Learning Technology
Learning Technology

Introduction

The Learning Technology outcomes support educators in developing school and class curriculum to enable learners to become literate with Information Communication Technologies (ICT) so they can take their place in our global knowledge society.

Learning technology is the broad range of ICTs that can be used to support learning, teaching, and assessment (Schmoller, 1997).

ICT is a particular dimension of technology that now permeates many aspects of everyday life. ICT includes computers and their peripherals, mobile devices, software, online systems, multimedia and the Internet. Rapid and continuing advances in ICT have fundamentally changed the way we communicate, interact and learn. In our digital age, young people in particular, need to be highly literate in ICT for life long learning.

Being ICT literate means being able to choose and use ICT responsibly and ethically, to support critical and creative thinking about information and about communication as citizens of the global community.

ICT literate learners

- understand the role and impact of ICT and apply ethical, safe, responsible and legal standards in its use
- solve problems, accomplish tasks, and express creativity, both individually and collaboratively, using ICT
- acquire, organise, analyse, evaluate, and present information using ICT
- use ICT to communicate effectively
- develop knowledge and ability in the use of ICT.

There are strong links between the skills outlined above and the EsseNTial Learnings. The Learning Technology outcomes are Exit Outcomes. That is, they are ‘end point’ outcomes that indicate expected achievement levels for learners at the end of Year 10. This makes them different from Learning Area outcomes which describe an outcome at each Key Growth Point and Band Level.

The Learning Technology component of the NTCF has been designed as a cross curricular component to assist learners to develop ICT literacy through skills and knowledge developed and applied within authentic learning contexts. The Learning Technology component is not intended to be stand alone learning about technologies.

The diagram opposite illustrates models for developing ICT literacy along a continuum. Educators should work towards making Learning Technology integral to teaching and learning.

ICT Literacy should be integral to learning

Adapted from Manitoba Education, Citizenship and Youth (2006)
The Learning Technology section of the Northern Territory Curriculum Framework contains:

- a Learning Progress Map of outcomes and Key Indicators for planning and assessing within each Key Growth Point or Band provides the opportunities for learners to achieve the outcome (P1 and the entire S strand)
- a scope and sequence of indicators which lead to the demonstration of the outcome at each Key Growth Point or Band (P1 and the entire S strand)
- links to evidence of learning where available at each Key Growth Point or Band
- a model for designing teaching and learning in learning technology including links to curriculum, pedagogy and assessment support materials.

**Learning Progress Maps**

The renewal of the Learning Technology area of the NTCF has been based on a developmental learning model called the Structure of the Observed Learning Outcomes (SOLO). This model looks through the eyes of student learning to describe the map of learning. SOLO and the frameworks listed below, student evidence of learning and the professional wisdom of Northern Territory teachers have been triangulated in order to form the Learning Technology learning progress maps.

The National Statements of Learning for ICT provide a description of the knowledge, skills, understandings and capacities that all learners in Australia should have the opportunity to learn in the area of ICT. The Learning Technology area of the NTCF directly incorporates or reflects the National Statement of Learning for ICT.

- **National Educational Technology Standards for Students [NETS] (2007)** – These standards, developed by the International Society for Technology in Education (ISTE) describe what learners should know and be able to do to learn effectively and live productively in an increasingly digital world.
  
  http://www.iste.org/AM/Template.cfm?Section=NETS

- **Netalert Cybersafe Schools** (Australian Government)
  

- **Literacy with ICT across the curriculum** (Manitoba Education, Citizenship and Youth)
  

- **Maryland Technology Literacy Standards for Students** (Technology Literacy by Eighth Grade Consortium and Maryland State Department of Education)
  
  http://www.marylandpublicschools.org/MSDE/programs/technology/techstds/

The following principles underpin the constructivist approach to Learning Technology presented in the NTCF:

- an inquiry approach articulated by the Information Literacy process
- higher-level critical and creative thinking
- digital citizenship
- multi-literacies for the 21st century

**Organisation**

Learning Technology outcomes are organised into four interconnected domains. Each domain has a number of Exit Outcomes. Each Exit Outcome has a number of Key Indicators that learners must demonstrate at a solid level of competency. Elaborations of understandings and skills for each Key Indicator provide more detailed information and examples for planning and assessing learning for the P1 outcome and the entire S Domain.
## Domains

### Information Communication Technology (ICT) in Society [LT-S]

It requires learners to practise responsible use of technology systems, information and software while developing attitudes that support life-long learning, adaptability and innovation. They develop understandings about the issues associated with intellectual property, copyright and plagiarism. Learners gain understandings about the social, cultural, ethical and safety issues relating to ICT use and increase their awareness of ICT in a rapidly changing society.

### Problem-solving and Decision-making through Research [LT-R]

It enables learners to use learning technologies to examine, question and devise situations to help solve problems. The Information Literacy process is developed as learners access, select and evaluate electronic information sources. Learners explore, experiment and program with relevant technologies to enhance questioning techniques, problem-solving skills and decision-making strategies.

### Communicating through Presentation, Publication or Performance [LT-P]

It focuses on the use of learning technologies to create and share information through contribution to, an appreciation of and participation in the publishing process. The opportunity for individual, local and global expression and sharing is enhanced through learning technologies. Learners consider the audience when designing, creating and publishing presentations or performances.

### Operating Computer Components [LT-O]

It develops essential skills for operating computer equipment, programs and systems. Learners develop confidence and an awareness of the limitations and opportunities associated with Information Communication Technology.

### Information Communication Technology (ICT) in Society [LT-S]

<table>
<thead>
<tr>
<th>Outcomes</th>
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<tbody>
<tr>
<td>Learners</td>
</tr>
<tr>
<td>S1 uphold ICT protocols and demonstrate practices that protect one’s safety and respect the privacy and safety of others at various levels ranging from school to global contexts</td>
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<tr>
<td>S2 identify and value the intellectual property associated with learning technologies and demonstrate ethical principles</td>
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<tr>
<td>S3 critically analyse the place and potential impact ICT has on society</td>
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<table>
<thead>
<tr>
<th>Learners</th>
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</thead>
<tbody>
<tr>
<td>P1 consider audience and purpose when designing and producing multimedia presentations, publications or performances</td>
</tr>
<tr>
<td>P2 interact with others locally and globally using a range of technologies</td>
</tr>
<tr>
<td>P3 competently use a range of software that creatively enhances presentation, performance or communication of information</td>
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</tbody>
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<table>
<thead>
<tr>
<th>Learners</th>
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</thead>
<tbody>
<tr>
<td>O1 independently operate computer equipment and associated peripherals</td>
</tr>
<tr>
<td>O2 efficiently use programs and systems</td>
</tr>
<tr>
<td>O3 identify limitations and opportunities associated with using ICT in relation to needs</td>
</tr>
<tr>
<td>O4 develop a proactive model for optimising computer functionality including regular maintenance, file management and ergonomics</td>
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</tbody>
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<table>
<thead>
<tr>
<th>Learners</th>
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</thead>
<tbody>
<tr>
<td>R1 use appropriate and effective search strategies to access electronic information</td>
</tr>
<tr>
<td>R2 critically evaluate, scan and select relevant information from electronic sources</td>
</tr>
<tr>
<td>R3 record and manipulate information electronically</td>
</tr>
<tr>
<td>R4 use technological resources that require problem-solving skills, decision-making strategies and questioning techniques</td>
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### Operating Computer Components [LT-O]

Learners

- Independently operate computer equipment and associated peripherals
- Efficiently use programs and systems
- Identify limitations and opportunities associated with using ICT in relation to needs
- Develop a proactive model for optimising computer functionality including regular maintenance, file management and ergonomics

### Problem-solving and Decision-making through Research [LT-R]

Learners

- Use appropriate and effective search strategies to access electronic information
- Critically evaluate, scan and select relevant information from electronic sources
- Record and manipulate information electronically
- Use technological resources that require problem-solving skills, decision-making strategies and questioning techniques

### Communicating through Presentation, Publication or Performance [LT-P]

Learners

- Consider audience and purpose when designing and producing multimedia presentations, publications or performances
- Interact with others locally and globally using a range of technologies
- Competently use a range of software that creatively enhances presentation, performance or communication of information

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- Independently operate computer equipment and associated peripherals
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The ICT in Society domain forms the core of the Learning Technology component of the NTCF. The interconnected nature of the Learning Technology domains with the Information Literacy Process as the inquiry model for developing ICT literacy requires ICT in Society to be central to all learning.

