg je bericht hoe in te loggen op de NIOC kennisbank.

Het eerstvolgende NIOC vindt plaats in 2027 en wordt dan georganiseerd door HAN University of Applied Sciences. Zodra daarover meer informatie beschikbaar is, is deze hier te vinden.

Wil je op de hoogte blijven van de ontwikkeling rond Stichting NIOC en de NIOC kennisbank, schrijf je dan in op de nieuwsbrief via

www.nioc.nl/nioc-kennisbank/aanmelden nieuwsbrief

Reacties over de NIOC kennisbank en de inhoud daarvan kun je richten aan de beheerder:

R. Smedinga kennisbank@nioc.nl.

Vermeld bij reacties jouw naam en telefoonnummer voor nader contact.

# BYOD & Education

## *What are the conditions that need to be in place to ensure that learning improves when pupils have their own devices?*

*Door: Christina Preston, MirandaNet Fellowship / University of Bedfordshire.*
*Trefwoorden: BYOD, contentontwikkeling, practice based research.*

**Bring Your Own Device (BYOD) is a contentious new strategy to develop the use of digital technologies in schools because there is a fear that children from well-off homes may gain even more advantage over children whose families are struggling to provide conditions for successful learning. We present to you this research that covers BYOD projects in three contrasting schools and aims to develop a template for practitioners who are thinking about entering this area in order to help them make decisions that will: Impact on pupils' learning rather than distract them AND help teachers rather than hinder them.**

Professor Christina Preston founded the MirandaNet Fellowship in 1992 as a means of sharing professional knowledge, experiences and expertise in the use of digital technologies. In 1992 one day classes for teachers in educational computing were proving inadequate. Learning as a group proved a practical plausible solution and this notion of 'social interaction' as a pedagogical perspective enhanced the interest and research in collaborative learning. Practical experiments and experiences in groups of professionals who meet in 'community of practice' (CoP) are collected since then. Other research subjects besides COP in Mirandanet are: Action Research, Braided learning, Concept Mapping and Critical Incidents.

MirandaNet offers a not for profit community of practice to educators who wanted to support each other in learning about the potential of digital technologies and developing innovative approaches to learning. It offers also free resources on the website provided by members for members and for a global audience. The website had 68,000 unique visitors last year, with an average of 2 visits each, downloading around 7.5 pages per visit. Events (MirandaMods) are organized where professionals can share theory and practice on subjects agreed by the membership:
www.mirandanet.ac.uk/mirandamods

Miranda net has 800 members in 80 countries on six continents who are committed to learning from each other about innovation in education. Members are researchers, teacher educators, senior managers, practitioners, policy makers and companies who are committed to improving education.

At NIOC2013 Christina Preston shared the experiences and experiments in British schools and she presented the latest MirandaNet research into BYOD. Three pilots and lessons learned were presented and discussed.

Research was conducted by 3 MirandaNet Fellows with Masters and Ph.Ds in 3 very different schools: a private school in London; a state school in a rural area; a state school in a rundown coastal town. The advice from pupils is: give teachers these devices before us, given them training about what these devices can do. Teachers need advice about how to manage these devices in class and they should work with us (pupils) to learn more.

**Private London School**

In the private school in London (founded in 1834) the project has deliberately been started slowly in the sixth form because of risks to be avoided from the organizational point of view. The risks were:

• a sudden influx of new devices might be too challenging for teachers;
• too sudden introduction of devices might place strain on networks;
• theft and loss of devices might occur and appropriate use codes be abused.

The impact on pupils has been greater below the sixth form where they lobbied to be involved.

Figure 1. Sixth form and collaborative meeting room with Ipad and Apple TV in private school.

From the point of view of staff two barriers or obstacles were identified. First the teachers' fears of lack of control or impact on discipline: as a result teachers can decide at any time whether devices are to be used in class, or not. Second the teachers' feeling overwhelmed: for this reason BYOD was initially limited to 6th form and there is still no enforced curriculum use.

From the point of view of the digital leaders personal organization and research was a major benefit, but distraction in class was a concern of the digital leaders.

