

# Naaace

Advancing education through ICT

# ICT Framework





Welcome to the Naace ICT Framework. We hope you find it useful when developing your own existing curriculum, identifying areas that may need additional support or input and in moving forward with ICT. This framework takes aspects of technology in EYFS and shows how this can be built on to develop children's learning experiences as they progress through Key Stages 1 and 2 into Key Stage 3. This develops a coherent, firm basis for a rigorous Key Stage 4 curriculum.

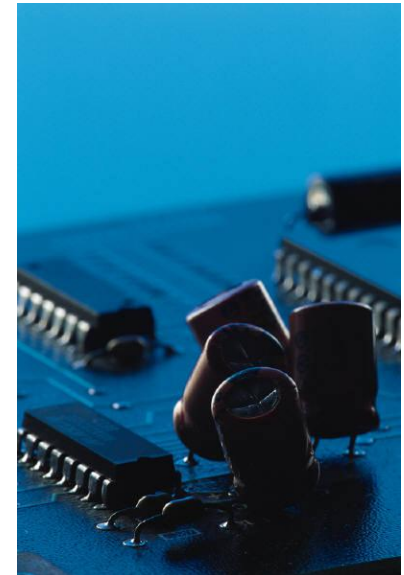
Aims to develop digital wisdom lie at the heart of the learning experience, with features of Third Millennium Learning sweeping through each of the five areas of knowledge skills and understanding.

# Rationale for ICT

ICT is a broad subject that equips learners to use technology effectively in their lives – whether it is for personal, educational, community, social or business purposes. It has the potential to be a powerful enabler of transformation, equipping our learners to make invaluable contributions to society. To do this, they need to understand the tools they are using, develop the skills to make wise decisions and gain the confidence to use technology as a means to finding innovative solutions to problems that would otherwise be unachievable or have less effective or less efficient solutions. Learners, who will ultimately be our leaders and agents for change, should understand ICT, be enabled to design tools for action and be able to think creatively about where ICT can support interventions.

ICT also empowers learners when they are studying other aspects of the curriculum by providing skills and tools that allow them to do things more effectively, efficiently or that wouldn't otherwise be possible. Many aspects of ICT need to be taught discretely in order that learners gain a greater insight into the tools and skills available so they can be used creatively in different contexts. Opportunities to embed aspects of ICT throughout the curriculum, with contextual problem solving and application of ICT skills and knowledge, are the responsibility of **ALL** teachers/facilitators, but it cannot be assumed that skills can be “caught” in the process or that learners will have sufficient skills or insight for problem solving and creative approaches without them being “taught” discretely. The context for developing skills and understanding helps provide a clear purpose for using ICT and reinforces the concept that technology can support learning, whatever curriculum area they are working in. There needs to be a systematic approach to teaching ICT in order to ensure that **ALL** aspects are learnt effectively and with sufficient depth.

The holistic approach to equip learners for their current and future digital lives will develop their ability to use digital tools wisely and effectively when communicating, collaborating, problem solving and creating.



# The Naace ICT Framework

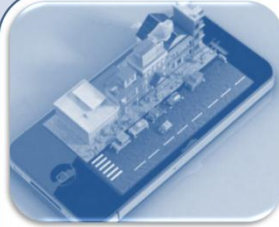
The Naace ICT Framework provides an audit and planning tool to enable schools to deliver a broad and balanced ICT curriculum and provide a clear progression from EYFS to Key Stage 3. It provides a firm basis for KS4 studies. Whilst some suggestions are given about fleshing out the framework and about approaches to teaching and learning, there is sufficient flexibility and choice for a school to develop and personalise the curriculum so that it best meets the needs of their learners within their local context. However it is important that schools recognise that in order to deliver a broad and balanced ICT curriculum, they need to include all five areas of the curriculum framework in their provision. Naace recognises that this may require further CPD for staff to ensure they are competent and confident to teach all areas effectively.

This framework will be supported with a detailed explanatory document and with a toolkit of resources, research and examples of how aspects can be delivered in the classroom.

Features of Third Millennium Learning – culture, attitudes, pedagogies, environment and tools, use of higher order thinking skills – should sweep through each of the strands and areas for learning.