### Summary of Key Differences between 2002 NTCF and 2009 NTCF

<table>
<thead>
<tr>
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<tbody>
<tr>
<td><strong>ICT in Society Domain</strong></td>
<td></td>
</tr>
<tr>
<td>S1 outcome</td>
<td>S1 outcome</td>
</tr>
<tr>
<td>ICT in Society was the last of the four domains.</td>
<td>ICT in Society domain is now the first of the domains indicating its importance to all other domains.</td>
</tr>
<tr>
<td>Learners comply with established ICT expectations and protocols at various levels ranging from school to global contexts.</td>
<td>Learners uphold ICT protocols and demonstrate practices that protect one’s safety and respect the privacy and safety of others at various levels ranging from school to global contexts.</td>
</tr>
<tr>
<td><strong>Outcome from Communication through Presentation, Publication or Performance Domain</strong></td>
<td></td>
</tr>
<tr>
<td>P1 outcome</td>
<td>P1 outcome</td>
</tr>
<tr>
<td>Learners select appropriate tools and skills to design and produce a multimedia presentation or performance.</td>
<td>Learners consider audience and purpose when designing and producing a multimedia presentation, publication or performance.</td>
</tr>
<tr>
<td><strong>Indicators</strong></td>
<td></td>
</tr>
<tr>
<td>Indicators were a mix of activities, assessment tasks and ideas. The progression of particular concepts and skills through the Key Growth Points and Band levels was not always clear.</td>
<td>The Indicators are now Key Indicators that learners demonstrate at a solid level of competency. The Key Indicators have elaborations of understandings and skills for each Key Indicator that provide the scope for planning and assessing learning within a Key Growth Point or Band level.</td>
</tr>
<tr>
<td><strong>Glossary</strong></td>
<td></td>
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<tr>
<td>The Glossary was a print publication.</td>
<td>The updated Glossary is available only online.</td>
</tr>
</tbody>
</table>

### Links to Systemic/National Assessment

As part of the National Assessment Program (NAP) learners in Years 6 and 10 undertake an ICT Literacy test every 3 years. ICT Literacy tests took place in 2005 and 2008. Expectations for Years 6 learners correspond to NTCF Band 3 and Year 10 with NTCF Band 5.


The assessment items in the test are organised into three strands:
- Strand A: Working with information
- Strand B: Creating and sharing information
- Strand C: Using ICT responsibly.
These three strands are based on the following six key processes of ICT literacy. These processes and their links to the Learning Technology domains in the NTCF are outlined in the table below:

<table>
<thead>
<tr>
<th>NTCF Learning Technology Domains</th>
<th>Key processes of ICT Literacy</th>
</tr>
</thead>
<tbody>
<tr>
<td>[R1]</td>
<td>Accessing information</td>
</tr>
<tr>
<td>[R3]</td>
<td>Managing information</td>
</tr>
<tr>
<td>[R2], [R4], [O3]</td>
<td>Evaluating</td>
</tr>
<tr>
<td>[P1], [P3], [O1], [O2]</td>
<td>Developing new understandings</td>
</tr>
<tr>
<td>[P2]</td>
<td>Communicating with others</td>
</tr>
<tr>
<td>[S1], [S2], [S3], [O4]</td>
<td>Using ICT appropriately</td>
</tr>
</tbody>
</table>

Designing for Teaching and Learning in Learning Technology

Eight Learning Management Questions (Smith and Lynch, 2006)

The eight learning management questions provide a model for designing short, medium and long term learning and teaching programs. A number of curriculum, pedagogy and assessment support materials are available to assist teachers to use these management questions.

Starting with Learners

To answer these key questions teaching teams analyse NTCF Learning Technology data, classroom data and may refer to the NAP ICT literacy results.

Designing for Learning

There are a number of principles teachers must take into account when making Learning Technology integral to teaching and learning.

1. Digital citizenship - This principle is articulated through the ICT in Society domain. The development of understandings and skills associated with digital citizenship are an essential part of any learning design when learners engage with Learning Technology.

2. Information Literacy - An appropriate design for the learning journey emphasises learner engagement and inquiry, based on questions posed by teachers and learners, and discussion. The ability to pose and investigate questions as part of the Information Literacy process is an important aspect of digital literacy.

3. Multiliteracies - In the past, learners generally engaged with and developed critical literacies of written texts that included images. Today’s learners engage daily with multimodal texts comprising written text, images, animations, video and sound. Developing learners’ abilities in critically evaluating and composing multimodal texts should be a key component of the learning journey.

4. Connectivism - The rise of Web 2.0 has fundamentally changed the way learners construct knowledge. Web 2.0 tools have allowed learners to engage in real-time collaboration and to co-construct solutions to problems. As learners increasingly view learning as a collaborative activity, the need for collaboration and collaborative skills increases. Teachers need to design activities to enable learners to develop collective intelligence - the ability to pool knowledge and compare notes with others toward a common goal, and negotiation - the ability to travel across diverse communities, discerning and respecting multiple perspectives, and grasping and following alternative norms.
NT Curriculum Framework

Curriculum, Pedagogy and Assessment Materials Supported with Professional Learning

NT Action Learning with Learning Objects (ALLO) Project

The Le@rning Federation online curriculum content (learning objects and digital resources)
http://www.scootle.edu.au

Learning Activity Management System (LAMS)
http://lams.ntschools.net

NT Schools Portal

espace
http://espace.ntschools.net

Monitoring Learning
Assessment provides the tools for measuring learners’ progress towards reaching instructional goals and standards. Feedback through assessment provides information about learners’ progress and data gathered assists in guiding instruction that can accommodate learners’ needs, interest and abilities.

Electronic portfolios and student profiles are two means for creating electronic spaces for learning to be housed, viewed and reflected upon. These also provide the opportunity for parents/guardians to view their child’s progress.

References


Information Communication Technology (ICT) in Society

[S1] Learners uphold ICT protocols and demonstrate practices that protect one’s safety and respect the privacy and safety of others at various levels ranging from school to global contexts.

Learners demonstrating solid evidence of

**Band 5**
- analyse the benefits, constraints and influence of social, legal and economic issues on use of the Internet and enable devices
- apply codes of practice to address issues of safe, secure and responsible ICT and Internet use that take into account emerging ICT issues and trends
- critique codes of practice for safe, secure and responsible ICT and Internet use and justify choices
- advocate for safe, secure and responsible ICT and Internet use in local and global contexts

**Band 4**
- explain and apply appropriate codes of practice when using the Internet and ICT in local and global contexts
- analyse a variety of security and privacy risks associated with ICT and explain and apply safeguards for limiting exposure to these risks
- evaluate own and others’ codes of practice and advocate safe, secure and responsible ICT and Internet use

**Band 3**
- explain the issues with the safe, secure and responsible use of ICT for specific purposes and develop codes of practice that address the issues
- explain the benefits and risks associated with using the Internet to obtain and publish information and for interaction and communication
- describe a variety of security and privacy risks associated with ICT use and explain safeguards for limiting exposure to these risks
- evaluate codes of practice for safe Internet use and secure and responsible ICT use when prompted
- use the Internet safely, securely and responsibly for a variety of specific purposes
- apply class rules for the safe, secure and responsible use of ICT when using ICT for a variety of specific purposes and support others to apply the class rules

**Band 2**
- advocate for and apply an appropriate code of conduct for safety and security when using the Internet for a specific purpose
- discuss safe and secure conduct relating to security and privacy when using ICT for a specific purpose
- identify and apply an appropriate code of conduct for responsible ICT use when using ICT for a specific purpose

**Band 1**
- explore appropriate conduct for safe Internet use that is consistent with class rules in an instructional setting
- explore appropriate conduct relating to security and privacy when using ICT that is consistent with class rules
- explore and apply codes of conduct for responsible ICT use that are consistent with class rules
NT Curriculum Framework

