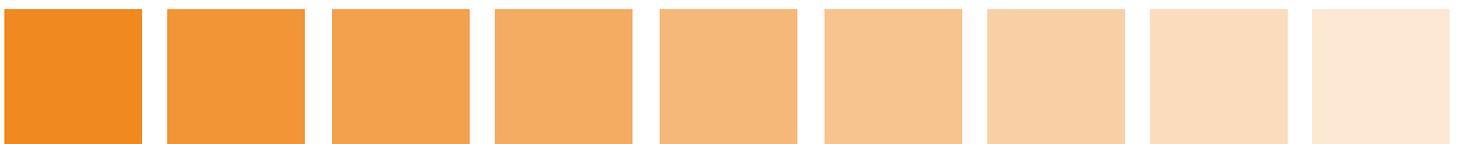


# Classroom Management

## A report on NetSupport Software NetSupport School v9.02



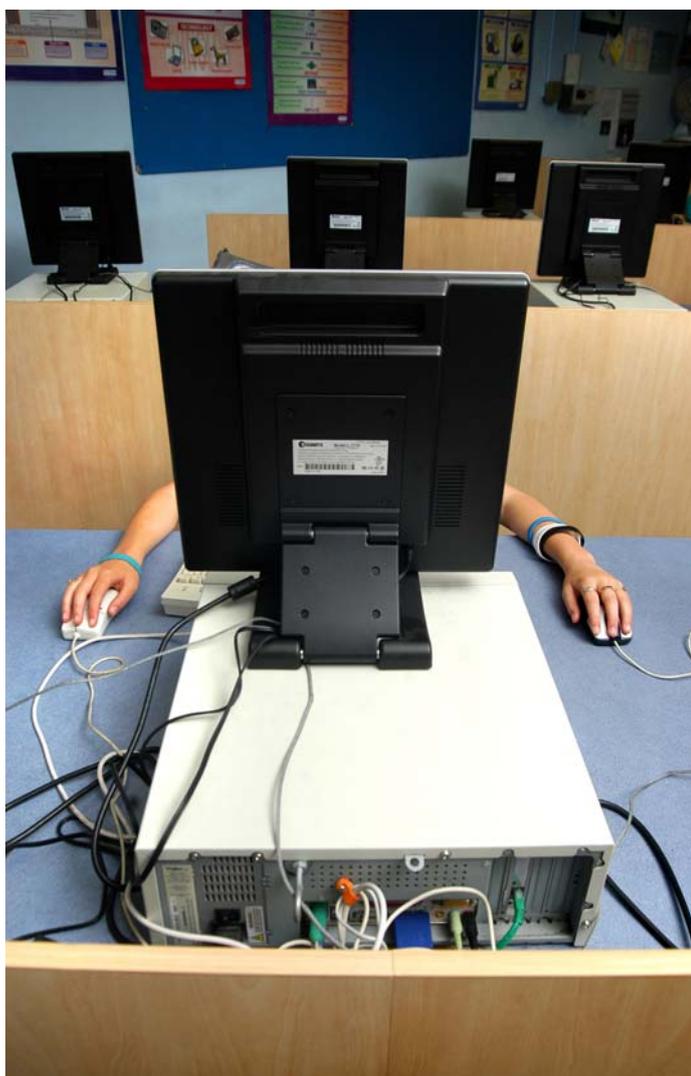
ICT in the classroom



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Educational establishments have a clear responsibility to provide students with an ICT (information and communication technology) environment and this should be an integral part of a wider strategy. Many countries have their own established teaching and learning directives and one critical function that is gaining importance within this area is the concept of classroom management. In a broader sense this describes sets of procedures and methods of providing a disciplined and structured environment that promotes learning but it can be equally applied specifically to ICT.



Computers provide an ideal learning platform in the classroom but they need to be managed effectively to get the best from them. The majority of schools regardless of geographical location are already struggling with limited budgets and the significant investment ICT can represent needs to be maximized to be of most use to the school and its students. Computers can be networked and used to provide easily controlled and monitored examinations but also to send and collect material such as course work. There are a number of products on the market that provide these facilities and offer other features such as the ability to monitor students as they work plus facilities for teachers to share their computer screen with the classroom or selected individuals. Many other useful features are available where teachers can lock all the PCs in the classroom or individual systems, conduct text and voice based chats with students and use shared whiteboards.

However, in the drive to provide ICT services schools are becoming increasingly aware of the pitfalls. With sufficient funds it's easy enough to put a PC on every desk but access to applications and resources must be strictly controlled otherwise they can be easily abused. Non-essential applications should be blocked from being run so students can't, for example, indulge in game playing during lesson time.

Other resources such as printers can represent a high spend for schools and these need to be controlled just as strictly. A recent report from the CEBR (Centre for Economic and Business Research) and OKI Printing Solutions has identified massive printing inefficiencies in U.K. schools and LEAs. According to the report the amount of money being wasted each year by the education sector is sufficient to buy 2.2 million primary school dinners or employ 5,476 new graduate teachers. This makes for grim reading and one area identified as responsible is poor management of internal printing resources.

The Internet is a fundamental component of any ICT teaching strategy but it also represents one of the biggest risks. Schools that provide Internet access to their students have strong moral and legal obligations to show that they are controlling these resources in a responsible manner. Abuses are manifold and range from accessing inappropriate web content to cyber-bullying but it should be remembered that the school must also protect itself. Uncontrolled web access in the classroom is simply not acceptable as it's all too easy to expose minors to undesirable or pornographic content. The recent case in the U.S. involving a Connecticut substitute teacher highlights clearly how easy it is for schools to get into deep trouble if they don't implement security measures.