# The Framework Foundations



DIGITAL LIFE

Developing confident, independent, discerning, safe, responsible users with transferable skills.



DIGITAL TOOLS

Using digital artefacts and tools for enquiry-based learning; creating digital artefacts.



DIGITAL TECHNOLOGIES

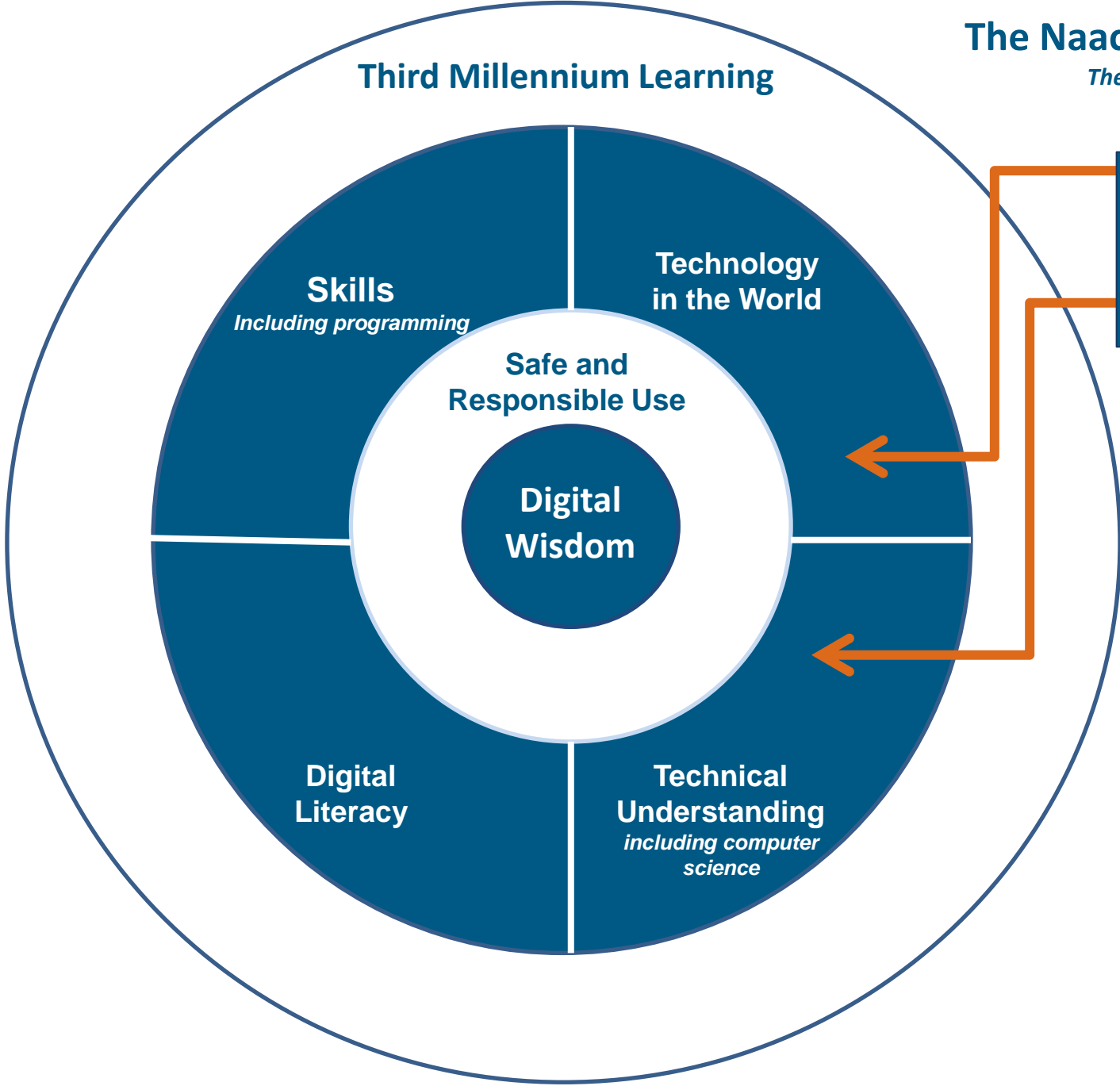
Understanding of the working and design of digital technologies and systems.