KGP 3
• explore safety issues relating to Internet use in an instructional setting
• explore the concepts of ownership and privacy relating to ICT use in an instructional setting
• explore codes of conduct that address safe or responsible ICT use in an instructional setting
• apply codes of conduct for safe or responsible ICT use

KGP 2
• develop an awareness of the concept of safety relating to Internet use in an instructional setting
• develop an awareness of the concept of a code of conduct for responsible or safe ICT use in play-based and instructional settings
• apply a code of conduct for the responsible use of ICT in play-based and instructional settings

KGP 1
• actively seek and anticipate interactions with familiar people, activities, objects and environments
• use a limited repertoire of gestures, actions, vocalisation strategies to respond to a sensory cue related to a familiar event

Educators will find more detailed information, examples and links in the online version of the renewed [S1] outcome in the Indicator section. This is available through the NT Schools Portal. A sample is printed below:

The curriculum scope for planning and assessing learning within Band 5

Learners analyse the benefits, constraints and influence of social, legal and economic issues on use of the Internet and enabled devices

• understand the benefits and risks associated with the use of chat rooms or instant messaging
  - analyse how chat rooms and instant messaging operate and the ways in which these technologies may expose users to unsafe activity
  - investigate how chat rooms and instant messaging technologies work in order to recognise when personal information is at risk
  - discuss the use of false identities in chat rooms or instant messaging and their potential for harm
  - describe the potential risks associated with participation in unmoderated chat rooms
  - use moderated chat rooms for specific educational purposes
  - examine and discuss real case studies of young people who have experienced emotional or physical harm resulting from encounters in chat rooms
• understand the benefits and risks associated with e-commerce
  - investigate Internet commerce and the technologies used for safe and secure transactions when buying or selling online
  - examine safe approaches for submitting personal information online
  - discuss financial safety issues involving online purchasing and online selling
  - investigate the legal and economic implications of online transactions
• use a range of sophisticated research procedures for online learning
• validate content using credible external sources
  - develop processes and use tools with which to validate online content
• understand that specific websites target young people and attempt to improperly manipulate their views for racist or extremist purposes, or to recruit them to racist or extremist organisations
  - discuss the limited censorship of the Internet and the consequences
  - identify and discuss Internet content that either misrepresents the truth, racially vilifies, or which may attempt to recruit learners to racist or violent organisations
Information Communication Technology (ICT) in Society

[S2] Learners identify and value the intellectual property associated with learning technologies and demonstrate ethical principles.

Learners demonstrating solid evidence of

Band 5
- consistently apply ethical codes of practice for the use of intellectual property and copyright material associated with learning technologies that take into account emerging issues and trends when using ICT
- critique ethical use of the intellectual property associated with learning technologies to comply with copyright laws and fair dealing provisions when using ICT and justify choices
- advocate for ethical use of intellectual property and copyright materials associated with learning technologies

Band 4
- explore the relationship between intellectual honesty, plagiarism, copyright laws, fair dealing provisions and the public domain and apply effective strategies for ethical use of intellectual property and copyright material associated with learning technologies in local and global contexts
- explain moral rights associated with learning technologies and comply with the Copyright Act pertaining to moral rights when using ICT in local and global contexts
- evaluate own and others’ ethical use of intellectual property and compliance with copyright laws and fair dealing provisions associated with learning technologies and advocate for standards

Band 3
- explain intellectual honesty and plagiarism associated with learning technologies and apply protocols for avoiding plagiarism
- explain intellectual property, copyright, software piracy and fair dealing associated with learning technologies and comply with copyright laws and fair dealing provisions
- explore and describe licensing types other than copyright and use creative works licensed under other licenses
- evaluate ethical use of intellectual property and compliance with copyright laws and fair dealing provisions associated with learning technologies when required
- support peers to ethically use intellectual property and comply with copyright laws and fair dealing provisions associated with learning technologies

Band 2
- examine intellectual honesty and plagiarism associated with learning technologies and use strategies to avoid plagiarism
- examine intellectual property, copyright and fair dealing provisions associated with learning technologies
- comply with copyright laws and fair dealing provisions associated with learning technologies

Band 1
- explore the concepts of intellectual honesty and plagiarism associated with learning technologies in an instructional setting
- explore the concepts of intellectual property and copyright associated with learning technologies in an instructional setting
- demonstrate ethical behaviours relating to the intellectual property associated with learning technologies in an instructional setting

KGP 3
- explore the concept of the intellectual property associated with learning technologies in an instructional setting
- explore ethical behaviours relating to intellectual property associated with learning technologies in an instructional setting
- demonstrate ethical behaviours relating to the intellectual property associated with learning technologies in play-based and instructional settings
NT Curriculum Framework

KGP 2

- develop an awareness of the concept of the intellectual property ownership associated with learning technologies in play-based and instructional settings
- develop an awareness of expectations of ethical behaviours relating to the intellectual property associated with learning technologies in play-based and instructional settings
- demonstrate an ethical behaviour relating to the intellectual property associated with learning technologies in play-based and instructional settings

KGP 1

- actively seek and anticipate interactions with familiar people, activities, objects and environments
- use a limited repertoire of gestures, actions, vocalisation strategies to respond to a sensory cue related to a familiar event

Educators will find more detailed information, examples and links in the online version of the renewed [S2] outcomes in the Indicator section. This will be available through the NT Schools Portal.

A sample is printed below:

The curriculum scope for planning and assessing learning within Band 2

Learners examine intellectual honesty and plagiarism associated with learning technologies and use strategies to avoid plagiarism

- describe the importance of respecting the rights of others when using their material
  - identify and describe the right of others to have their work attributed if you use it
  - identify and describe the user’s responsibility to attribute others’ work if they use it
- analyse their own and others’ values and social expectations regarding the ethical use of digital content and information
  - compare and contrast ideas and values with social expectations in relation to copying and pasting or downloading images from a website or other online source
  - compare and contrast ideas and values with social expectations in relation to copying and pasting text from a website or other online source
  - discuss thoughts, feelings and values in relation to how others might use their intellectual property
- analyse own and others’ views about the acknowledgement of the contributions of team members when working collaboratively
  - identify and analyse ideas and values about the importance of acknowledging the contribution of team members to collaborative work
  - identify and describe ways to acknowledge the contributions of team members to collaborative work
- define intellectual honesty as a principle that upholds the acknowledgement of the contribution of others
- describe how intellectual honesty promotes opportunities to challenge existing ideas and learn new ideas
  - discuss how intellectual honesty encourages authors and creators to publish their ideas and works because they expect that their ideas and works will be acknowledged by others
  - discuss why someone who wants to appear ‘clever’ might be intellectually dishonest because they want others to believe that the ideas are their own
  - discuss how being intellectually honest promotes the deepening of everyone’s understanding because original sources of information can be found
- define plagiarism
  - as a form of intellectual dishonesty or cheating
  - as a situation whereby a person uses the intellectual property of another without attributing the source of the original work
Information Communication Technology (ICT) in Society

[S3] Learners critically analyse the place and potential impact ICT has on society.

