Oide

Tacú leis an bhFoghlaim Ghairmiúil i measc Ceannairí Scoile agus Múinteoirí

Supporting the Professional Learning of School Leaders and Teachers

# Construction Technology

## Professional Learning Booklet

## 2025-2026

*Explore the structure of the Construction Technology specification.*

*Develop a shared understanding of the Rationale and Aims of the Construction Technology specification.*

*Explore the contextual strands of learning in Construction Technology.*

*Investigate the Learning Outcomes sections with a particular focus on the Action Verbs.*

*Experience a Unit of Learning that integrates the strands of the Construction Technology specification.*

*Develop learning experiences that promote an integrated approach.*

## Activity 1:

# Rationale

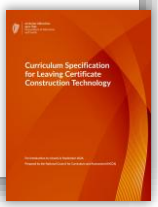
**Leaving Certificate Construction Technology** fosters a holistic understanding of the built environment, providing opportunities for students to develop confidence to navigate local and global challenges and contribute to a sustainable future. It cultivates an appreciation for architectural heritage while promoting innovation, craft excellence, and environmentally responsible design. Students explore the interconnectedness of architectural design, construction techniques, planning and environmental considerations, developing an awareness for their impact on our natural and built environment, society, individual behaviours, and the economy.

Leaving Certificate Construction Technology instils a sense of environmental responsibility in students, encouraging ethical decision-making, sustainable building and craft practices, and a strong emphasis on design. By integrating learning about STEM concepts, such as inquiry and problem-solving, students deepen their understanding of material properties, energy efficiency, and sustainable construction principles. This enables them to make informed decisions regarding materials, construction methods, and environmental conservation.

The Leaving Certificate Construction Technology classroom is an active learning environment where students integrate theory with practice and foster technological literacy and capability through a wide range of learning experiences. This hands-on approach nurtures critical thinking, problem-solving, creativity, craft skills, and communication abilities, empowering students to tackle construction challenges and shape a sustainable future.

Beyond the classroom, the subject prepares students for a range of diverse futures, including apprenticeships, further and higher education, and STEM-related professions. Through a balanced curriculum that integrates traditional craft and heritage skills with modern technologies, it fosters adaptability and life-long learning, ensuring students are equipped for evolving professional landscapes and active citizenship.

*NCCA, Leaving Certificate Construction Technology Specification*, page 4.




Highlight the key messages contained in your assigned paragraph of the rationale.

Write down any phrases, ideas, key terms, or concepts that you have identified from the rationale, to discuss with your group.

## Activity 2:

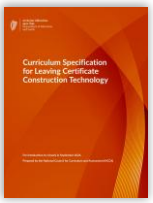
### Aims

The aim of Leaving Certificate Construction Technology is to provide students with an experience that develops their interest in and enthusiasm for learning relating to the built environment. It aims to equip students to become technologically literate and responsible citizens, in ethical and sustainable ways, who will embrace life-long learning and sustainable living and be prepared for local and global challenges and opportunities.

More specifically, Leaving Certificate Construction Technology enables students to:

- learn about the relevant core concepts and fundamental principles of construction
- develop a holistic understanding of the built environment by enhancing visual literacy, promoting environmentally responsible design, recognising its impact on societal wellbeing, and drawing insights from both the past and present
- enhance their technological literacy and capability, by applying the necessary knowledge, skills, values, and dispositions to design, innovate and develop creative solutions that address challenges within the built environment
- develop an awareness of future pathways and opportunities through the learning experiences offered in Construction Technology.

*NCCA, Leaving Certificate Construction Technology Specification*, page 5.




Having read the Aims, summarise your thoughts:

**Group Activity**:

Communicate the main points on your group's flipchart sheet.

## **Activity 3:** Exploring the strands of learning

# Strand 1: Built Environment

In the Built Environment, students learn to appreciate the importance of sustainability in the construction of buildings and the need for sustainable housing and a sustainable planet. Students understand that, by making informed ethical choices regarding the built environment, they have agency to change the world for the better.