## Executive Summary

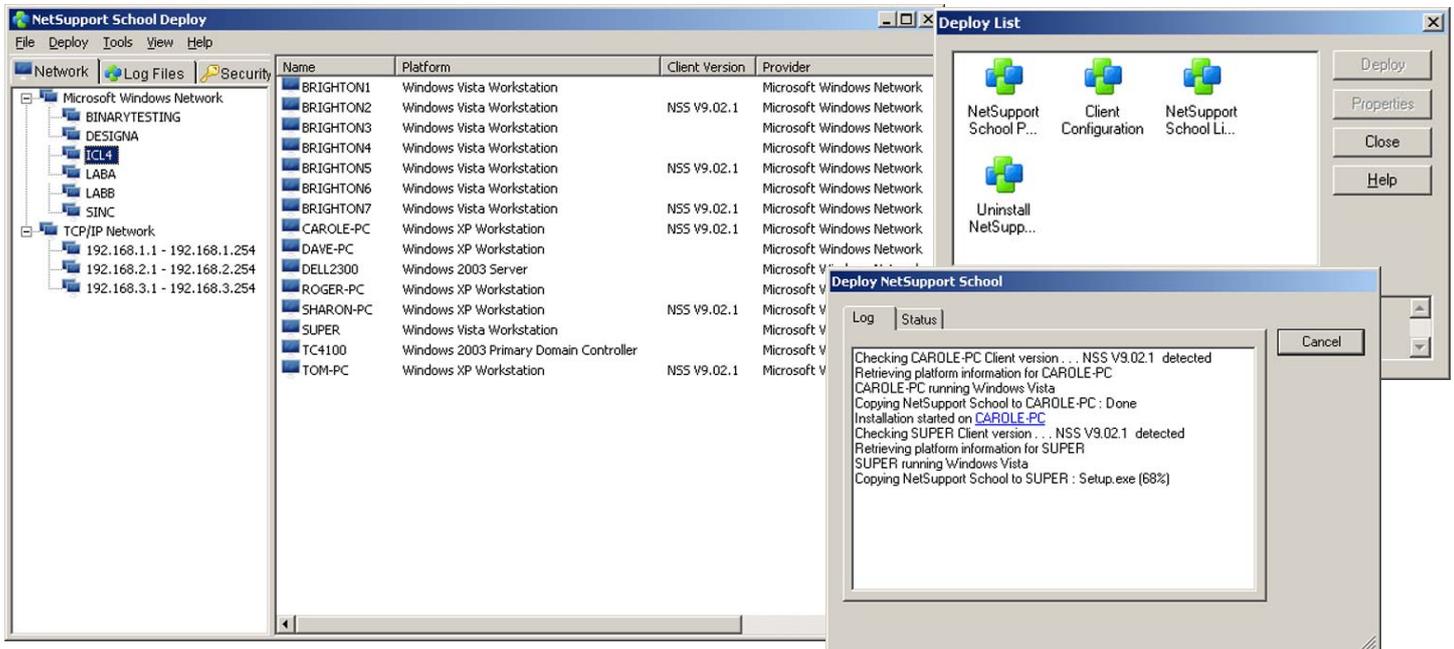
In the drive to provide students with IT based teaching facilities and their own personal learning space schools have a wide choice of software solutions to achieve this. However, very few also provide the tools to control and manage access to IT resources and implement security. In the business sector companies with the same number of staff as schools have pupils will often deploy point solutions to provide sophisticated security measures but few schools can afford this level of protection. Furthermore, schools do not have the resources to employ dedicated support teams to maintain these systems.

Providing the ICT facilities for functions such as computer-based lessons, automated examinations, results collection and distance learning is only part of the solution as a school must also protect these resources from abuse or misuse. Internet access is a particularly knotty problem as although there are many sophisticated web content filtering products on the market the costs of these can be prohibitive in an educational environment with strict budgetary restraints. Furthermore, they can represent a high ongoing cost as many use a regularly updated database of web site addresses and these are usually operated on a yearly subscription basis. Choices are reduced even further when it comes to restricting access to applications and even hardware resources. How do you stop a student running a particular program or removing data from their classroom PC onto a USB stick? It can be done but once again the products available are also point solutions and can be prohibitively costly. The majority of products aimed at a classroom environment do not include these controls or those that do offer a very limited tool set. In general they allow you to monitor students, view their screens and see what they are doing but most have no control over what services or facilities they are able to access.

There is a wide choice of classroom management solutions on the market but few, if any, offer the same level of functionality as NetSupport School (NSS). It has been a long term player in this field and has at its foundation the highly respected NetSupport Manager remote access and control component. It has consistently set standards for other vendors to follow and this report takes an in-depth look at the latest version in order to ascertain its suitability as a complete classroom management solution. The report will discuss the installation processes, look at deployment and ease of use and provide an in-depth view of its Internet and application monitoring and control features. The report will look closely at the general level of features including the facilities to allow teachers to interact with students and a full test will be conducted using a range of Windows client systems to ascertain the effectiveness of its Test Designer and automated examination modules.



# Installation and Deployment



As previously discussed, many schools will not have the luxury of a dedicated IT support department so teachers will often find themselves having to carry out some of these roles themselves. Consequently, to avoid falling at the first hurdle a key feature of a classroom management software solution must be ease of installation and deployment. We found NSS certainly adheres to this philosophy as our testers had it up and running in a matter of minutes.

