

# SMART **Classrooms** BYTES

## 21 steps to 21<sup>st</sup> Century 1-to-1 success

This edition of Smart Classrooms Bytes provides a summary of resources available to teachers and administrators who have commenced or are considering implementing 1-to-1 student laptop programs.

1-to-1 programs provide students with personal portable computers to enhance their opportunities for learning. The devices help schools engage the digital generation by nurturing individual (or 1-to-1) learning experiences.

1-to-1 programs are also known as 'anywhere, any time' or 'laptops for students' programs.

Increasingly, there has been a global move towards implementing these programs in schools. Of greater interest is how they are being used for learning in ways that deepen understanding of concepts and advance knowledge of how to use digitally rich ICT environments for teaching and learning.

- 1-to-1 programs are an element in an international move towards individualising learning, which can increase independence and self-initiated learning in students, and extend their learning beyond the classroom.
- Students who have their own laptop computers have been found to take greater pride and ownership over the knowledge they create, with a flow-on to more flexible forms of schooling.
- 1-to-1 programs have been found to extend formal learning communities to include parents, siblings and other people important in students' lives. Also, the programs may lead to initiating global communication and collaboration and develop creative expression.



## Successfully implementing 1-to-1 programs

Successfully implementing a 1-to-1 program in any New South Wales state school relies on an equal focus on:

- a strongly supported vision and culture across the whole school community
- effective technical infrastructure and support
- development of constructivist, student-centred pedagogies
- structured professional development for staff.

This edition of Smart Classrooms Bytes provides a summary of the four phases to a successful implementation and presents a brief summary of the 21 steps to successful implementation of student laptop programs.

Additional resources and support including checklists, sample project plans, sample handbooks, financial calculators, FAQs and more, have been developed to support New South Wales schools.

It is recommended school leadership teams attend the 1-to-1 Practicum program to gain greater understanding and to receive access to a wide range of supporting resources and tools.

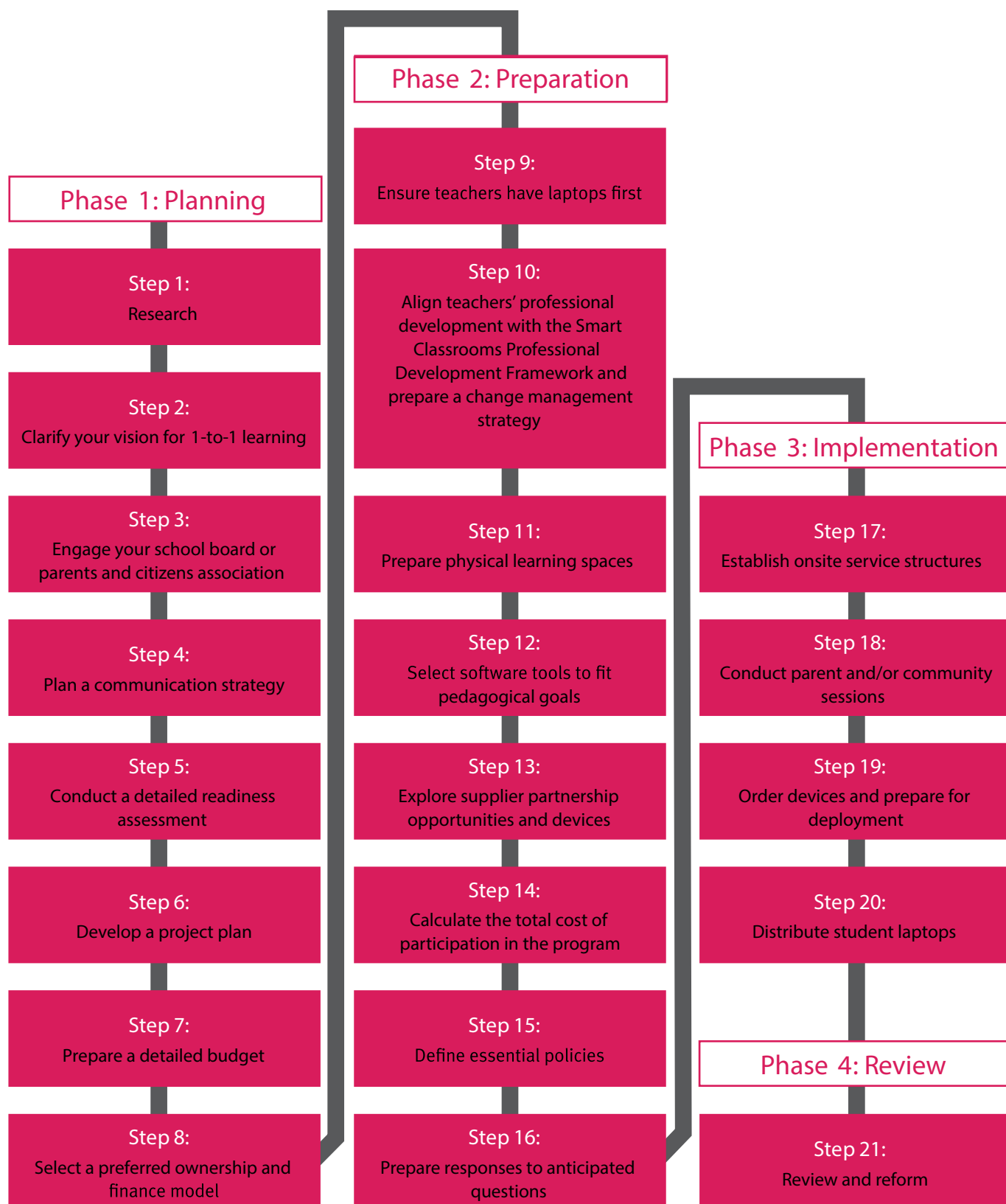
There are four phases to a successful implementation:

