

# WHAT CAN WE LEARN FROM THE SINGAPORE MODEL TO IMPACT ON DEVELOPING COMPUTING SKILLS AT MARYLAND?

## HOW DO SINGAPORE SCHOOLS INTEGRATE ICT SO SUCCESSFULLY?

This stems from the government masterplans for ICT integration into the curriculum. They started with MP1 in 1997 with the vision to train teachers and get hardware into schools and since then the vision has been built on. Now on MP4 which promises 1:1 ownership and wireless connectivity for all, also more curriculum integration. The aim is to use ICT to deepen subject mastery and develop '21<sup>st</sup> century competencies' with a strong focus on 'cyber wellness'. This goal is encapsulated in the published aim '*future-ready and responsible digital learners*'. Political change in the country does not interfere with this master plan. There are 3 authorities that help to embed the master plan so it stays true to the vision and is implemented consistency. They are:

- The Ministry of Education
- The Infocomm Media Development Authority
- The National Institute of Education (teacher training).

The quality of teacher training and the philosophy that teacher training never ends – it is a life long pursuit to improve. They believe in building on good practice, face to face learning, lesson study and mentoring. They are constantly researching and innovating as well as keeping abreast of educational research. They are grounded on sound theories and practices.

The 'blended' approach. Not shoehorning ICT in and undervaluing the secretarial and more traditional learning tools, like books, pens, paper, keep libraries relevant. ICT must add value to learning. The overriding expectation is similar to that we found in Sweden, which is ICT to **produce** not to **consume**.

## CONTEXT

### Social context

- Society upwardly mobile as a result of heavily subsidised education at all levels right up to tertiary level and outstanding resources in education.
- Low living costs, subsidised housing and low transport costs.
- Parents pay for uniform, books, utensils and computers, however if you are financially deprived the state will pay for these resources.
- High achievement is rewarded financially with bursaries and annual reward payment.
- Low immigration, only skilled workers will get leave to remain. Needs determined by the government.
- Culturally, there are 4 main groups – Singaporean, Malay, Chinese and Tamil. The main language of the country is English, but students may learn any other of the mother tongues as part of the curriculum.
- Children from low income families are well supported by the Ministry of Education so they have equal access, e.g. provided with free internet at home and low-cost computers.
- The nation is 'values' driven and this can be seen throughout the education system as it is in the society.

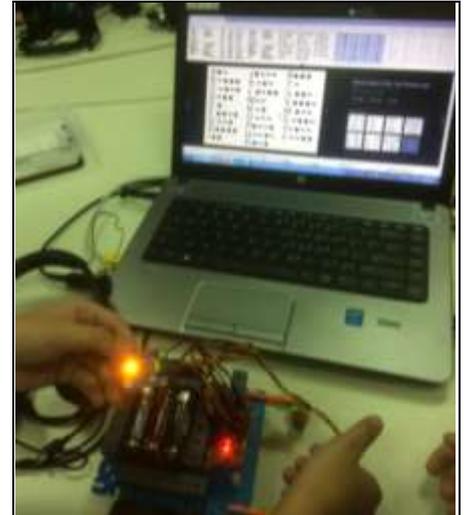
### Educational context

- Primary schools are much larger – 1000+ (Woodlands has over 2000 children). The government has invested in the expansion of school buildings to accommodate what was a

growing school roll and to increase classroom square meterage as well as provide state of the art facilities (sport and creative arts). However, the birth rate across the nation has dropped in recent years.

- Children start Primary school at 7 (P1), but attend 2 years of pre-school and 2 years of Nursery. They enter Primary school being able to read and write. They leave at 12 years old when they reach P6.
- Progression in the Singapore computing curriculum is more logically structured. Keyboard skills and familiarity with universal programmes, apps and internet use (eg Microsoft Word, Google and equivalents) are a focus from school entry, so that higher order computing tasks, like programming, are easily facilitated from the age of 8 onwards. All pupils impressively demonstrate the basics, so that no time is wasted in lessons on teachers having to spend time on early computing skills. By contrast, our pupils do not have the speed and mastery of the basics eg the majority are slow on keyboards and show little knowledge of shortcuts and programme tools. This is because our curriculum is not specific about the teaching of these skills and assumptions are therefore made about pupils' acquisition of them.
- Extremely well funded and resourced.
- Narrower curriculum, e.g. no RE, no specific history and geography but some social studies content to familiarise pupils with the history of their country.
- Larger admin teams but fewer classroom support staff. In house technicians and specialist teachers.
- There is a great emphasis on wellbeing and holistic approach of pupils and staff.
- More teacher contact time- 6 hours of education.
- Larger classes - 40 students per class is standard. Libraries are well resourced with books and librarians, where they use the Dewey system. Library sessions are timetabled. No class libraries, only text books.
- No aesthetic displays but developing Learning Walls. Many walls have inspirational quotes.
- Behaviour management signals are used – “eyes on me” “eyes on you”, clapping signals.
- Children are polite and gracious which is the cornerstone of the whole society. Adult language is positive and achievement is couched in terms of ‘readiness to learn’, i.e. low readiness, middle readiness and high readiness. Schools use tuneful chimes to signal class change.
- Parents are overwhelmingly supportive of schools and teachers, particularly with homework, use of libraries and providing life experiences. They are aspirational for their children.
- The government fund the ‘Take Flight’ programme to give older pupils the opportunity for overseas travel in order to develop global awareness and cross-cultural skills.
- Critical thinking and growth mindset strategies are built into lesson planning and delivery, so children become resilient, independent learners.