The installation process is in two parts where you first install a Tutor component on the master system that will be used to control all the other PCs in the classroom. The latter all run a Student component that allows them to be viewed, accessed and controlled from the Tutor system. This is also required to allow the Tutor to monitor areas such as Internet and application usage and enforce access policies.

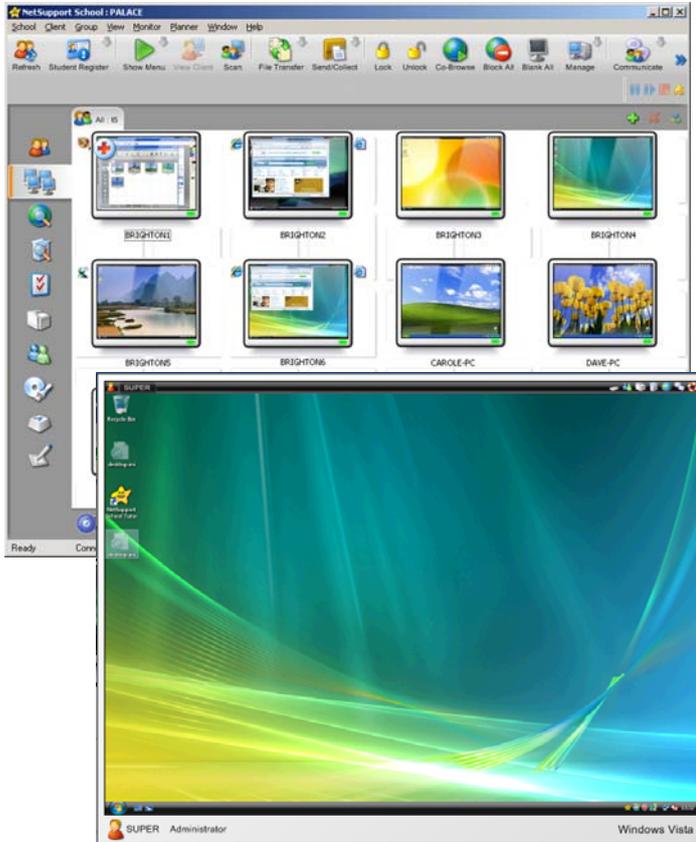
You don't need to visit each PC to install the Student software as this can be easily pushed out over the network from the Tutor Deploy component which will scan the network and provide a list of all discovered Windows client systems by domain and workgroup. You can also enter details of multiple IP subnets by providing a start and end address which will also be scanned for available systems. Usefully, the Deploy utility includes information about the operating system being run on each one and we found during testing it accurately differentiated between Windows Server 2003 servers and domain controllers along with systems running Windows XP and Vista.

Next, you select the systems you want to push the software to and choose the appropriate component. Four options are provided as you can simply push the main client package out to selected system or supply those already running the Student with a new configuration file. New licenses can be sent via this method as well and you can uninstall the Student remotely from any system too. Usefully, you can request that the Student component runs transparently on the client system thus stopping it from being removed.

NSS offers plenty of control over the deployment process as you can provide details of your own initialization file which may contain custom parameters for controlling what is installed on each system. We particularly liked the fact that the default initialization file contains clear instructions about what each entry means and how to modify it. Consequently, you can easily decide where the software is loaded, if the Tutor and Student components are both installed and whether shortcuts are placed on the desktop. During the deployment NSS provides a real-time log display showing the results for each system that is receiving the software package.

There's more as you can use the Deploy tool to upgrade systems already running the Student to the latest version, advise users that the installation will be run, send them a custom message and restart their system automatically on completion. Overall, we had no problems at all with this phase and found it a slick process that has been smoothly streamlined.

# The Tutor



As each Student joins a class the local utility on their PC displays a status bar across the top of the screen showing the computer name, the title of the lesson and teacher's name if this has been configured. A row of icons to the right show what monitoring functions are active on their system plus options for requesting a chat with the teacher and other students or a direct request for help from the teacher.

Overall, we found the Tutor interface very pleasant to work with as all key features are immediately accessible and it uses cheerful, chunky icons for each one. The List view shows all connected Students and this can be changed to reveal details such as the installed operating system and client versions. The icons can be modified to represent group leaders and we approved of the option to move the icons around the map so that they can be positioned to represent a PC's physical location in the classroom.