From the point of teachers particular impacts were mentioned. A Modern Foreign Language (MFL) teacher was disturbed by inappropriate exchanges from students abroad in a class project. Financial advantage can be gauged from a Computer Science example. The department can now afford for each student to work on their choice of computer language using a free or very low cost app. The potential impact of BYOD/BYOT in facilitating collaborative learning could be as great as the expected impact on independent learning. Ultimately the manager supports a shift to Flipped Classrooms and suggests an action research programme for staff might increase the opportunities to rethink the school's teaching and learning policies. Finally mentioned: current assessment is a major barrier, however, in an academically orientated school.

**Key lessons private school**

All teachers must be acquainted with the Code of Conduct that pupils' must sign if working online. While pupils are comfortable using personal devices in the other aspects of their lives, they appear to struggle a little with integrating this into school/learning. Flexible environments are important in making it easy and workable to have and manage own devices in and between classrooms. More public communication with pupils and parents is needed in the next stage to ensure their enthusiasm.

The pupil focus group agreed that some teachers in the pilot were not aware that time-wasting activities were happening. More teachers need appropriate strategies to deal with these behaviors including getting control early and moving around the classroom. The pupil focus group also thought that there should be more acknowledgements at the start of the next stage of tech-savvy pupils who are keen to be a resource for staff and pupils. Overall training about the technicalities should be balanced in the next stage by more formal training about classroom management and pedagogical advantage.

Figure 2. Rural Surrey.

**State School rural Surrey**

In rural town school at Surrey (figure 2) the 32 staff with the first iPads are including pedagogy in their deliberations about the value of these devices. A well-organized trials plan was communicated in an engaging way to parents who are invited to discuss the results with their children. Subjects where interesting practice is emerging are: Physical Education (PE), Information and Communications Technology and Geography. In History a comic strip designer and book creator apps “engaged the student’s creativity whilst keeping them focused on the content of the curriculum. This helped students who are visual learners to remember key terms and concepts more readily.”
Special Educational Needs (SEN) pupils and students with behavioral problems have responded particularly well to the use of iPads as a personal tool. In Science Using the iPad to make a video about the action of enzymes using paper props was motivating for Special Needs Students.

**Impact**

Teachers view positively the move to use these tools in personal administrative tasks: for example registration and email on the move; note taking; and resource collection.
Impact on the school/organization: the results of the first pilot will be used to make agreed alterations to policies on teaching and learning, appropriate use and e-safety policy.
Impact on pupils: data is still being collected on the impact, but we have to extend the project to Year 10 because of parental and student pressure. Pupil reporters for the school news stream have found the job easier and pupils in the focus group welcomed opportunities to help the teachers.

**Key Lessons rural school**

Research is essential if a project that promotes change is to succeed. The viability of the plan was researched over a year and a half by investigating research papers, videos, forum discussions supplier demos, exhibition show products, the E-learning foundation, technology conferences and visits to schools where similar programs have been implemented. The iPads pilot fits into a long-term strategy to put more responsibility in the hand of the pupils for learning. Ownership of the iPad has meant that each teacher also experiences more ownership over changing practice from the classroom perspective. Do not underestimate the emergence of technical issues as the project progresses and allow time to sort these out and orientate the technical team to be able to work with new technology in new ways.

Communicate sympathetically with parents and staff members who are concerned about league tables and academic rigor. The current assessment environment does not encourage the changes in teaching and learning that are pursued in this project. Debate the wider and broader aims of education within the staff because at some point the whole staff will want to consider whether they are willing to adjust the theoretical underpinning that informs their professional life and adjust school policies on teaching and learning.


Figure 3 State School in run down coastal town.