☐ planning  
☐ preparation

☐ implementation  
☐ review

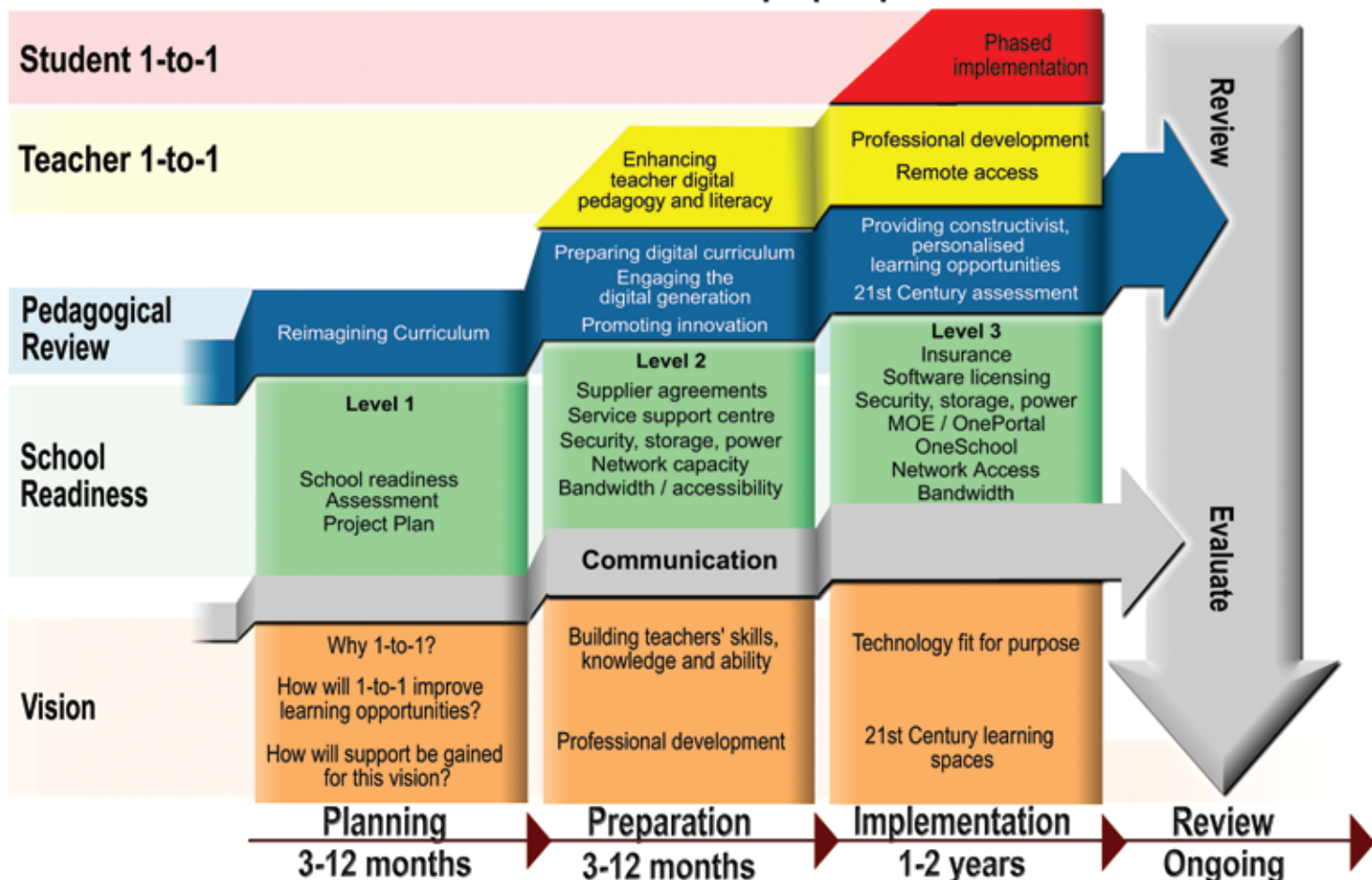
# In a nutshell

## The four phases of, and 21 steps to, 1-to-1 success





## A successful 1-to-1 student laptop implementation



# Getting started

## The 21 steps in summary

The 21 step sequence is inter-relational and may be considered out of this printed order.

These steps provide guidelines to those leadership teams considering implementing 1-to-1 programs.

## Step 1:

### Research

Learning how schools locally, nationally and internationally have implemented 1-to-1 programs is an essential first step in 1-to-1 reform.

For more than 15 years, schools throughout the world have been documenting and sharing the way they implement 1-to-1 programs.

Exploring available research and case studies will help you:

- build a strong vision for how your program will greatly improve student learning outcomes
- gain broad support by demonstrating the link between moving to a 1-to-1 program and improving student learning outcomes
- preparing proactive responses to likely change resistance and uncertainty in your school community
- understand the scope and complexity of successfully implementing a quality 1-to-1 program.

### Focus on the learning outcomes

- ☐ Have you seen examples of 1-to-1 programs that clearly demonstrate improved student learning outcomes? How will you model these in your school?
- ☐ How were improvements in learning outcomes measured? What other criteria or assessments indicate the programs you have researched were successful?
- ☐ What advantage is there in using computers in all areas of curriculum, including literacy, mathematical analysis, science and history?
- ☐ What were the major obstacles faced in the implementations you researched and how will these impact your school?

This is a sample checklist only. The complete resource kit contains over 200 essential questions, case studies, resources and tools.

## Step 2:

Build a strong vision for 1-to-1

Your vision statement should provide guidance, serve as the foundation of your decisions and inform the direction of all stakeholders involved in the program's implementation. It will articulate how and why your 1-to-1 program will lead to improvements in student learning outcomes.

The vision statement needs to:

- clarify the mission and provide a sound basis for decision making
- provide purpose and direction that can be shared with all stakeholders
- provide a standard against which the project can be measured.

Sample vision statements are available on the Smart Classrooms 1-to-1 site.