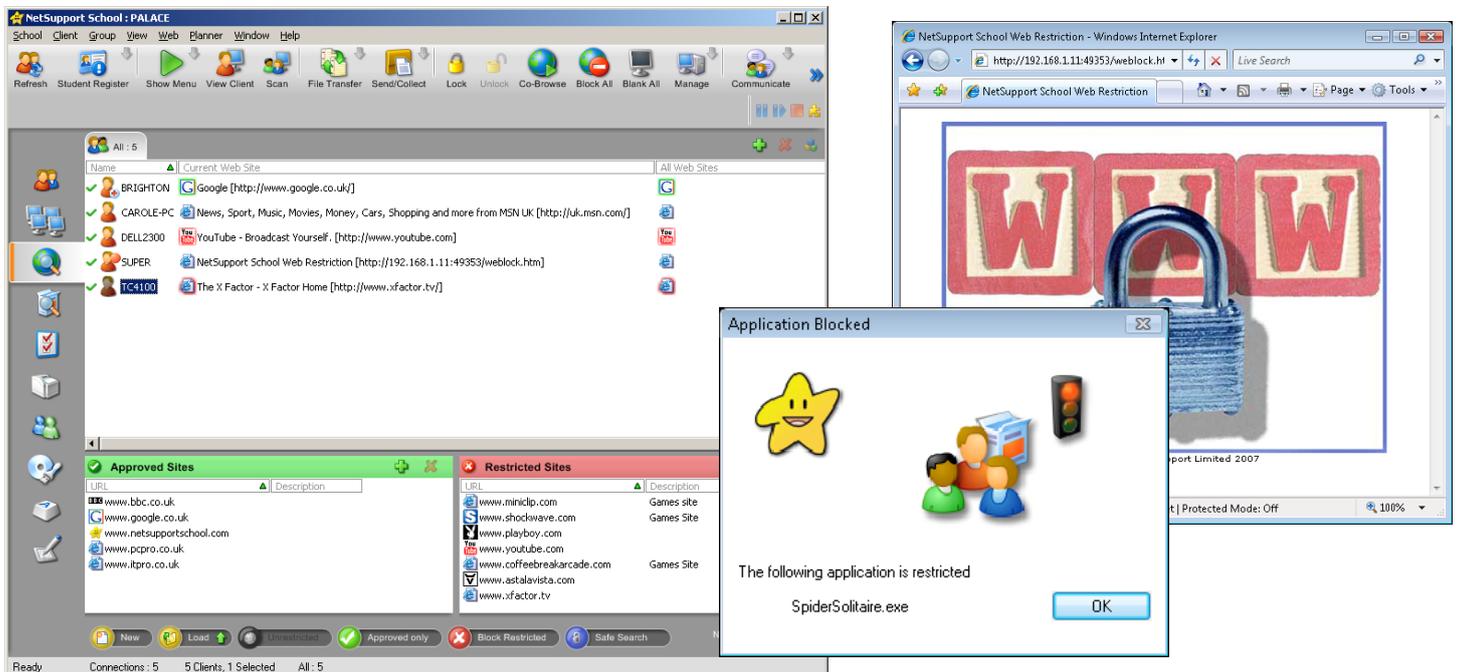
The Monitor screen offers a wealth of information as it shows thumbnails of each system allowing you to see in real-time precisely what each student is up to. The refresh rate can be increased to five second intervals and hovering the mouse pointer over any screen causes the zoom feature to enlarge it for easier viewing. Each thumbnail can also be accompanied by small icons down their side that show what the currently active application is and if a web browser is loaded what the current web site is as well. If a student has selected the help feature on their system then a Red Cross icon flashes on the relevant thumbnail in the Tutor.

The Tutor interface really has been very well thought out allowing NSS to present teachers with a pleasantly shallow learning curve. The large icons in the side bar allow you to switch effortlessly across different classroom views and quickly access functions such as applications and Internet monitoring, printer management, device control and whiteboards. The same applies to the tool bar across the top of the Tutor console which has been populated with easily identifiable icons that show clearly what their function is.

Teachers can view and control all their students' activities from the main Tutor interface which provides a smart central console with quick access to all the key functions of NSS. On first contact, the Tutor scans the network and populates its main window with all discovered systems running the Student component. You can modify this process if you wish by searching for keywords in computer names or connecting only to systems that are already known to the Tutor. There is also an option to integrate with NetSupport's new Protect software which is a separate product designed to protect PCs from unwanted modifications and applications, file deletions and possible malicious damage.

If you're feeling generous you can simply publish a class to available Students inviting them to decide whether to join the class. To do this they open the Student icon from the System Tray, view available classes and select one to join. The Tutor provides a status window showing which users have joined and when everyone is present the teacher can start the class. Even more useful is the ability to register each user with the class by presenting them with a predefined form that asks for their details such as their name and student ID number.

# Internet and Applications Monitoring and Control



The Internet and Application control modules are extremely valuable features that make NSS virtually unique in the classroom management software market. The Student component is able to monitor all Internet and application activity on the client system and pass this information back to the Tutor. If you wish you can simply monitor each system and see what your students are doing but it goes a lot further as you can decide what they are allowed to run and also which web sites they can and can't visit.

For Internet monitoring the Web view lists all connected systems and the main window can be configured to show those that have browsers loaded. Choosing the Details option brings a lot more tools into play as each Student icon is now accompanied with the address of the web site being visited. If the teacher wants to know more about the web site being accessed they can select the entry and browse directly to the same address.

By choosing the Activate menu option you can force an address to be replaced with the selected one and the web browser on the selected system can be closed down immediately from the Web view if required. NSS uses lists of approved and restricted addresses to control web access and sites can be added to either list just by selecting them from the main view. You now have two choices as you can use a basic web access policy by activating the list of restricted web sites or be much stricter and implement the approved list which means all access will be blocked to any site that isn't on this list.

Each list can be deactivated with one mouse click and you can block all Internet access for all students just as quickly. If a student tries to access a restricted site their web browser is redirected to the Tutor system which sends them a warning page that has little to argue about.

Valuable new features in this version of NSS are Safe Search which aims to stop inappropriate content from web searches being displayed, the ability to block all FTP file copy operations and Co-Browse which gives teachers total control over a browser session. The latter opens a co-browser window on the selected system or systems and this only displays the web sites the teacher inputs from their end of the link.