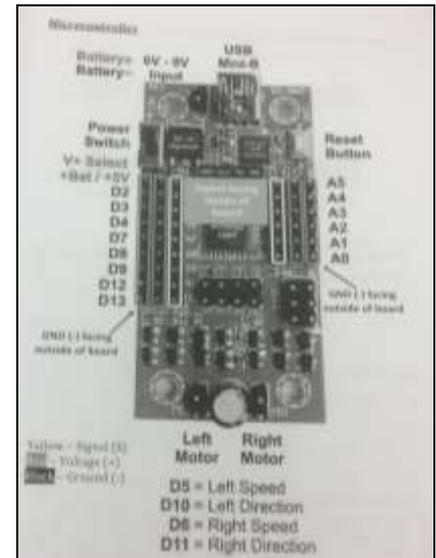
*Pupils are adept at keyboard skills to enable them to take on higher order computing tasks. This picture shows pupils in a Year 4 class working on designing an energy saving LED light system.*



## STAFF TRAINING

- Teacher training. Only top third of Bachelor degree graduates get through the election process for a PGCE equivalent year, so the quality of teaching graduates is excellent. The profession has a high profile and commands respect.
- Leaders at all levels and teachers are steeped in educational theory and continuous professional learning is expected, as is participation in professional conversations on social media. The theoretical aspect is evident in planning and practice. 100 hours a year of CPD is expected, although not all schools adhere to the guideline.
- Belief that professional development can't be a 'one-off', so courses are not common. Much preferred, is sharing best practice and ideas between peers and learning from more experienced practitioners. Where links exist with external bodies to do with training, they are extended, e.g. ties with researchers or technical experts.
- CPD separates into levels of seniority and experience, e.g. newly qualified teachers have their own, and Senior Leaders have training at their own level. Mentoring and peer-to-peer training is formalised to support staff learning. CPD is very structured. Heads of department carry out the leadership load in monitoring, observation and appraisal. Teachers are paid performance bonuses annually but remain on the same grade.

*Specialist teachers with depth of subject knowledge.*



## WHAT CAN WE TAKE AND REPLICATE AT MARYLAND?

- Keyboard and use of universal programmes, apps and internet use skills become the main focus (not, for example, programming) of teaching in KS1 and EYFS.
- Continue with and increase peer-to-peer learning under the direction of the most successful teachers who integrate ICT best. For the future, plan for a specialist teacher on staff to be used across all phases for dedicated computing lessons.
- Encourage experimentation.
- At any time children are able to work individually on a Chrome book of their own.
- Facilitate opportunities for parents and pupils to access internet after school to complete homework that has been assigned.
- To accelerate our use of the Google suite throughout the school, including administrative tasks, streamlining communication with governors (school g-mail address through which documents, key website access information is sent) etc.
- To make electronic planning using the Google platform the norm for teachers.
- CPD design and sharing is the key to successful consistency and dissemination of best practice.

### So...

- More ongoing, experimental CPD using a lesson study approach
- Whole school research project where teachers research over the period of a year to integrate computing skills into specific areas of the curriculum
- At the end of the year they present to the school at the last INSET day in July.
- This is written into their appraisal from Sept 2017.

- SLT research project to specifically explore the integration of SMART phone apps., like *Padlet* instead of reams of emails. The intention is to streamline, share more easily and reduce workload. Once this has been established and working efficiently, we shall construct 2 other professional groups, i.e. middle managers and all teachers and AAs.
- Consider how we can use SMART phones for year 6 within the next few years, integrating into some areas of the curriculum. This will need a strict code of conduct and system that prevent disruptive use of devices during school hours.
- Prior to starting science (or other subject) units. Research homework assigned on Google platform using standard format grid for all yeargroups:

What I know	What I want to know	What I learned

- Explore application of *Microbit* – coding chip developed by the BBC to enable pupils to become actively involved in writing software (coding). Launched in 2016 to Year 7s, although planned for pupils from Year 5.

### WHAT FACTORS WILL IMPEDE OUR PACE OF PROGRESS?

1. Budget.
2. The broader curriculum demands, so less time is available to teach computing.
3. Teacher workload is greater in the UK, so replicating 10 hours of research-based CPD is difficult, but not impossible.
4. Building up the skills of (currently) older pupils to manage higher order computing tasks.

#### Lorna Jackson and Lorraine Cooper

Headteacher & Deputy Headteacher, Maryland Primary School

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