### Moving to 21<sup>st</sup> Century learning models

- ☐ What will 21<sup>st</sup> Century learning look like in your school?
- ☐ How will classroom practice leverage technology to improve student learning outcomes? What is the students' interface to learning?
- ☐ What advantage is there in using computers in all areas of curriculum, including mathematical literacy, science and history?
- ☐ To what extent should the introduction of a 1-to-1 initiative improve teachers' ability to address diversity and better personalise students' learning?
- ☐ What are your plans to continually improve your understanding of what 1-to-1 learning might make possible for students?

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## Step 3:

Engage your parents and citizens association or school board

A move to a 1-to-1 learning model may challenge many people's paradigm of what learning is. Gaining support from your school's council or parent body may be challenging.

Ensure the parent body is behind the move before planning becomes too advanced. Ensure you are positioned to manage expectations.

The more support you have, the easier it will be to implement your plan. You can boost your chances for success by communicating early and often with all the people involved.

Good strategies will ensure support is aligned and consistent between:

- parents and citizens associations
- principals
- teachers
- students.

### Be transparent and concise

- ☐ Can you provide your school council with research and stories from other 1-to-1 schools?
- ☐ Do parents understand the reasons for moving to 1-to-1 and support your decision in this reform?
- ☐ Has the school council participated in the building of your vision for 1-to-1 learning?

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## Step 4:

Plan a communication strategy

A successful communication strategy requires the full involvement of your information and communications technologies (ICT) committee, key staff and other interested people.

Meet with these people to determine the strengths, weaknesses, opportunities and the potential obstacles in implementing your vision.

Then prepare a communication strategy. Train the people carrying out the strategy on the importance of being knowledgeable, courteous and responsive to questions from others.

Effective, economical ways of reaching out are available in every community. Try as many of the following as are practical, given your time and resources:

- speak to parent groups
- speak at club, business and community meetings
- produce a newsletter that promotes your vision for ICT in education
- write articles for the district newsletter
- develop a school or district brochure that explains your ICT vision
- promote your ICT vision on your school or district website.

### Build understanding and ongoing support for your vision

- ☐ Is your vision understood and supported by staff prior to you going public? Can your staff articulate this vision for you?
- ☐ Have you developed a communication strategy?
- ☐ Have you conducted parent information sessions (with handouts)?
- ☐ How will you publicly celebrate successes?
- ☐ Have you been transparent and open in providing information on the project?

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## Step 5:

Conduct a detailed readiness assessment



You must understand where you currently stand before building a strategic path to where you want to be. Do this by preparing a readiness assessment that considers your current resource position on:

- ICT and infrastructure
- personnel
- facilities.

Schools that have standardised their ICT infrastructure through the deployment of the Managed Operating Environment (MOE) are in a strong position to take on an increased number of ICT devices.

Conducting this assessment will provide a structure you can use to form the basis for your ongoing project plan (a sample is provided for those who attend the Principal's 1-1 Practicum).

### Define the scope of the project

- ☐ What ICT is being used now, and how much of that ICT can be redirected to support the ICT plan?
- ☐ How many staff have adequate skills/ICT Pedagogical Licences?
- ☐ What can your school's wiring and electrical system support?
- ☐ Is there sufficient air conditioning and security in the rooms?
- ☐ What is the standard of routers, hubs, servers, CD towers and other key network equipment?
- ☐ Has your school been deployed with the new MOE?

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## Step 6:

Develop a project plan

Include a manageable timeline for project implementation: typically 6–12 months for planning, but projecting out three years. Ensure you include the communication plan within the structured project plan.

One of the first tasks in establishing a project plan is to set up milestones to mark its progress. As part of the planning process, the project team should propose the timeline needed to implement the plan, including dates for when each task should be completed.

When selecting an ICT leadership team, don't feel you must only choose experts in computer and networking technologies. It is a benefit if your designated planning leader is an ICT expert. If your leader is not an expert, support them with outside expertise. Either way, it is important the ICT leader has a clear vision of how ICT can improve education outcomes for students.

### Identify the project components

- ☐ What are the key milestones and deliverables of your project?
- ☐ Who will be the project manager?
- ☐ What is the implementation timetable?