Learners demonstrating solid evidence of

**Band 5**
- evaluate how ICT affects individuals and societies taking into account emerging trends and issues relating to the impact ICT has on society

**Band 4**
- analyse how ICT affects the individual and society in local and global contexts
- explore significant milestones in the history of the development of ICT and value this history in understanding the present and future impact of ICT on individuals and societies

**Band 3**
- explain how ICT affects the individual and societies in the past and present
- use wireless games and/or communication devices at appropriate times and in appropriate places
- explore significant milestones in the history of the development of ICT

**Band 2**
- examine how ICT affects the individual and societies in the past and present
- develop an awareness of significant milestones in the history of the development of ICT

**Band 1**
- consider how ICT affects people and society in the past and present

**KGP 3**
- explore how ICT affects the individual both at home and at school

**KGP 2**
- explore how ICT affects own daily life

**KGP 1**
- actively seek and anticipate interactions with familiar people, activities, objects and environments
- use a limited repertoire of gestures, actions, vocalisation strategies to respond to a sensory cue related to a familiar event

Educators will find more detailed information, examples and links in the online version of the renewed [S2] outcomes in the Indicator section. This will be available through the NT Schools Portal. A sample is printed below:

The curriculum scope for planning and assessing learning within Band 2

**Learners develop an awareness of significant milestones in the history of the development of ICT**

- gather stories from adults about their past experiences with ICT
  - interview parents and other adult family members/friends and teachers about first experiences with computers, peripherals and the Internet

- read and view, discuss and present information about significant events in the history of the development of computers, peripherals, electronic communications and the Internet
  - identify the development of the first analogue computer in 1925, the first ENIAC (Electronic Numerical Integrator And Computer) in 1943-45, the first commercially available computer in 1951, invention of the mouse in 1963, launch of the floppy disc in 1970, launch of the first personal computer in 1975, the first inkjet printer in 1976, the first IBM™ personal computer in 1981
  - describe the rise of significant computing companies such as Intel™ in 1968, Microsoft™ in 1975, Apple™ in 1976, Compaq™ in 1982
  - describe the advent of electronic communications including the first email sent between two machines in 1971, the birth of the World Wide Web in 1990
  - name some changes that have taken place in the last 10 years in relation to ICT

- reflect on whether understanding the history of the development of ICT assists learners to understand the impact of ICT on society and predict future use and impact of ICT on society when required
Learners use appropriate and effective search strategies to access electronic information.

Learners demonstrating evidence of **Band 5** for example
- use advanced search techniques to minimise hits on requests, eg use of Boolean operators: and, or, not, +, wildcards, eg learning+technology
- select information from primary and secondary electronic sources using advanced search techniques
- access advanced functions of meta search engines, to effectively gather appropriate information, eg Copernic, Dogpile.

Learners demonstrating evidence of **Band 4** for example
- locate web sites using a range of methods, eg links, URL’s, bookmarks, search engines
- search the Internet for web sites that suit selected learning outcomes
- debate the advantages and disadvantages associated with searching for information electronically [Col 3]
- use collaborative electronic tools to investigate curriculum related problems or issues, eg e-learning environments [Col 3]
- select the most appropriate search engine to gather information quickly and efficiently
- use meta search engines to maximise findings, eg Copernic, Dogpile
- use some advanced search strategies for limiting or increasing search engine results, when directed, eg narrower or broader keywords, synonyms, Boolean operators.

Learners demonstrating evidence of **Band 3** for example
- use appropriate terminology when using search engines
- read headings and blurbs on search engine results to determine relevance of links
- explain some advantages and disadvantages associated with searching for information electronically
- use key words to locate relevant information using various electronic resources, eg library catalogue, Internet
- use simple search engines, eg Yahooligans
- select and use appropriate technology tools and resources to accomplish a research task.

Learners demonstrating evidence of **Band 2** for example
- suggest words required to effectively search electronic sources, eg library catalogue, Internet
- use menus and icons to locate relevant information from familiar sources, eg CD ROMs
- locate bookmarked or linked web sites
- conduct simple searches employing various search engines and using single or combined key words
- use ‘browse’ mode available on various search engines, eg Yahooligans
- list advantages and disadvantages associated with searching for information electronically [T&D]
- use content specific electronic sources to support and enhance research, eg simulations, web sites, CD ROMs
- use technology to locate information from various sources, eg web favourites, web links, library catalogue, CD ROM menus
- use appropriate technology tools and resources to accomplish research tasks [T&D].
[R 1] Learners use appropriate and effective search strategies to access electronic information.

Learners demonstrating evidence of **Band 1** for example
- conduct a topic or keyword search to locate relevant information in a library catalogue, with some assistance
- suggest words to use when conducting an Internet search
- discuss ways to search for information using various forms of Learning Technology [Col 1]
- participate in research activities where the teacher models locating web sites using various strategies, eg simple search, URL, links, bookmarks
- use technology to locate information from various sources, with assistance, eg links or bookmarked websites, library automated catalogue, CD ROM
- use topic specific multimedia programs and encyclopedias to gather information, with assistance.

Learners demonstrating evidence of **Key Growth Point 3** for example
- conduct a simple topic or single key word search of a library catalogue to locate relevant resources, with teacher assistance
- using teacher talk, retell the steps of how to access information after searching for a given topic
- work together to decide on questions related to a given topic to be used to aid searches [T&D].

Learners demonstrating evidence of **Key Growth Point 2** for example
- choose a cell, icon, key, button or switch to hear information stored electronically, eg cell on electronic communication device
- suggest key words that the teacher can use to search for information on a given topic
- select a topic to search electronically, eg a library catalogue, access bookmarked resources.

Learners demonstrating evidence of **Key Growth Point 1** for example
- select a cell, icon, key, button or switch to hear the information stored electronically, with assistance, eg cell on electronic communication device.
Learners demonstrating evidence of **Band 5** for example

- sensitively select electronically accessed information relevant to a particular topic
- assess the authority, reliability and validity of electronically accessed information
- critically appraise electronic data by using the Information Literacy process, ie define, locate, select, organise, present and evaluate
- record a bibliography of sources including title, author, URL, date of access, date of creation and copyright details.

Learners demonstrating evidence of **Band 4** for example

- evaluate the relevance of electronically accessed information applicable to a particular topic
- evaluate the authority and reliability of electronic sources
- analyse multiple sets of information and reject low quality or unverifiable data [T&D-Cri]
- select sites aimed at appropriate level for own learning and needs
- create a reference list of electronic sources, eg title, author, URL, date created, last modified.

Learners demonstrating evidence of **Band 3** for example

- recognise that not all websites are credible and that Universal Resource Locators (URL’s) can help determine validity of source based on the suffix or file extensions, eg ‘.gov’ means government resources, ‘.edu’ means educational or research sites, ‘.com’ means commercial sites
- recognise that information serves different purposes and that data from electronic sources may need to be verified to determine accuracy or relevance
- determine the purpose of websites for bias or agendas, detecting obvious viewpoints, before selecting relevant information
- compare and contrast information from similar types of electronic sources [T&D]
- compare and use various electronic and non-electronic sources of information [T&D]
- visually scan on-screen electronic sources for relevant information using recording software where appropriate, eg word processing, templates, note pad
- use visual skimming and scanning skills to assess readability and relevance of electronic sources, eg URLs to help validate reliability of source
- evaluate the appropriateness and accuracy of information located on electronic sources [T&D]
- record resources accessed to form the basis for a reference list, eg title, author, URL [T&D].

Learners demonstrating evidence of **Band 2** for example

- evaluate credibility through simple checklists, eg Section 6 of *Internet Insights for Teachers 2001* by Judith Evans
- determine the appropriateness of information to a specific topic or question located on an electronic source, with assistance [T&D]
- participate in teacher led discussion on the purpose of various web sites, eg personal, educational, propaganda, persuasion
- compare information found in various texts and electronic sources looking for discrepancies or variations, with guidance, before selecting relevant information
- scan on-screen, electronic sources for relevant information without printing
- compare and examine information gathered through research using software and web based sources
- analyse and evaluate various information contained on websites for research purposes
- use software designed to assist in organising tasks, eg Kidspiration
- highlight, copy and paste relevant information in small chucks from electronic sources to a word processing document
- use email to gather and contribute information
- list electronic resources accessed, eg URL, date accessed.

**Problem-Solving and Decision-Making through Research [LT-R]**

**Development**
Learners demonstrating evidence of Band 1 for example
- identify whether an electronic source is fact or fiction
- judge the appropriateness of an electronic source in relation to a specific topic or question, eg pictures, headings, key words [T&D]
- classify teacher chosen websites according to a set criteria
- view and compare various Internet sites related to a similar theme/topic
- skim electronic sources for relevant keywords and graphics
- retrieve relevant information from a database, CD ROM, or other shared file
- use an application to represent and map concepts (defining), eg Kidspiration, simple drawing programs
- discuss possible electronic sources to find relevant information for a given topic
- analyse and discuss various teacher selected websites and the information they hold for research related purposes.

Learners demonstrating evidence of Key Growth Point 3 for example
- judge the appropriateness of electronic resources, with assistance, eg pictures, headings, key words [T&D]
- view various teacher selected Internet sites and discuss similarities and differences between sites
- use simple visual scanning skills to make keyword selection using electronic sources, eg multimedia software, age appropriate web sites
- view, discuss and compare various teacher selected websites related to similar topics.