Just as a three legged stool would topple over if one of the legs was missing, the Foundations of the Naace ICT Framework are all needed in order to provide a balanced ICT learning experience.

# The Naace ICT Framework

*The Knowledge Hub*



**Suggested  
Areas of  
Knowledge,  
Skills and  
Understanding**

**Third Millennium  
Learning**  
*Culture, pedagogies,  
environment, tools,  
developing higher  
order thinking skills*

*Every Area of the Framework  
involves learning about the  
tools, the technologies behind  
them, their evolution and  
impact*

# Early Years Foundation Stage

## The Five Areas of the Naace ICT Framework



### DIGITAL LITERACY

Online identities  
 Finding information  
 Using ICT to help learning  
 Creating and sharing content  
 Gaming  
 Impact of ICT on our lives



### SKILLS

Digital Communication -  
 online and offline  
 Sharing information  
 Producing media  
 Control  
 Collecting real world data  
 Problem solving  
 Developing confidence and ability to transfer skills



### TECHNOLOGY IN THE WORLD

Recognising technologies  
 How technology helps us at home, school and work  
 Introduction to features of web pages  
 Navigating web pages  
 How technology has changed lives and the world



### TECHNICAL UNDERSTANDING

Technologies (computers and devices containing a computer)  
 Technologies store Information (Data)  
 Programs and programming  
 Networks and the World Wide Web  
 Evolution of technologies



Respect and etiquette  
 Responsible use  
 Online safety  
 Offline safety



### SAFE AND RESPONSIBLE USE

Health and safety  
 Sharing information and data safely  
 Ownership of information and data  
 Environmental issues



# Key Stage 1 and 2

## The Five Areas of the Naace ICT Framework



**DIGITAL LITERACY**



**SKILLS**



**TECHNOLOGY IN THE WORLD**



**TECHNICAL UNDERSTANDING**

Online identities  
Social Networking  
Creating and sharing content  
Gaming  
Using ICT to help learning  
Finding, retrieving and validating information  
Impact of ICT on Society including scope, scale and nature of ICT evolution

Digital Communication- offline & online  
Sharing Information (inc presentations)  
Producing and editing media  
Simulations  
Modelling  
Control  
Programming  
Collecting, analysing, evaluating real world data including datalogging  
Problem solving  
Transferability of skills

Collaboration  
Communication  
Web Design  
Creative industries, inc. media and games creation  
E-commerce  
ICT specific jobs  
How other jobs use ICT  
Evolution and impact of technology

Technologies (computers and devices containing a computer)  
Information/Data storage  
Sequences (Algorithms)  
Programs and programming  
Game and apps creation  
Networks, the Internet and World Wide Web  
Evolution of technologies, computers and computing

Respect and etiquette  
Responsible use  
Online safety  
Offline safety



**SAFE AND RESPONSIBLE USE**

Health and safety  
Sharing information and data safely  
Ownership of information and data  
Environmental issues

## The Five Areas of the Naace ICT Framework



DIGITAL LITERACY



SKILLS



TECHNOLOGY IN THE WORLD



TECHNICAL UNDERSTANDING

Online identities  
Social Networking  
Digital Communication  
Creating and sharing content  
Gaming  
Using ICT for learning  
Finding, retrieving and validating information  
Impact of ICT on Society including scope, scale and nature of ICT evolution

Digital Communication  
Communicating online  
Producing media  
Editing media  
Modelling – CAD  
Modelling – games  
Modelling – spreadsheets  
Control, data logging and programming  
Problem solving

Business software  
Industry applications of programming to solve problems  
Transferable skills  
Collaboration  
Communication  
Web Design  
Creative industries, inc. media and games creation  
E-commerce  
Work related learning/training  
ICT specific jobs  
ICT based jobs  
Evolution and impact of work practices/tools

Electronic devices  
Networks  
Data storage  
Programming  
Algorithms  
Game and apps creation  
ICT Systems life cycle  
Systems Design  
User-centred design  
Embedded systems  
Industry standards  
Organisation of data and data standards  
Evolution and impact of computing

Respect and etiquette  
Responsible use  
Online safety  
Offline safety  
Health and safety



SAFETY, SECURITY AND THE LAW

Legal issues/Legislation  
Copyright  
Data protection  
Hacking  
Environmental issues

# Third Millennium Learning

## Culture, attitudes and pedagogies

Responses to technology by whole school community are positive, creative and demonstrate a willingness and open-ness to use technology to enhance learning, teaching, assessment and communication with all stakeholders.