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## Step 7:

Prepare a detailed budget

One way of gaining experience in forecasting future ICT expenditure is to measure where your school, region or district's ICT funding is currently being spent.

While no singular checklist can capture every possible school environment, general categories can be monitored to track current expenditures and plan for future ones.

Costs associated with implementing school and district ICT programs fall into the following categories:

- hardware
- software
- infrastructure improvements
- telecommunications costs
- ongoing technical support for teachers and administrators
- professional development
- system maintenance and upgrading.

These budget categories are a starting point. They focus on an array of ICT found in networked environments. Consult your Regional Technology Manager in preparing this budget.

### Understand what resources will be required

- ☐ Have you listed all the components your 1-to-1 program will require, including the individual laptop, software and bag; servicing and insurance costs; technical support and infrastructure costs; and initial and ongoing staff development costs?
- ☐ Have you considered one-off grants and ongoing funding strategies?

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## Step 8:

Select a preferred ownership and finance model

There are three possible ownership models: school-owned, parents and citizens association-owned or parent-owned.

The department does not support parent/student-owned devices and strongly discourages schools from considering this as an ownership model. For schools that have already introduced parent/student owned devices and need support in moving to a preferred model, please contact the 1-to-1 project officer on 3421 6310.

Smart Classrooms can provide guidance on the range of finance models available to support your school or parents and citizens association in managing an equitable and manageable program.

### Ensure the model is viable

- ☐ What parent contributions will be required and expected?
- ☐ Is the funding model sustainable?
- ☐ Have you considered all possible options for receiving supplemental funds, such as parent contributions, government grants for items such as one-off infrastructure costs, and corporate or philanthropic support?

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## Step 9:

Ensure teachers have laptops first

Ideally, teachers should have laptop computers for a minimum of six months before students use them in class.

Through the Computers for Teachers project, the department is providing laptop computers to all teaching staff working two or more days a week. This is enabling teachers to become sufficiently comfortable with ICT to adjust to the requirements of 21<sup>st</sup> Century learning.

### Provide teachers with the necessary tools of their trade

- ☐ What training will be provided to support teachers with their new laptop computers?
- ☐ Is your curriculum ready for eLearning?
- ☐ Have you developed a strong community of practice coaches/mentors?  
Are staff aware of what is currently available to support eLearning?
- ☐ What support structures exist for change-resistant staff?

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## Step 10:

Align teachers' professional development with the Smart Classrooms Professional Development Framework and prepare a change management strategy

While it is easy and natural to focus on the logistics of ICT integration, professional development is the critical priority. A comprehensive professional development program can boost confidence, build competence and foster commitment among teachers.

The Smart Classrooms Professional Development Framework provides clear expectations for schools and teachers about how they can effectively use ICT to support and extend student learning.

Manage change carefully, in a sustained, ongoing program. Allow multiple pathways for teachers to build their professional knowledge, practice, values and relationships in making ICT integral to learning. This involves thoroughly exploring new forms of assessment, teaching and learning.

In developing this strategy, consider how you will provide:

- support for change-resistant staff
- incentives to ensure all staff members embrace change
- flexibility to enable gradual and rapid change.

Identify teacher 'champions' to lead change. Build teams of teachers with complementary skills and levels of expertise. Create team incentives to foster high achievement.

### Know the skills profile of your staff

- ☐ How many teachers in your school hold the ICT Certificate, ICT Pedagogical Licence or ICT Pedagogical Licence Advanced?
- ☐ Who are the teacher 'champions' within your school?
- ☐ What is your school's ongoing professional development plan?
- ☐ What peer network support structures have you considered or implemented?

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## Step 11:

Review and prepare physical learning spaces

Effective 21st Century learning spaces are not limited to the traditional teacher-centred model that many schools are used to. Research confirms students conform to physical spaces.

In a 1-to-1 'anywhere, any time' learning model, learning spaces are transformed to enable a new, more complete learning experience. Spaces are flexible, interesting, inspirational and cater to a range of learning styles and modalities.

The department has undertaken significant research to support schools in understanding 21st Century learning spaces. Contact the ICT Learning Innovation Centre.