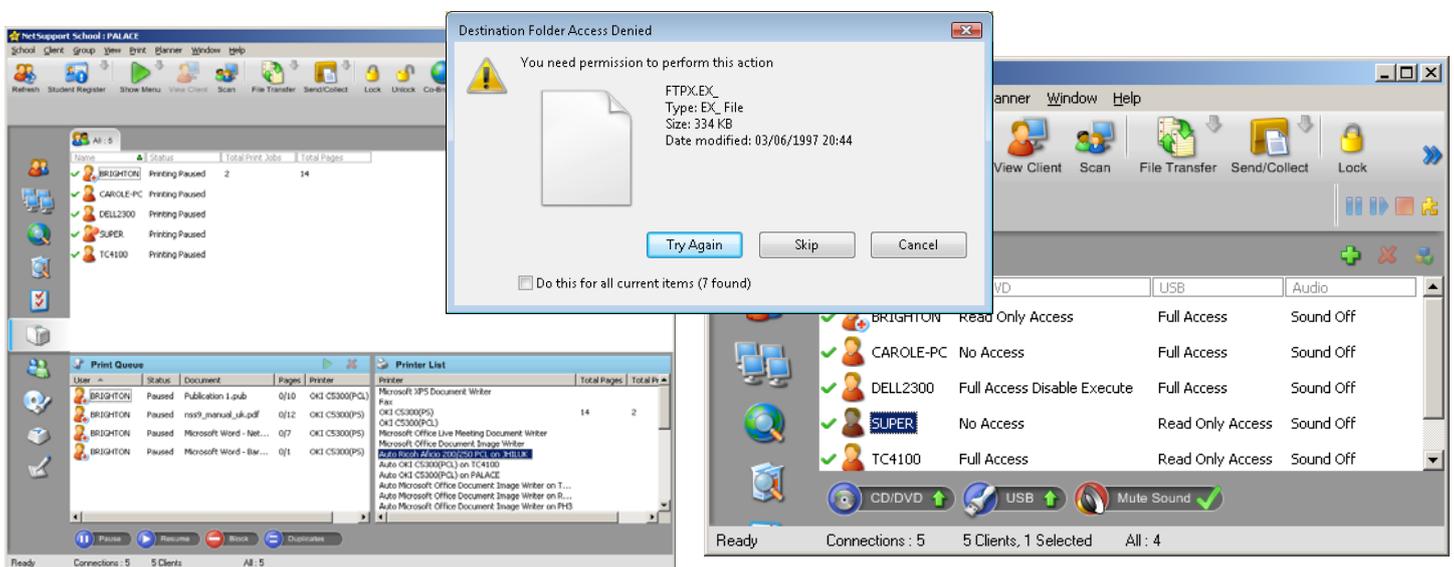
Sensibly, application control is almost identical in operation to the web control module. You can easily see what applications are being run on each system and add them to approved or restricted lists. However, each entry will default to expecting the program executable to be on the Tutor system and for it to work properly you may need to browse for the relevant file on a remote system.

Nevertheless, once we had it configured correctly we were able to block access to selected applications on all our XP and Vista test clients. Other useful features with this module are the option to select an application running on a client and close it immediately or kill a running process. If a student tries to access a blocked application they will receive a warning pop-up window advising them that this is not allowed.

# Printer and Device Management

Few businesses have failed to recognize that printing can generate huge amounts of wastage if not managed properly and this applies equally to the education sector. The new printer management module in NSS is designed to provide teachers with the controls to monitor their students' printing activities and, where necessary, restrict access. It's part of the Tutor console so is very easy to use and it provides a list of all connected systems along with the number of print jobs and pages each one has already run. Below this is a list of all discovered printers and we were able to select multiple entries and block them from being used. Students attempting to print when these privileges have been paused will receive a message on their PC advising them of this.

Once printing has been blocked all subsequent print jobs will be held in a queue which can be viewed from the Tutor. We could see which systems and applications had initiated jobs, the number of pages for each one and which printer they'd been sent to. At any time you can release the entire print queue or whittle it down first by deleting selected jobs. You can also select a specific entry in the queue and release it whilst holding everything else back.



Removable media is the scourge of network administrators as its use in any IT environment can be so difficult to control and virtually impossible to monitor. Devices such as cheap, high capacity USB keys pose a huge problem as they can be inserted in seconds and used to remove data in a manner that is almost undetectable. Furthermore, bringing these types of devices into the classroom also circumvents any security measures such as anti-virus defences.

The Device management module is yet another new feature in NSS and can be used to manage the use of USB ports, CD/DVD drives and audio equipment on the students' PCs. It's very easy to use as the main view in the Tutor interface provides details of all connected clients and the status of these devices on each one. For USB and CD/DVD devices you have a number of options where you can block all access, limit this to read only to stop files being copied from the PC or allow full read and write access.

The Block Execute option will stop users from bringing their own software in with them as it stops programs being run from an inserted device. For audio you simply have the option of muting it on all connected systems which, in a school environment, is almost certainly more than sufficient. During testing we found this component worked very well. On all our XP and Vista test clients we could easily block all access to any USB device or CD/DVD discs we loaded, stop files being copied to them or allow read only access.

No custom messages are provided when access has been blocked with Vista clients, for example, displaying a standard Windows error message when we attempted to copy files from a blocked USB device. However, we were somewhat perplexed when trying to copy files from a blocked DVD drive to the system hard disk as both Windows XP and Vista clients advised us that the destination drive was full and that space needed freeing up - potentially encouraging students to delete files on their PC.