Learners demonstrating evidence of Key Growth Point 2 for example
- view and comment on various teacher selected Internet sites related to a given topic, eg 'This one has interesting pictures.'
- use simple visual scanning skills to choose from a range of electronic sources, eg answers to simple questions, appropriate greetings, express feelings and needs.

Learners demonstrating evidence of Key Growth Point 1 for example
- use simple visual scanning skills to choose from a range of electronic sources, with assistance, eg teacher asks a question relating to visuals on the screen and the student answers simple questions, uses appropriate greetings, expresses feelings and needs.
Learners demonstrating evidence of **Band 5** for example
- demonstrate competent use of word processing conventions to independently publish a document, paying attention to layout that incorporates advanced functions, eg use of templates/masters, style sheets
- use advanced software packages to input text or data, eg web design, graphic manipulation software, desktop publishing
- combine different documents to manipulate information, eg spreadsheet into a word processing document, mail merge
- use advanced functions in software programs, eg style sheets, track changes, different formats for translation of data into graphic representations
- design, create and modify a database demonstrating advanced functionality to record and manipulate information
- interact with concept mapping software to analyse a social issue, eg Inspiration, Mind Manager
- manipulate data by using charting and graphing to test inferences and probabilities [T&D-Dec]
- investigate and solve problems when organising and manipulating information, eg concept mapping tools [T&D-Pr].

Learners demonstrating evidence of **Band 4** for example
- select appropriate programs to input text or data for different purposes, eg word processor, spreadsheet, web page
- apply effective word processing practices to format and publish text and graphics, eg format conventions, margins, tables, layout, style
- use programs to present information in an electronic form for a given audience, eg web design software
- use a range of tool bar functions to manipulate data, eg sorting, graphing
- use a spreadsheet program to display, interpret and modify graphs
- design, create and modify a database to record and manipulate information for a specific purpose
- interact with concept mapping software to plan and revise essays and speeches, eg Inspiration.

Learners demonstrating evidence of **Band 3** for example
- record relevant information located in electronic sources using electronic modes, eg templates, word processing, note pad
- use a range of technology tools to process, capture and record information, eg databases, spreadsheets, charts, word processor, digital camera
- design, develop and organise a simple database, with assistance
- compose, revise and edit word processing documents using formatting conventions, eg tabs, columns, graphics, text wrap, headers and footers
- use toolbar functions to modify or adapt data for a particular purpose, eg highlighting, bold, italicised, cutting
- use spreadsheet programs to display data and construct simple graphs from raw data for further purposes
- describe the functions of familiar programs to appropriately manipulate and present information, eg cutting and pasting, enlarging an image
- discuss the recording format of electronically sourced information and its usefulness, eg website, CD ROM, digital images [Col 1]
- manipulate concept mapping software to assist in manipulating information, eg Inspiration, templates [T&D].
Learners demonstrating evidence of **Band 2** for example
- demonstrate the basic skills involved in self editing/correction during word processing, eg spell check, thesaurus
- use tables to record selected information
- record information electronically using a familiar program in a clear and precise way, for others to view by using self editing techniques
- design and develop a simple class database related to class work or interest area, eg Hyperstudio, Claris Database
- use word processing conventions to format and publish original text, eg editing tools, alignment, copy/paste, spacing
- explain different ways that information is recorded electronically and give concrete examples of certain program usage, eg presentation software, web design software
- use and explain the purpose of tools and skills to manipulate documents in a variety of ways, eg copy, paste, cut, insert, move
- use appropriate software to assist with simple concept mapping (defining), eg Kidspiration, KidPix, draw/paint.

Learners demonstrating evidence of **Band 1** for example
- use basic word processing conventions to present simple stories, eg punctuation keys, text wrap, fonts and styles
- develop self-editing skills on the computer, eg editing from the screen
- record information electronically in simple language and plain text for others to view
- discuss ways that information is presented in various electronic forms [T&D]
- use software to express words and pictures, eg KidPix, drawing, paint
- experiment and use simple functions, eg copy, paste, cut, move.

Learners demonstrating evidence of **Key Growth Point 3** for example
- use a word processing document to record own name and a simple sentence with appropriate conventions, eg shift for capitals, space bar
- discuss the recording format of electronically sourced information, eg web site, digital images, CD ROM
- recognise, establish and choose ways to edit or delete information, eg backspace, delete, cut tool, arrow keys, enter key
- explore and experiment with various software that enables presentation of information, eg KidPix, painting, drawing.

Learners demonstrating evidence of **Key Growth Point 2** for example
- use a word processing document to record simple information, eg recording name, address and age, single words to accompany illustrations
- use icons on desktop
- use the mouse to highlight specific areas and, with guidance, follow the steps to delete or change the information in various simple, single step ways
- create a drawing or text for printing purposes
- collect printed items from printer.

Learners demonstrating evidence of **Key Growth Point 1** for example
- create a drawing or text for printing purposes, with assistance
- recognise mouse to screen link
- use icons on desktop, with assistance
- attend to screen
- use mouse, switch, keyboard, extended keyboard appropriately, with assistance
- use an adaptive word processing program to record simple information, with assistance, eg name, address, age
- collect printed item from printer, with assistance.
Learners demonstrating evidence of Band 5 for example
- evaluate the appropriateness of the Learning Technology used to investigate or solve a problem
- use various forms of technology to solve numerical problems, eg sort data, organise and classify information, graphic calculators, spreadsheets, databases
- investigate and solve problems of prediction, calculation and inference, eg simulation games
- use graphic organisers to present connections between ideas and information in a problem-solving environment, eg mind mapping, flow charts
- design and create a ‘scaffold’ highlighting how a software application can be used to meet task requirements.

Learners demonstrating evidence of Band 4 for example
- identify appropriate electronic materials and tools that can be used to accomplish a plan of action
- evaluate problem-solving choices, then redefine the plan of action as appropriate
- articulate clearly a plan of action that uses Learning Technology to solve a problem
- create a solution to a problem using software to demonstrate the solution, eg simulation programs
- create a simulation or model by using technology that permits inferences to be made
- pose and test solutions to problems by using computer applications, eg Computer Aided Design (CAD) simulation software
- participate in online projects that involve decision-making and problem-solving to reach an end point, eg Web Quests, ASX Schools Sharemarket Game [Col 3].

Learners demonstrating evidence of Band 3 for example
- compare various forms of technology for appropriateness in problem-solving
- list steps in a plan of action using technology to help in the decision-making process
- participate in online projects to locate, gather and contribute information, including web and email based projects [Col 3]
- generate alternative solutions to problems by using Learning Technology to facilitate the process.

Learners demonstrating evidence of Band 2 for example
- choose most appropriate program to complete a task and use a selection of tools to achieve project goals
- make a variety of decisions in relation to a project and apply related problem-solving strategies
- participate in online projects to locate, gather and contribute information [Col 3]
- explain how to perform a task using a technological resource, clearly outlining the steps involved
- evaluate and answer questions based on a self produced Learning Technology enhanced task.

Learners demonstrating evidence of Band 1 for example
- complete a task using a selection of electronic tools considered most appropriate for the designated task.

Links

Learners use technological resources that require problem-solving skills, decision-making strategies and questioning techniques.
[R 4] Learners use technological resources that require problem-solving skills, decision-making strategies and questioning techniques.

- make decisions in relation to a teacher directed task and apply related problem-solving strategies, eg complete a pictograph with given data and create a variety of ways to complete a task with set restrictions (such as create different houses using a paint program, make a house using only shapes)
- respond to questions about self produced Learning Technology enhanced tasks
- ask questions about a peer produced Learning Technology enhanced task, eg ‘Can you show me how you added the pictures?’ [Col 3]

Learners demonstrating evidence of Key Growth Point 3 for example
- draw/paint a self chosen picture using a selection of paint tools, with assistance
- use computer software that fosters creativity, eg KidPix, Zoombinis
- make decisions in relation to a teacher directed task and apply related problem solving strategies, eg type your name and decorate around it using KidPix
- share some of the steps involved in producing a Learning Technology enhanced task, eg ‘First I drew a box then I used colour to put inside it.’ [Col 3]

Learners demonstrating evidence of Key Growth Point 2 for example
- explore with open ended software, eg KidPix
- draw/paint a picture using basic paint/draw tools under teacher direction, eg pencil or brush only
- participate in a group task under teacher direction to make decisions and use problem-solving strategies that are directly related to set task [Col 3]
- ask questions of a peer produced Learning Technology enhanced task, eg ‘How long did it take you to create?’