**State school in coastal town.**

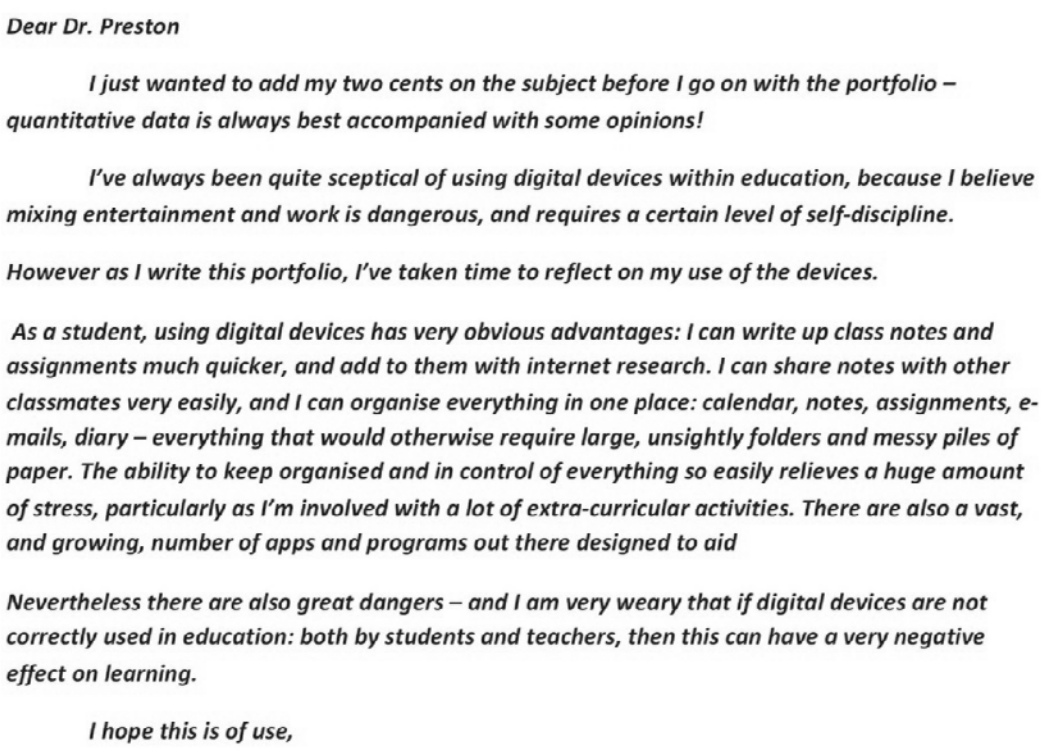
Organization learning policy is developing slowly. Based on teachers' and pupils' observations in the pilot a teaching and learning framework that supports the use of devices is emerging, but currently this is quite limited. Staff plan to widen involvement and share insights in order to ensure the richness of this document. The timescale envisaged is about another year. Progress in the school community about the value of devices. Survey is important, in ensuring that all members of the school community are aware of the benefits and issues relating to BYOT/BYOD. The enthusiasts at this point are making progress in developing a code of conduct to be discussed with the community as the next stage. Pupils and parents will be included in this process. Hard evidence of the impacts of BYOT/BYOT on teaching and learning is not well advanced. The pupils and the teachers can provide convincing anecdotal evidence that changes in performance, engagement, motivation and behaviors have taken place.

Main results for staff so far: major impact on their lesson preparation time because they can use the tablets in transit; administrative tasks like registration are easier; ease of use in classrooms because

of significant time savings over the use of PCs. More systematic action research now needs to take place to confirm that BYOT/BYOT can impact on learning outcomes as well.

**Key Lessons state school**

Working slowly and inclusively in pilot mode has insured high expectation of success in full implementation over the next year. Some key points have arisen for inclusion in the emerging policies. Research into ownership was essential in planning the pilot and also in engaging staff, pupils and parents. Ownership of devices at 38% was lower than expected and has slowed up progress. Provision must be developed for students and staff who cannot fund their own devices; currently some staff still bans the use of devices in their classrooms despite changing policy. According to the pupils more staff need their own devices and specific training in order to ensure a new teaching and learning policy is embedded. Pupils have offered to teach the teachers informally. Wifi is essential through the school if take-up of BYOD/BYOT is to be improved. An affordable solution has now been found but the absence of overall wifi in the pilot was a barrier to change. Pupils using their own hotspots where wifi is not available has raised concerns about how the school will control what websites pupils are accessing. The Senior Management team needs to trial more thoroughly key online administrative and teaching software as poor performance dampened enthusiasm for the pilot amongst staff and pupils. Special attention was given to the value of pupils' feedback by an example as presented in figure 4.