Prepare the interface to 21<sup>st</sup> Century learning described in your vision

- ☐ Do your learning spaces cater for different learning modalities?
- ☐ Are the spaces flexible and engaging? What do your students think of the design?
- ☐ Is your classroom a symbol of your educational philosophy?
- ☐ What furniture will be needed to ensure the ergonomic needs of students are met?

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## Step 12:

Select software tools to fit pedagogical goals

Before purchasing additional software, be clear on the learning objectives you are seeking in each class and how software will support these objectives.

The department has negotiated significant licensing agreements with major software companies, which may support your objectives without requiring additional expenditure.

Consider these agreements before purchasing more software.

Select software to improve curriculum delivery

- ☐ What are your educational objectives of each class, and will the software support these objectives?
- ☐ Does the software have enough functionality to support your present and future needs?
- ☐ What are the limitations of your software licences? Can software be used at home and at school? How many devices can be loaded with the software?
- ☐ Are you selecting the type of software that your students will encounter (and need to be familiar with) in the business world?
- ☐ Have you considered cross-platform issues that may arise, such as Mac v. PC?

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## Step 13:

Explore supplier partnership opportunities and devices

There are two essential considerations when selecting the best device.

1. Selecting a device suitable for students. Many low cost devices are unsuitable for student use. Devices must be selected to provide students with a reliable, flexible and long term (three-year) option.

2. Selecting a supply partner. A decision to engage a supplier should not be made purely on price. The supplier should have a vested interest in ensuring the program works, the devices are maintained and students have a reliable 1-to-1 experience. Schools should only purchase devices through the 'Preferred Supplier Arrangement' as these devices come pre-built with the Department's MOE and offer greater protection in terms of quality and warranty.

### Select a project partner, not just a supplier

- ☐ Is the device strong enough, durable enough and light enough for students?
- ☐ Will the device offer sufficient speed and memory to run required applications?
- ☐ Is the device on the New South Wales Government Preferred Supplier Agreement?
- ☐ Can the supplier offer a suitable guaranteed turnaround time?
- ☐ What are the performance measurement criteria for your partnership with the supplier and how often will the partnership be reviewed?

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## Step 14:

Calculate the total cost of participation in the program

An accurate and detailed total cost of participation must be provided to parents and guardians before inviting them to join the program.

It is not acceptable to advise a lower cost and then ask parents to provide a greater contribution when costs were forgotten or not included.

It is recommended schools calculate the total cost of participation in the program, taking into consideration that the cost for components (including software) may change and vary depending on the needs of students and school.

### Be thorough in your calculations

- ☐ How much will additional technical support cost?
- ☐ How much will additional bandwidth cost?
- ☐ What are your additional power, physical security/storage and infrastructure costs?
- ☐ Will you factor in additional costs for new software / upgrade costs?
- ☐ Will you quote parents for additional costs such as USB drives, software, hard cased school bags, spare power cables/batteries etc?

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## Step 15:

### Define essential policies

There are about 40 policies that need to be considered and defined by your school before conducting parent nights (also referred to as out-of-box nights).

Talk with the 1-to-1 project officer (phone 3421 6310) or other schools to find out how they deal with some of the major issues including:

- insurance – mandatory versus optional and school versus home
- parental training – mandatory versus optional
- internet and network policy (in line with existing departmental policy): home versus school
- data limit for downloading versus buying more credit
- email – MIS, Yahoo, Hotmail or other?
- reporting lost or stolen laptops
- online chatting (Yahoo, MSN or other) – will it be allowed, restricted or banned?
- electronic games policy
- personal software policy
- battery charging – who's responsible? Students or parents? Can swap out batteries be used? Will there be penalties for low batteries?

- devices left at home – will spare devices be available? Will students be penalised?
- backup and data storage – division of responsibility (home versus school) Will backup be on CD, DVD, server or other?
- virus protection and removal, including the cost of re-imaging computers
- storage – mandatory or optional secure storage?
- allocation of storage to students
- school-based service and support – cost, level of support and supplier agreements
- transport – responsibility between home and school
- printing credits – school-supplied versus student-purchased
- device model flexibility – single unit or limited range options?
- service and support policies, including pricing and guidelines
- school bags – will this be mandatory or optional (durable hard case alternatives)?