# Remote Control

At the foundation of NSS lies NetSupport's own Manager software - probably one of the best remote control products on the market. It has consistently offered an unbeatable range of features and performance that few other competing products can match let alone beat.

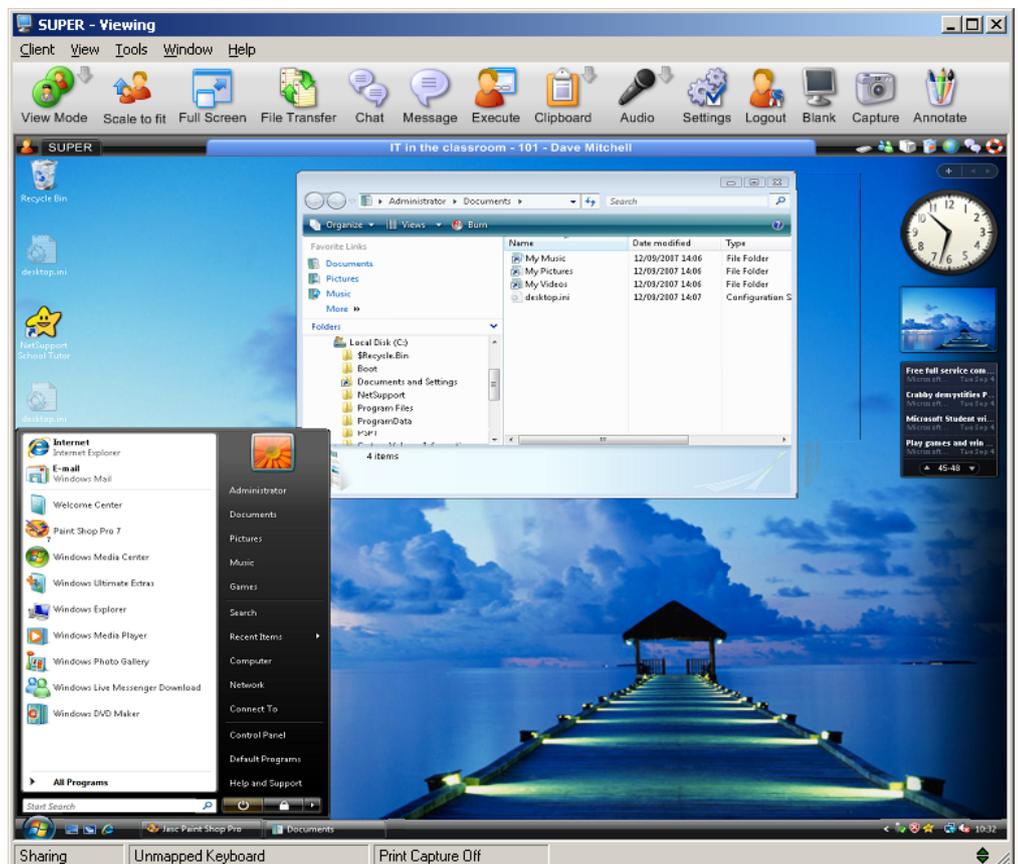
These components are integrated seamlessly into the main Tutor console and offer teachers the ability to remotely watch, share and control students PCs from their own desktop. If a student is having problems their PC can be taken over merely by double-clicking on its icon in any of the Tutor view screens and this will automatically fire up a remote control session. Teachers can choose to take full control which stops the mouse and keyboard being used on the remote system during the session.

Alternatively, they can opt to share access to these devices or passively view the student's screen.

A problem we often encounter with remote control products is slow performance which shows up with poor mouse pointer synchronization and jerky movements when trying to control the client. This didn't occur with NSS as the methods used to link up with the client's video driver produced very smooth movement making it much easier to control the remote system.

During a remote control session you have access to a wide range of tools including full chat and messaging facilities allowing private text-based conversations to be held between teacher and student. If audio is available then voice conversations can also be held over the network. The File Transfer tool loads up a smart split screen where the teacher can view the contents of their own hard disk along with that of the remote PC and conduct file copies using nothing more than drag and drop operations. Performance is a key factor here as well as in previous tests on the NetSupport Manager software we've always found it to be significantly faster for file transfers than virtually all of the competition in the remote access software market.

Programs can be executed on the remote system although you will need to know the full pathname of the file you want to run and any associated parameters. The Windows Clipboard can be accessed on both systems from the Tutor console so teachers can send their contents to the student and you can remotely log the user off the system. A screenshot of the remote control window can be initiated and saved to a file for later use and the student's screen can be blanked off if required. The annotation tools could prove useful as these allow the teacher to draw on the student's screen using a variety of shapes, lines and arrows so they can clarify instructions or point something of interest out.



# The Test Designer

One feature that sets NSS apart from many other classroom management products is its Test Designer module which makes very light work of creating automated examinations. Our testers found this component particularly easy to understand and use - especially as wizards are provided throughout the entire process. The types of tests possible are endless and can include multiple choice questions which incorporate text, graphics, video and audio files.