Learners demonstrating evidence of Key Growth Point 1 for example
- experience open ended software, with assistance.
Communicating through Presentation, Publication or Performance

[1] Learners consider audience and purpose when designing and producing multimedia presentations, publications or performances.

Learners demonstrating solid evidence of

Band 5
• plan and make design choices that achieve defined purposes for specific audiences
• justify planning and design decisions
• select and use appropriate technologies to achieve predefined purposes
• critique own and others’ work
• work as part of a design team

Band 4
• plan and make design choices for specific audiences and purposes
• understand how design criteria meet the needs of different audiences and purposes
• select and use features from a variety of technologies to meet specific needs
• evaluate own and others’ work
• take on different roles in a design team

Band 3
• plan and make design choices taking into account audience and purpose
• explain how audience and purpose affect design choices
• select and use appropriate technologies to produce a multimedia product
• evaluate multimedia products when prompted
• develop understandings about roles in a design team

Band 2
• plan and make design choices that relate to an audience and a purpose
• relate an audience need and a purpose with a design choice
• use appropriate technologies to produce a multimedia product
• reflect on the effectiveness of own multimedia product

Band 1
• explore planning and design choices to express ideas and convey a message
• explore the ideas of audience, purpose and design choices
• create a multimedia product
• identify reasons for likes and dislikes about multimedia products

KGP 3
• develop an awareness of purpose
• identify a familiar audience for a multimedia product
• explore design choices in a play-based or instructional setting to express ideas
• create a multimedia product
• identify a like and/or a dislike about a multimedia product

KGP 2
• explore choices about colour, alignment, repetition and proximity in a play-based setting
• seek feedback on their multimedia product

KGP 1
• actively seek and anticipate interactions with familiar people, activities, objects and environments
• use a limited repertoire of gestures, actions, vocalisation strategies to respond to a sensory cue related to a familiar event
Educators will find more detailed information about the key indicators in the examples and links in the online version of the renewed [P1] outcome in the Indicators section. This will be available through the NT Schools Portal.

A sample is printed below:

The curriculum scope for planning and assessing learning within **Band 5**

**Learners plan and make design choices that achieve defined purposes for a specific audience**

- analyse a variety of multimedia products and identify the audience and purposes for which they have been designed

- analyse a variety of multimedia products and identify the design choices that the designers have made in order to cater for a particular audience and achieve the desired purpose

- identify possible audiences for own multimedia products and identify appropriate design criteria that meet the needs of each audience and the identified purpose

- plan multimedia products that meet the requirements of a design brief provided by a client, the teacher or developed by the learner

- develop evaluation criteria
  - to define important elements that need to be part of each design criterion
  - as a reference to be able to tell which option will most satisfy the requirements of the brief
  - that are drawn out of the design brief, highlighting the important constraints and considerations that affect the product’s design

- use an iterative design process to design, produce, critique and distribute their multimedia products
  - design and produce a draft multimedia product, eg a video clip, carry out a critique, seek feedback from others, and incorporate appropriate recommendations into a revised version; critique, seek feedback
Learners interact with others locally and globally using a range of technologies.

Learners demonstrating evidence of Band 5 for example
- collaborate in online projects that involve integrating data from different places and incorporating it into a presentation/project
- use all email functions to efficiently communicate with others
- use appropriate netiquette for real-time online communication
- use the NT Schools Portal as a primary means of retrieving and storing work from outside the school environment
- create a web site that provides information to, and potential interaction with, the global community about a specific topic or thing [Arts-Me].

Learners demonstrating evidence of Band 4 for example
- participate in online projects where information about individuals and/or the community is communicated to students in other areas
- maintain a shared folder of data recorded through brainstorm/collaboration to enhance sharing information and communication with peers
- use the attachments function to transfer documents through email within and outside the school environment
- identify when email is the most appropriate form of communication
- use collaboratively agreed netiquette when communicating electronically
- identify and use the most appropriate means of delivering electronic information to a particular audience or target group, eg using the Portal drop box function to submit work as opposed to using floppy disc or email
- decide how to use the NT Schools Portal to disseminate school-wide based student information related to learning
- use a school based Intranet as a primary means of retrieving, reading and storing information
- create Intranet pages informing others of information current to learning or an area of interest [Arts-Me].

Learners demonstrating evidence of Band 3 for example
- participate in online curriculum projects that promote sharing, gathering and communicating, eg Webquests, EdNA Projects
- access and add to information stored in shared folders for use by peers
- debate the advantages and disadvantages of communicating with others electronically
- compose, send and receive email for various educational purposes
- create rules for appropriate netiquette when communicating online
- use address book and contacts functions within an email browser to efficiently send, store and manage email communication
- investigate and describe the capabilities for communication using the NT Schools Portal for classroom based communication
- collaborate with a range of others relating to a particular topic using email facilities available through the NT Schools Portal
- publish personally relevant web pages on the school Intranet, eg My Poems, About Me
- help to design and construct a class web site for publication on the Internet [Cr 1] [Arts-CrA].

Learners demonstrating evidence of Band 2 for example
- plan individual designated recipients for email, with assistance
- participate in class online projects using the Internet and email
- describe the email process
Learners interact with others locally and globally using a range of technologies.

- compose, send and receive email for various curriculum purposes, eg information gathering/sharing, Book Raps, Travel Buddies
- discuss the advantages and disadvantages of communicating with others electronically
- share electronically gathered information for group tasks
- use the NT Schools Portal to communicate using the email function locally and globally
- contribute to class web publishing on Intranet or Internet [Arts-SkP].

Learners demonstrating evidence of **Band 1** for example

- participate in class programs that require composing, sending and receiving email, eg E-Pals, Book Raps
- discuss ways to communicate with others using various forms of Learning Technologies
- share ideas about electronically producing information
- send email by following a process set by the teacher, eg writing rough draft, typing it on computer, have teacher assist in sending email to designated recipient
- choose people to communicate with globally, using various sources
- outline the steps involved in sending an email to another person [In 1]
- work together in a group to design Internet/Intranet page for others to view [Arts-SkP].

Learners demonstrating evidence of **Key Growth Point 3** for example

- participate in class lessons with teacher modelling composing, sending and receiving email, eg Book Raps, Travel Buddies
- discuss ways to communicate using electronic information, eg the Internet is a means of local and global communication, email
- contribute to producing class Intranet page, eg working with a Buddy class to create own page
- make suggestions about information that is acceptable to use in emails
- outline some of the steps involved in sending an email to another person [In 1]
- identify some advantages associated with using **Information Communication Technology** to communicate with others
- collaborate with a peer to produce an electronic product and share ideas [Arts-SkP].

Learners demonstrating evidence of **Key Growth Point 2** for example

- discuss information or images received via email as a means of communication with another class of similar age in another school/state/country, eg E-Pals organised and maintained by the teacher/assistant
- participate in a group to send an email to another person
- contribute as a class to compiling an email, eg collaborative compilation for teacher to send to designated recipient
- suggest ways that Information Communication Technology can be used to communicate with others
- view local Intranet pages designed and created by other students within the school community.

Learners demonstrating evidence of **Key Growth Point 1** for example

- use a speech output device, eg Dynavox, text/symbol to speech software or switch, to convey a simple (one unit) message
- gain the attention of a peer or adult while interacting with learning technology, eg turn head towards teacher after hearing speech output when a switch is hit, speak to peer during a computer game/simulation.
Learners demonstrating evidence of **Band 5** for example
- create, select and use appropriate software to manipulate and present data using advanced functions, eg database, spreadsheets
- select from a range of tools and applications appropriate for supporting creativity in presentations
- explore new software products to determine their suitability for a task, independently
- prepare a basic résumé, curriculum vitae or personal data sheet that is developed and stored electronically [In 6] [In 2]
- plan, develop and create an interactive web site requiring interaction to collect and disseminate information
- produce and maintain calendar and diary functions within an electronic organiser
- use the template function within word to create memos and faxes that assist in an efficient communication process
- use hyperlinks within documents to link with files that exist outside the current document
- incorporate files created using different programs within a current document, eg importing spreadsheets into a word processing document.