## Environment and tools

The physical environment and availability of a wide range of tools supports learning across the curriculum, is conducive to developing effective teaching and learning opportunities and supports the creative use of technology.

## Developing Learners

Third Millennium schools promote approaches to teaching and learning that encourage higher level thinking skills. Pedagogies may promote the higher levels of Bloom’s taxonomy, or ISTEnets for students, or PLTS (Personal Learning and Thinking Skills). Tech-empowered, constructivist, design process approaches are used.

## Features often seen in Third Millennium Schools

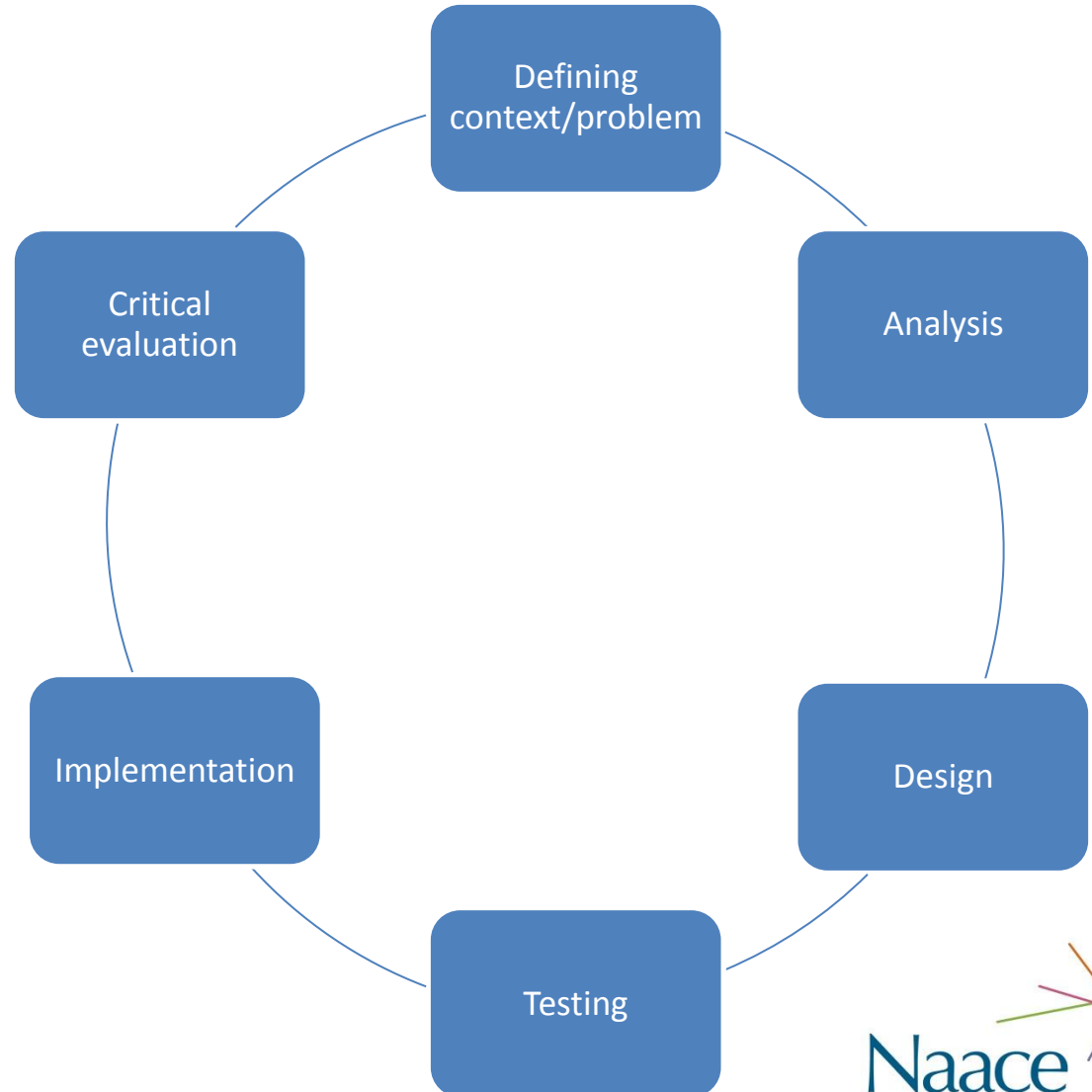
- Embedded technology
- Invisible technology
- Technology enabled learning
- Technology empowered learners
- Personalisation through tech
- Range of tools
- Technology enabled assessment
- Technology enabled
- parental involvement
- Independent learning
- Collaborative learning
- Exploration in learning
- Dynamic learning
- Thinking skills
- Celebrated achievements
- Data to inform and improve
- Flexible teaching and learning spaces to
- support flexible approaches to learning experiences
- Clear impact of tech on outcomes
- Vision for lifelong learning journeys
- Tech- captured learning experiences