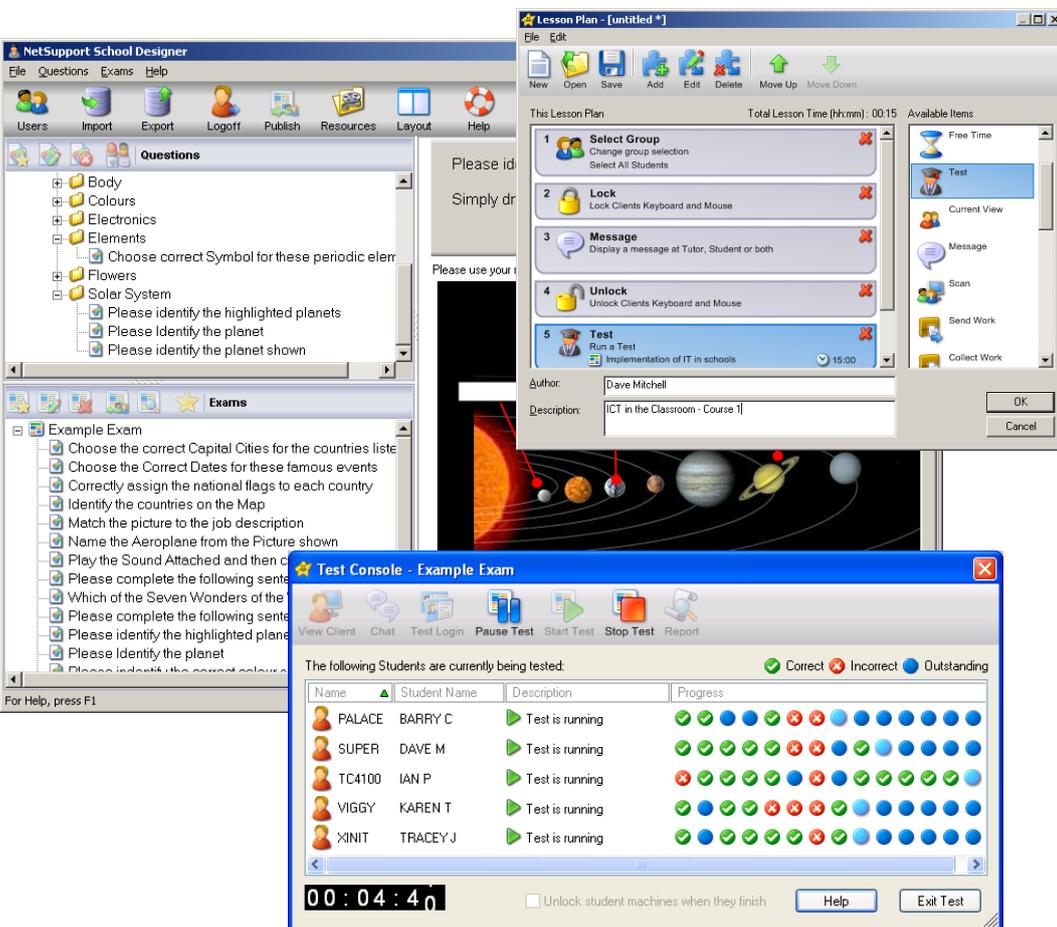
The Test Designer is loaded separately from NSS and we liked the layout of its interface as it allows you to create a database of questions which can then be added to any examination. NSS supports eight question types and these include multiple choice, selection of text or images, true or false, combination answers and placing answers in the correct order. To build an examination you can select your questions from the panel above or create them from within the examination editor. Either way, we found this a simple process and NSS allows any authorized teacher to add questions to the central database for all to use. Clearly, security is a big issue and the database is maintained separately from the

rest of the NSS components and requires a valid username and password to access it.

Examinations can be made available to all teachers and they are initiated from within the Tutor using the Testing Console option. Only exams that have been previously published from the Test Designer are available for selection.

These can be run directly from the Testing Console but the Lesson Planner adds even more scope as you can use it to execute an automated sequence of events. You could start by scanning the selected systems, locking their keyboards and mice, sending a message with advice or assistance, unlocking all the systems and starting the selected test.

Whilst a test is running all students are automatically blocked from using any



other applications on their PC. A time counter keeps them advised of the remaining time and on completion the results are gathered into a table that can be printed out. During the test a screen at the Tutor keeps the teacher apprised on each student's progress and shows whether the correct answers have been supplied for each question and those still outstanding.

Once a test has been completed you can get immediate feedback from students. The Instant Survey feature in previous versions has been replaced with a general Student Survey tool in the Tutor console which allows teachers to fire a set of questions at their students which require simple answers such as yes or no, true or false or don't know. NSS keeps a real-time tally of all replies and gives you an at-a-glance readout of the percentages as they come in.