Learners demonstrating evidence of **Band 4** for example
- apply program specific techniques to clearly present data information within spreadsheets
- select from a range of tools and applications to enhance flexibility in presentation styles
- design, create and modify a database for a specific purpose
- create or modify a spreadsheet for simple calculations and graphs
- apply effective word processing practices to format and publish text/graphics, eg format conventions, margins, tables, layout, style
- plan and develop a website imparting information and encouraging communication through email
- select and add appropriate hyperlinks within a single document.

Learners demonstrating evidence of **Band 3** for example
- design, develop and organise a simple database, with assistance
- use a spreadsheet to display data and create simple charts
- develop a web site to share information on a given topic
- select a combination of multimedia tools to creatively produce work items [T&D].

Learners demonstrating evidence of **Band 2** for example
- design and develop a simple database related to class work or interests
- use a simple spreadsheet to display data and create simple charts
- use word processing conventions to format and publish original text, eg editing tools, alignment, copy/paste, spacing
- add information to an Intranet site that disseminates relevant information to other users about a specific topic.
Learners demonstrating evidence of **Band 1** for example
- use a range of tools and applications to record and present data expressing creativity and innovation, with support, eg slide show, table/chart, graphics, word processing
- use basic word processing conventions to present simple stories, eg punctuation keys, text wrap, fonts and styles
- demonstrate the ability to use software to express words and pictures, eg Kid Pix, drawing, paint.

Learners demonstrating evidence of **Key Growth Point 3** for example
- explore and experiment with various software that enables presentation of information, eg KidPix, painting, drawing
- use a word processor to write own name and a simple sentence with appropriate conventions, eg shift for capitals, space bar
- use fonts and sizes within a document
- explore and experiment with various software for a designated purpose.

Learners demonstrating evidence of **Key Growth Point 2** for example
- explore and experiment with various software that enables presentation of information, eg KidPix, painting, drawing
- use the computer to produce a set task as directed by teacher
- reproduce a teacher given task changing particular aspects, eg use drawing tools to make a picture then make alterations.

Learners demonstrating evidence of **Key Growth Point 1** for example
- explore and experiment with various software packages, with assistance
- choose an appropriate path within a known software package, with assistance
- use adaptive word processing programs to write own name, eg Co Writer, Pictograph Writer
- use a word processor to produce simple teacher directed tasks, with assistance
- select a switch to operate a device based on choice of activity, with assistance, eg painting, swirl art
- use a switch/mouse to activate familiar multimedia packages, eg slideshow, stack in Hyperstudio, KidPix.

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**NT Curriculum Framework**

**Learning Technology**

**Communicating through Presentation, Publication or Performance (LT-P)**

**Development**

**P 3**

Learners competently use a range of software that creatively enhances presentation, performance or communication of information.

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**Lin s**

**sse Tial Learnings**

**Collaborative Learner, Con, Con**

**Learning reas**

**The rts P Cr**
Learners independently operate computer equipment and associated peripherals.

Learners demonstrating evidence of **Band 5** for example
- independently and confidently operate computer components, eg all keyboard functions, add printers, scan, burn a CD
- efficiently and strategically use available peripherals, eg scanner, external drives, digital camera
- apply etiquette and network protocols to be a responsible user, eg logging on and off, protecting passwords, locations for saving files.

Learners demonstrating evidence of **Band 4** for example
- describe and confidently use a range of computer components and connectivity, eg CPU, network, peripherals, server
- competently operate computers on local and global networks, eg Local Area Networks (LAN), Wide Area Networks (WAN)
- practise acceptable network etiquette, eg log on and off procedures, file saving.

Learners demonstrating evidence of **Band 3** for example
- identify and use the basic functions of computer components and peripherals, eg server, network, scanner, digital camera, drives, mouse
- print appropriate materials, independently
- consolidate keyboard and mouse dexterity and conventions, including right mouse click
- use efficient key boarding skills.

Learners demonstrating evidence of **Band 2** for example
- use correct terminology for computer components, eg server, network, drives
- follow keyboarding conventions for input of text, eg word processing
- use various peripherals, with assistance, eg digital camera, scanner, external drives
- follow keyboard conventions for word processing, eg home keys, space bar, shift, punctuation keys, backspace
- print to the appropriate location and retrieve printing, independently.

Learners demonstrating evidence of **Band 1** for example
- use correct terminology for computer components and basic peripherals, eg CPU, monitor, disc drive (A:), keyboard, mouse, printer
- practise fine motor skills to manipulate a mouse effectively, eg tracking, clicking
- follow keyboarding conventions of home keys, space bar and shift keys
- insert CD ROMs correctly, when appropriate
- select items to be printed, print and collect as appropriate, from the printer.
Learners independently operate computer equipment and associated peripherals.

Learners demonstrating evidence of **Key Growth Point 3** for example
- use correct terminology for basic computer components and everyday peripherals, eg computer, keyboard, mouse, printer
- demonstrate an awareness of start up and shut down procedures
- display basic navigational skills associated with mouse control within a restricted area
- recognise which pictures or text are best printed in black and white or colour
- print a page from the computer screen and collect it from the printer.

Learners demonstrating evidence of **Key Growth Point 2** for example
- turn on a computer following instructions
- manipulate mouse control and click on icons to open program
- shut down programs and the computer, under supervision
- use volume control and headphones with care
- use a switch to operate familiar equipment and programs, independently [LS]
- recognise that what is seen on screen is printed
- recognise the differences that occur between black/white and colour printers
- retrieve printed items from the printer located in a specific area on a regular basis.

Learners demonstrating evidence of **Key Growth Point 1** for example
- experiment with keyboard or voice activation to communicate [LS]
- attend to the computer screen
- recognise mouse to screen link
- manipulate mouse control to click on icons to open programs, with assistance [LS]
- turn on a computer, with assistance [LS]
- use a mouse, switch or keyboard to operate familiar equipment or programs, with assistance [LS]
- collect printed item from printer, with assistance.
Learners demonstrating evidence of **Band 5** for example

- file manage independently, efficiently and effectively
- operate computer systems independently and confidently, eg windows, generic software, (word processing, web browser)
- effectively manage multiple applications running simultaneously to create a product, eg merging documents, cut and paste between documents, insert hyperlinks to different files
- appraise new software products to determine suitability
- use a wide range of text manipulation and formatting keyboard shortcuts, eg Ctrl X for cutting text, Ctrl Z for undo
- arrange the operating environment using advanced taskbar functionality
- control desktop environment to maximise usage, eg settings and appearance.

Learners demonstrating evidence of **Band 4** for example

- file manage efficiently and effectively, eg regularly save, backup and trash unnecessary files
- recognise file extensions and use appropriate applications to read/open or work with the file
- select appropriate file formats, eg cross-platform files as `.rtf` files
- manage documents and applications using appropriate file and window management, independently
- explore new software and recognise that particular programs are used for specific tasks, with teacher direction
- use keyboard shortcuts, eg Ctrl C for copy and Ctrl V for paste
- adopt a positive and flexible attitude to working on various computers throughout the school, eg use various computers around the school adapting to slight differences
- personalise desktop environment to suit needs, eg settings and appearance.

Learners demonstrating evidence of **Band 3** for example

- choose the best place to store data on a network or computer hard drive after collaboration with a teacher or peer
- select an appropriate program to produce a specific document or file
- navigate through documents and applications using window management protocols
- participate in assessing new software for suitability of use in the classroom
- use simple keyboard shortcuts, eg Ctrl B for bold
- customise and organise the desktop for efficient access.