# Developing Higher Level Thinking Skills



Strategies used should move beyond basic levels in Bloom's taxonomy so that higher order thinking skills are developed (see left) and enable learners to develop features identified by ISTE nets and PLTs (see right).

# Pedagogies – Using Design Processes



*Learner should use design processes when creating digital artefacts, digital solutions and digital systems.*

# Definitions

- Digital Artefacts
- Digital Literacy
- Digital Wisdom

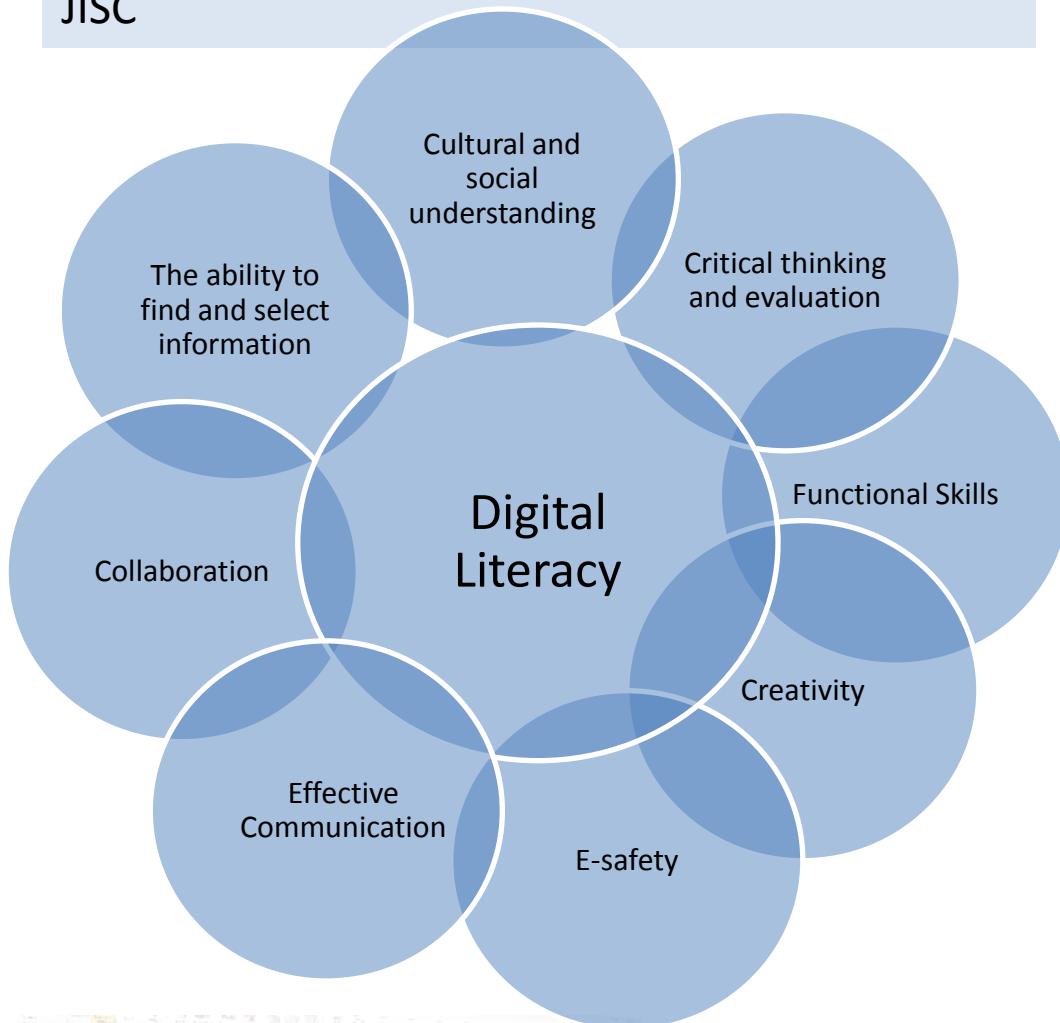
# Digital Artefacts

- From the Latin phrase *arte factum*, from *ars* skill + *facere* to make
- **From the Oxford English dictionary, the definition of an artefact is an object made by a human being, typically one of cultural or historical interest. Another definition is that it is observed in scientific experiments or investigations, not naturally present but occurring as a result of preparative or investigative procedures.**
- A digital artefact is made by a human being with skill or art. Although digital content is produced using technology tools and applications, it is "made with skill" and may result from preparative or investigative procedures. Learners need to be taught both the knowledge and skills required to create high quality "artefacts" that can compete against the best in the world. Digital artefacts include information prepared or shared in digital forms e.g. photos, videos, digitally prepared text, multimedia, databases, websites, presentations, music, e-books, programs, coding, etc.

# Digital Literacy

“... those capabilities which fit an individual for living, learning and working in a digital society”  
JISC

“... the confident and critical use of ICT for work, leisure, learning and communication” EU



*“Digital Literacy is a complex and contested term... goes beyond a focus on the individual technical competence and functional skills needed in order to operate digital tools; it refers to the more subtle and situated practices associated with being able to create, understand and communicate meaning and knowledge in a world in which these processes are increasingly mediated via digital technologies.” - Futurelab*