*Dear Dr. Preston*

*I just wanted to add my two cents on the subject before I go on with the portfolio – quantitative data is always best accompanied with some opinions!*

*I've always been quite sceptical of using digital devices within education, because I believe mixing entertainment and work is dangerous, and requires a certain level of self-discipline.*

*However as I write this portfolio, I've taken time to reflect on my use of the devices.*

*As a student, using digital devices has very obvious advantages: I can write up class notes and assignments much quicker, and add to them with internet research. I can share notes with other classmates very easily, and I can organise everything in one place: calendar, notes, assignments, e-mails, diary – everything that would otherwise require large, unsightly folders and messy piles of paper. The ability to keep organised and in control of everything so easily relieves a huge amount of stress, particularly as I'm involved with a lot of extra-curricular activities. There are also a vast, and growing, number of apps and programs out there designed to aid*

*Nevertheless there are also great dangers – and I am very weary that if digital devices are not correctly used in education: both by students and teachers, then this can have a very negative effect on learning.*

*I hope this is of use,*

Figure 4. Introduction to a journal by a digital leader of 15 years old.

**Key questions**

Questions that emerge from this study into 3 cases for further research are:

= For pupils: How to develop responsible use of personal hotspots in school and support for skills?

= For Teachers: How to motivate and support (pedagogical and technical) to change their practice? How to balance between informal and formal CPD? What knowledge about specific pedagogical theory in this area is needed?
= For schools: How to provide applicable project management? How to commit to Flipped Classrooms? What about Google, ownership of materials and schools creating resources?

**Joining research**
In wrap up of the discussion after the presentation Christina Preston called to Join a MirandaNet researchgroup. Many teachers are keen to start action research projects. She invited the participants to join. A meeting in March was conducted. Would you like to join a research group and conference? September 2013 in Bedford? January 2014 in London? Just sign up at **www.mirandanet.ac.uk.**

A condensed Dutch summary by a participant (Wilfred Rubens) completes this report on the presentation and discussion (figure 5).

Enkele geleerde lessen uit drie pilots zijn:

- Veel docenten blijken erg huiverig te zijn voor BYOD. Docenten waren bang controle te verliezen en overdonderd te worden met nieuwe technologie. Ook de *digital leaders* onder de docenten zagen het risico van afleiding.
- Een belangrijke les is dat docenten passende strategieën moeten hebben om bring your own device in te zetten. In feite wil je het concept van de flipped classroom helpen realiseren. Geen enkele school heeft dat stadium bereikt.
- Het creëren van eigen leermaterialen leidt tot een hogere werkdruk voor docenten, tot vraagstukken rond copyright maar ook tot meer ruimte om content te gebruiken.
- Het is belangrijk om een *code of conduct* te gebruiken en die te bespreken met leerlingen.
- iPads kun je meteen gebruiken, met interactieve apps om bijvoorbeeld strips te maken. Je hoeft niet te wachten tot dat alle computers zijn opgestart.
- Lerenden krijgen meer status als ze een iPad mogen gebruiken. Er kan echter ook 'standsverschil' ontstaan als lerenden geavanceerde en niet-geavanceerde apparaten hebben.
- Laat pilots gepaard gaan met onderzoek.
- Onderschat de technische issues niet. Ook bij iPads. Architecten bouwen gebouwen die ongeschikt zijn voor wifi. Gebruik eventueel je smartphone als hotspot.
- De wijze van beoordelen belemmert het gebruik van samenwerkend leren met ICT. Samenwerken wordt namelijk niet beoordeeld.
- In arme gebieden hebben veel jongeren geen eigen devices. Slechts 38% beschikten daarover.
- Zelfs als een school BYOD toestaat, dan zijn er nog steeds docenten die het verbieden.
- Ga na hoeveel hulp docenten nodig hebben, en schakel eventueel lerenden bij professionalisering in. Veel professionalisering is vaak gericht op op ICT-vaardigheden, niet op didactiek.
- Er is dikwijls geen gemeenschappelijke visie op het gebruik van BYOD.

Figure 5. Dutch Summary by a participant in the presentation of Christina Preston.

Wilt u reageren op deze presentatie? Neem dan contact op met:
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