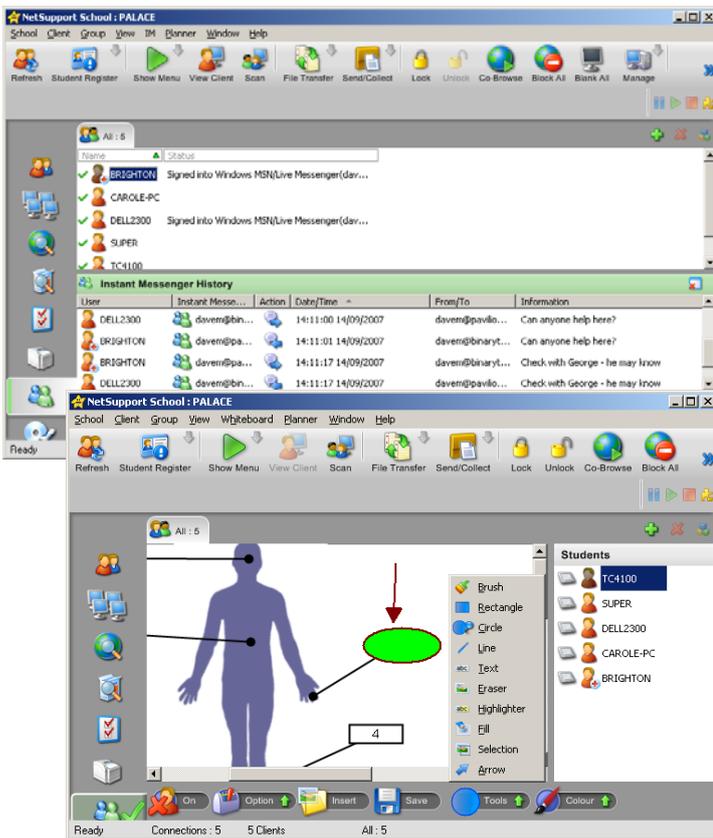
## Instant Messaging Security

The growth of instant messaging (IM) in the business sector has been phenomenal but it also presents clear security risks. This may not be a major issue in the educational sector but the use of IM on school PCs does need to be controlled. However, the majority of security solutions that have the capability to control IM applications are mainly point solutions aimed at enterprises and come with a commensurate price premium.

NSS tackles the IM issue with a new module that allows it to control applications such as Windows Messenger. IM monitoring can provide a complete rundown on text conversations being held on client systems and will also log all files transferred between IM applications. As with many of the other modules, NSS maintains a full history log and IM activity in the main window can be cleared and sent to this file when required. This log contains all details about the IM application, the logged in user, their email address, the full message content, which account it was sent to and details of any files transferred.

If the teacher feels that IM is too much of a distraction in the classroom they can block all access to selected systems with a single mouse click. Students will be advised that IM is either being monitored or blocked as the status bar on their

system will show a pop-up message advising them of this. During testing we found this worked particularly well as we could monitor all IM conversations and see what files were being transferred. The blocking feature impressed us as the moment it was activated NSS stopped all further communication between logged in IM users and stopped new users logging in. Some other IM management products we've seen have been unable to block existing sessions and are only capable of blocking the log-in process so users already signed in remain unaffected.



## Keyboard Monitoring

The keyboard monitor module is yet another useful student activity monitoring tool. From the Tutor interface you can see what the active application is on each system, the document that is currently open and alongside is a bar showing what is being typed in real time. This is a purely passive tool as the information being supplied cannot be saved off into a history log or file. However, NetSupport has included this as a complementary tool to the application control allowing teachers to see clearly what levels of activity are occurring and even each student's understanding of the class objectives.

## Shared Whiteboard

If you reckon your mouse drawing skills are good enough you can show off your prowess with the NSS shared whiteboard. Once activated, any drawing in the teacher's whiteboard will be transmitted to all systems and if you activate selected systems then the students will also be allowed to interact with the whiteboard where any actions they make will be shown to the whole class and the teacher. There is a good range of options provided as pictures can be inserted into the whiteboard, you have plenty of drawing tools to choose from, the whiteboard can be saved off as JPEGs or bitmaps and if it all gets too messy you can clear it and start over again.

## Conclusion

The use of ICT in education has clear benefits as it has the ability to transform the learning process in many different areas and subjects. However, in the drive to deliver IT facilities to pupils there are still a number of hurdles to overcome. Funding is clearly a major issue but other reasons for not implementing computers range from limited technical support to concerns about what students will get up to when accessing uncontrolled IT facilities.

NSS takes the concept of classroom management to the next level and in doing so provides a complete solution for delivering lessons, tests and examinations in a controlled and manageable environment. Teachers are busy enough already and don't have the time to learn how to use complex software but this report found that NSS is easy to install, deploy and understand. The well-designed interface makes the features very accessible and although the documentation provided is comprehensive we found we needed to refer to it on few occasions.

At its most fundamental level NSS provides the facilities to monitor students allowing teachers to see precisely what each one is doing on their PC. It allows them to show their screen to all or selected students and this feature alone can do away with the need to use costly LCD projector and smartboard combinations to present a lesson to the entire classroom. However, NSS goes much further than this as it also offers the tools to send and collect coursework. We were able to select documents on the teacher's system and send them to a predefined location on the student's PC. We were also able to use this tool to retrieve lessons or coursework material from the PCs when a lesson has ended and NSS sensibly includes the option to delete files from the remote systems once they have been copied to the teacher's system.

Whilst NSS is primarily designed to work over wired networks some schools may want to avoid costly structured cabling and have implemented wireless networks instead. Performance will be significantly lower but this fact hasn't gone unnoticed by NetSupport as it now includes features such as name servers and gateways to allow mobile students using wireless notebooks to connect to Tutor systems more easily.

NSS scores highly for its ability to monitor, control and log all application and Internet usage. However, this latest version is quite unique as it extends these capabilities to the management of printer usage and IM applications and also allows teachers to see what keyboard activity is occurring on each PC. Uncontrolled use of CD/DVD drives, USB ports and audio is a concern in educational environments and the ability to extend endpoint security to these devices also adds considerable value to NSS. Another important factor that sets NSS apart is full support for Windows Vista. Despite the fact this operating system was launched a number of months ago no other equivalent product currently offers this feature which we found worked flawlessly in our testing environment.

During testing we found the software very easy to work with and were impressed not only with the range of features on offer but also how well they had been integrated into a single, intuitive management interface. Schools looking for a complete classroom management solution need look no further than NetSupport School as it is, quite literally, in a class of its own.

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