### Prepare a handbook of policies

- ☐ Have you discussed your policies with a range of audiences?
- ☐ Do these policies support student learning possibilities?
- ☐ What process will ensure policies are updated and reviewed?
- ☐ How will policies be enforced?

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## Step 16:

Prepare responses to anticipated questions

Preparing answers to anticipated questions will maximise your chances of gaining broad community support for your initiative. Also, it will demonstrate your school's preparedness to move to a 1-to-1 program.

The department in partnership with the Anytime, Anywhere Learning Foundation (AALF) has identified more than 160 questions you may be asked during this phase.

### Be prepared

- ☐ Are you confident you can answer most questions from parents?
- ☐ How will you address questions you don't have answers to?

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## Step 17:

Establish onsite service structures

Introducing additional devices into any school will have a significant impact on technical support staff and resources.

Providing adequate onsite technical support and service is essential in ensuring a 1-to-1 program runs smoothly. Therefore, ICT support must be carefully planned. Providing a physical space as a first contact point is an important first step.

### Quality onsite support

- ☐ Have you taken steps to ensure enough staff to support the devices when they arrive?
- ☐ Have you considered recruiting student helpers and trainees?
- ☐ Will you carry an inventory of spare parts or stock?
- ☐ Do you have processes to ensure effective support, including job log facilities and remote imaging capabilities?
- ☐ Have you allocated and prepared a physical location for onsite support?

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## Step 18:

Conduct parent and/or community sessions

A 1-to-1 program can impact significantly on parents. Therefore, they need to support the program. Additionally, research shows students with interested and involved parents demonstrate better educational outcomes.

A series of well-structured parent information sessions will ensure your 1-to-1 project is supported and embraced.

To obtain a positive result, use a combination of communication tactics, including written documents, parent meetings and opportunities for one-on-one discussions.

How will you achieve parent/guardian support?

- ☐ Can you demonstrate to parents some of the exciting things students may use their laptops for in class?
- ☐ Will you provide parents with some basic training on the use and care of the devices?
- ☐ Have you considered timing implications in releasing information? For example, a 1-to-1 program may save a parent from buying a home computer for a Christmas present.
- ☐ Ensure you step parents through the school policies related to the program and answer all their questions.
- ☐ Have you provided a range of opportunities for parents to learn about the program?

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## Step 19:

Order devices and prepare for deployment

There are several tasks that need completion before you can distribute devices to students including testing, imaging, registering and more.

These tasks can be time consuming so order devices early to help make additional technical support available during this process.

Will you be ready for your devices?

- ☐ How much time will you allow for possible delays in delivery?
- ☐ Have you built a software image to ensure devices will be connected to internet, printers, other peripherals?
- ☐ How much time have you allowed for technical staff to apply software to all devices?
- ☐ How will you track serial numbers and register devices in the School Management System?
- ☐ Will students be required to have a certain school bag or laptop case before devices are distributed?

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## Step 20:

### Distribute student laptops

Set up formal agreements with parents and guardians about students' use of laptop computers.

Manage the deployment very closely to ensure students receive the correct devices as per the signed agreements with their parents or guardians.

Carefully consider the timing of the deployment to minimise disruptions to classroom practice and the functioning of each device.

#### How will you control the deployment?

- ☐ Will you provide student training immediately on deployment?
- ☐ Will additional training (e.g. keyboarding) be incorporated into curriculum in initial stages of the program?
- ☐ Will laptops be sent home on distribution, or will there be a period of in-school training first?
- ☐ What provisions will be made for students entering or leaving the school mid-term?

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## Step 21:

### Review and reform



As with every aspect of your 1-to-1 program, build on the things that work and improve the things that don't.

Establish a review group to oversee progress and resolve problems. Accept there are risks as well as learning experiences and a need for adjustments. Also, be sure to note and acknowledge your successes.