Some of these aspects of ICT may be developed, consolidated and applied through other curriculum areas such as Maths, MFL, Science, etc but in order to be digitally literate across the curriculum, skills need to be taught in a focused way .



# Digital Wisdom

Digital wisdom is the ability to make considered, conscious decisions about the use of technology inside and outside school or a working environment.

A “digitally wise” person knows how to use tools, software, hardware, programming – whether online or offline – effectively and creatively in a range of contexts, to solve problems, to be productive, to communicate effectively, to find information, to stay safe and understands when it is appropriate to use them. They are able to determine which tool will be the best for the task and develop a coherent and comprehensive range of transferable skills, technical knowledge and understanding that can be appropriately applied in study, work and home life.

*“Digital wisdom is a twofold concept, referring both to wisdom arising from the use of digital technology to access cognitive power beyond our innate capacity and to wisdom in the prudent use of technology to enhance our capabilities. Because of technology, wisdom seekers in the future will benefit from unprecedented, instant access to ongoing worldwide discussions, all of recorded history, everything ever written, massive libraries of case studies and collected data, and highly realistic simulated experiences equivalent to years or even centuries of actual experience. How and how much they make use of these resources, how they filter through them to find what they need, and how technology aids them will certainly play an important role in determining the wisdom of their decisions and judgments. Technology alone will not replace intuition, good judgment, problem-solving abilities, and a clear moral compass. But in an unimaginably complex future, the digitally unenhanced person, however wise, will not be able to access the tools of wisdom that will be available to even the least wise digitally enhanced human.” Prensky*

# Contact

For more details please see  
[www.naace.co.uk/naace\\_curriculum](http://www.naace.co.uk/naace_curriculum)

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*Naace welcomes comment on its proposals for this Framework*