Learners demonstrating evidence of **Band 2** for example

- save documents to most suitable location, independently
- select and use different software for a variety of purposes
- locate, open and close an application or document from desktop and server
- use new software in order to share a developed opinion about the software with others, eg review for other classes to access
- use basic keyboard shortcuts, eg Ctrl S for saving
- insert pictures from graphics program, eg clip art
- use correct terminology for computer programs and systems, eg application names
- operate desktop functions, eg shortcuts, floating pallets, popup menus.
[O 2] Learners efficiently use programs and systems.

Learners demonstrating evidence of **Band 1** for example
- open and close an application or document from the desktop
- save and print a word processing document to a specified location, independently
- select and use various software programs appropriately
- use correct terminology, eg programs, systems, desktop, menus, cursor, folders
- insert pictures from graphics program, eg clip art
- use new software after demonstration by a peer, eg following similar instructions
- operate basic desktop functions, eg pull down menus, scrolling, toolbars.

Learners demonstrating evidence of **Key Growth Point 3** for example
- open and close an application from the desktop
- save documents to a specified location, with assistance
- use correct terminology for basic computer hardware, eg keyboard, printer, screen
- change font size and style
- navigate around simple programs, eg KidPix, Claris Works
- explore various new software packages, with assistance
- operate desktop functions, eg tool bars, scrolling.

Learners demonstrating evidence of **Key Growth Point 2** for example
- save work to a specified location, with assistance
- navigate around and use simple programs, eg KidPix, Alphabet Blocks
- print from a program, with assistance
- open and close programs
- explore appropriate new software packages, with assistance
- follow simple repetitive screen prompts
- change text size and select different fonts.

Learners demonstrating evidence of **Key Growth Point 1** for example
- recognise symbols and icons that appear on a computer screen within a routine, eg program icons on desktop
- navigate around simple programs, with assistance, eg KidPix
- print from a program, with assistance
- follow a familiar screen prompt, eg dialogue box in Pictograph Writer
- open and close different programs, with assistance
- convey ideas and messages by using Compic or icons.
Learners demonstrating evidence of **Band 5** for example
- discuss and debate limitations and opportunities associated with Information Communication Technology [T&D-Cri]
- recognise potential viruses and initiate the removal of the virus
- explain potential damages associated with computer viruses and the purpose of virus scans [In 1]
- identify opportunities associated with Information Communication Technology through working products, eg expert assistance, job find agencies, shopping [T&D-Pr]
- explain precautions to be taken when downloading and checking email
- interpret situations that arise in relation to troubleshooting, eg unable to print, programs not loading correctly, access to Internet unavailable
- choose the best way to solve an identified problem, eg spreadsheet for complex, repetitive calculations
- adopt a positive and flexible attitude to using various hardware and software, eg be prepared to try new software or change to another style of presenting work [T&D-Pr]
- explain the limitations of working with memory restrictive programs
- describe the limitations and possible advantages in being able to work in a cross platform environment.

Learners demonstrating evidence of **Band 4** for example
- research and report on information related to virus patterns
- research opportunities and limitations associated with Information Communication Technology [T&D-Cri]
- make informed decisions about electronically reviewing and sending information with reference to size, potential virus problems, comparable applications, file types
- discuss and research potential damage associated with viruses
- decide and explain when it is appropriate to download files from the Internet, taking appropriate precautions
- take appropriate precautions when downloading and checking email
- recognise the need to work across platforms in certain electronic environments.

Learners demonstrating evidence of **Band 3** for example
- research and describe some restrictions related to viruses and virus patterns
- discuss the purpose of a virus scan and undertake on a regular basis
- scan for common virus patterns before opening files
- troubleshoot basic problems, eg proactively prevent regular problems by ensuring setup is complete before using computer by checking cords, network cable, power on
- describe some problems and limitations involved in downloading files from the Internet.

Learners demonstrating evidence of **Band 2** for example
- report computer problems in an appropriate and informed manner, eg program not responding
- discuss limitations and opportunities associated with computer usage, with guidance
- begin to recognise issues related to use of programs and downloading
- demonstrate creative and inventive use of Information Communication Technology through accessing basic computer programs, eg KidPix.
Learners identifying limitations and opportunities associated with using Information Communication Technology in relation to needs.

Learners demonstrating evidence of **Band 1** for example
- practice appropriate and considerate computer usage, eg shut down files and programs after use
- recognise and communicate specific computer problems, eg computer freezing, unable to print, will not turn on
- suggest creative and inventive ways to use Information Communication Technology by accessing basic computer programs, eg KidPix.

Learners demonstrating evidence of **Key Growth Point 3** for example
- demonstrate appropriate behaviour associated with computer usage, eg no food or drink
- verbally express basic computer problems, eg mouse not responding
- explain how Information Communication Technology should be used to ensure everyone’s safety, eg turn the computer off in an electrical storm.

Learners demonstrating evidence of **Key Growth Point 2** for example
- seek help when a problem arises, eg ‘mouse won’t work’
- recognise problems occur with technology, eg computer not working
- discuss software programs that are used at home and what they can do, eg drawing.

Learners demonstrating evidence of **Key Growth Point 1** for example
- use appropriate behaviour associated with computer usage, with assistance
- experience problems with the computer and seek appropriate help, eg ‘It’s not working, we need to get help.’
Learners develop a proactive model for optimising computer functionality including regular maintenance, file management and ergonomics.

Learners demonstrating evidence of Band 5 for example
- develop and maintain a cleaning regime, eg mouse, keyboard, screen, defragment, scan disc
- indicate when computer performance is hindered by temporary files and Internet cache, regularly empty temporary files and cache to optimise computer performance
- explain and act on the need to file manage when files are no longer needed, therefore freeing up server space
- use a system of file names for related files
- appraise standard work station ergonomics and adjust as appropriate.

Learners demonstrating evidence of Band 4 for example
- maintain cleaning regimes by regularly running scan disc and cleaning external peripherals, mouse, keyboard and screen
- explain the importance of regularly emptying the Internet cache to optimise computer performance
- perform a regular backup of work onto disc or server system, independently
- set up a filing system on a hard drive or server personal drive, eg use file names that are brief, stable and meaningful
- develop and maintain effective work habits between school and home computers, eg applying knowledge and transferring electronic files/documents
- transfer files using hard drive, disc and server
- develop and adopt ergonomically safe practices when using Information Communication Technology, eg posture and break times.

Learners demonstrating evidence of Band 3 for example
- undertake regular cleaning of a system, with supervision, eg disc fragmenting
- perform regular back up of work
- use folders to store work so that files are easily accessible
- use file names that allow easy identification of contents
- save, label and safely store work created on disc outside the school environment
- copy files between folders on a network
- develop and adopt a work station appropriate ergonomic standard, eg keyboard height, mouse requiring no arm movement.

Learners demonstrating evidence of Band 2 for example
- adopt a clean and tidy use of work station space
- explain the importance of backing information up
- research and adopt appropriate posture needed when using Information Communication Technology devices
- discuss and adopt safe practices when using Information Communication Technology, eg chair at correct height, screen at correct distance.
Learners develop a proactive model for optimising computer functionality including regular maintenance, file management and ergonomics.

Learners demonstrating evidence of **Band 1** for example
- discuss ways to care for Information Communication Technology devices
- save file in designated area
- open a self created document and add information to it, rather than creating another document
- recognise inappropriate posture and self correct when using the computer, eg sitting on the chair correctly
- undertake a basic safety check when at work station, eg chair at correct height, screen at correct distance.

Learners demonstrating evidence of **Key Growth Point 3** for example
- explain and apply appropriate skills involved with shutting down the computer
- suggest ways information produced on the computer can be linked and transferred from one document to another
- recognise and adopt appropriate posture when using the computer, eg sitting on chair correctly.

Learners demonstrating evidence of **Key Growth Point 2** for example
- shut down the computer appropriately
- adopt appropriate posture when using the computer, when prompted, eg sit on chair correctly
- use individually selected equipment to optimise access to computer, eg screen height, adaptive equipment to facilitate access, touch screens, joysticks, switches (mechanical devices of various sizes and shapes made for a specific purpose) modified keyboards.

Learners demonstrating evidence of **Key Growth Point 1** for example
- adopt appropriate posture when using the computer, with assistance
- use individually selected equipment to optimise access to computer, with assistance, eg screen height, adaptive equipment to facilitate access, touch screens, joysticks, switches, modified keyboards.