Your 1-to-1 program will fundamentally change the dynamics of the classroom, so it will challenge entrenched habits and behaviour. Be open to constructive reviews of your achievements and opportunities for improvement.

Formal evaluation gives you credible feedback, which you can provide to sponsors, program supporters, critics and parents. It gives you convincing evidence to support you in continuing and expanding your program. It also helps you identify any missteps that may have occurred during the initial implementation, so you can make corrective courses of action.

#### How will you measure your 1-to-1 success?

- ☐ Have you kept a learning journal/repository?
- ☐ What unexpected impact has the program had on student learning?
- ☐ Will you use an external party (such as critical friend) to assist in reviewing your program?
- ☐ What were the major issues and how will you overcome these?

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## The importance of effective professional development

Professional development for staff is imperative to the success of any 1-to-1 program.

A paper presented at the 2006 Australian Computers in Education Conference suggests effective professional development in ICT features these elements:

### Context

ICT professional development must be relevant (authentic, local and real), meaningful and practical, and meet immediate and ongoing needs.

### Time

ICT professional development should be timely (just-in-time) and sustained (over time). Also, it should provide adequate time for participation, reflection and implementation, and allow teachers to take responsibility for their own learning.

### Community

ICT professional development should encourage sharing with others, provide ongoing support and heightened collaboration, and expand professional and personal networks.

### Personal growth

ICT professional development should add to personal knowledge; increase personal skills, enhance status (within a learning community); take account of teachers' prior knowledge, different levels and learning styles; enable reflection; and allow personal selection.



## Low cost devices on trial in New South Wales schools

A range of low cost devices are flooding the Australian market. On the surface these devices appear to offer great value to schools, but in many cases they may end up costing far more than anticipated and their educational value is untested.

Several trials are running in New South Wales primary schools to evaluate the impact of low cost devices on student outcomes.

Currently the department is trialling a range of devices. These trials will inform the development of support materials for New South Wales schools considering the implementation of low cost student 1-to-1 programs.

The project will provide a structured case study for examining the benefits and issues involved in implementing low cost device programs in mainstream primary schools and the impact on the structure of the classroom in contemporary primary learning.

## The National Secondary Schools Computer Fund

The Australian Government's \$900 million National Secondary School Computer Fund will provide grants of up to \$1 million dependent on enrolment and need, over four years, to government, Catholic and independent secondary schools. The fund will assist schools to provide new or upgraded information and communication technology (ICT) for their students in Years 9-12.

This funding is in addition to existing Australian Government funding and also to the money the state and territory governments, independent and Catholic education authorities have set aside for investing in ICT in their schools. The fund will commence in 2008, continue until 2011 and will be implemented by the Federal Department of Education, Employment and Workplace Relations.

The fund will provide grants to schools to purchase new or upgrade existing ICT.

## Laptops for teachers a priority

To get the most from any student laptop program, it's important that teachers fully understand the educational potential of laptop computers and other ICT.

To help, the department is spearheading the nation in providing laptop computers at no cost to state school teachers.

Every state school teacher who works at least two days a week will receive a laptop by the end of 2011.

Professional development (PD) is available so teachers can immerse themselves in a digital educational environment.

Linked to the laptop rollout, the PD aligns with the Smart Classrooms Professional Development Framework, helping teachers keep up-to-date with

the continually expanding field of ICT in education.

Balaclava State School is one of the many schools to have already received laptops for teachers.

The school's deputy principal Chris Rigden believes the laptop rollout was having a major impact on student learning and teaching practice.

'Kids enjoy engaging with ICT- it gives them another way to learn but I want to emphasise that we are not just buying toys or installing wireless because it sounds good,' he said.

'We are doing it because of the huge impact it can have on student learning and curriculum delivery and that's what is important.'

The rollout of laptops to state school teachers is part of the Department's Smart Classrooms strategy.

Some concepts and ideas in this document were created in partnership with the Anytime, Anywhere Learning Foundation (AALF).