Students learn about the evolution of building types over time and understand buildings in a holistic manner - not as stand-alone structures but as structures closely connected to their site, society, climate patterns, region, country and the planet. Students appreciate how housing impacts the shaping of community identity, environmental sustainability and social cohesion.

As students work independently and with others, they appreciate the crucial importance of health and safety when working with tools and machinery, for their own personal safety and for the safety of others.

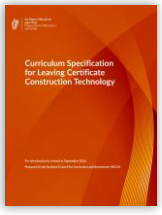
Students appreciate the importance of the conservation of heritage sites and structures and how design challenges were resolved by previous generations through the use of locally sourced materials and skills. Students learn how Universal Design principles inform inclusive design and ease-of-use of modern buildings.

## Strand 1 Learning outcomes

| Students learn about | Students should be able to |
|---|---|
| **Design principles of a domestic dwelling for the built environment**<br>• building/structural design<br>• building form<br>• function<br>• aesthetics<br>• balance<br>• proportion<br>• harmony<br>• innovation<br>• orientation<br>• sustainability<br>• environmental impact<br>• accessibility | **1.1** describe the natural and built environment emphasising the critical role of shelter and settlement in human existence and its impact on the environment.<br>**1.2** analyse elements of architectural design in the built environment.<br>**1.3** evaluate features that contribute to design excellence in housing design.<br>**1.4** justify measures for the preservation and sustainable management of buildings. |

| Students learn about | Students should be able to |
|---|---|
| **Environmental and architectural heritage of dwellings**<br>• historical and cultural significance<br>• vernacular, and ecological significance of heritage sites and structures<br>• value to communities and society<br>• informing future building practices | 1.5 recognise the importance of architectural and built heritage in influencing a contemporary built environment.<br>1.6 justify the preservation and sustainable management of environmental and built heritage. |
| **Urban and rural design of a dwelling**<br>• site selection<br>• site investigations<br>• planning permission<br>• local and national planning<br>• local services<br>• cultural sensitivity | 1.7 examine the selection of a site for a dwelling.<br>1.8 describe the planning permission process for a dwelling house.<br>1.9 design a site layout for a dwelling that will integrate with the surrounding environment. |
| **Personal safety and Safety on a Construction Site**<br>• hazards<br>• risks<br>• control measures | 1.10. describe current health and safety regulations in a Construction Technology classroom and on construction sites.<br>1.11. apply risk management strategies to a range of activities in both a Construction Technology classroom and in a construction environment.<br>1.12. apply current health and safety protocols including the appropriate use of Personal Protection Equipment.<br>1.13. collaborate with others in maintaining a safe working environment. |
| **Universal Design applied to a domestic dwelling**<br>• approaching the dwelling<br>• entering the dwelling<br>• moving within the dwelling<br>• space for living<br>• systems and elements. | 1.14. evaluate social and lifelong impacts of universal design for occupants of a domestic dwelling.<br>1.15. describe and apply principles of universal design relative to a domestic dwelling |

*NCCA, Leaving Certificate Construction Technology Specification*, pages 14-15.



## Strand 2: Design, Materials, and Craft Skills

Through the study of Design, Materials, and Craft Skills, students experience the working properties of a range of different materials. As they develop confidence in using hand and power tools, students appreciate making as a creative experience, enjoying the process of crafting high-quality artefacts. Students appreciate the importance of presenting their work in an organised and aesthetically pleasing manner.

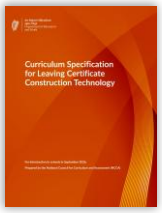
As students develop their design capabilities, they become competent in the language of design, iteratively develop their ideas, and understand that design excellence underpins all design decisions. Students recognise that all design decisions impact both locally and globally and understand the need for ethical decision-making in the sourcing, processing, use and reuse of materials.

Students develop their critical thinking skills through a continuous evaluation of their own progress. They use the insights gained from this process to make better informed decisions about design and their personal growth.

### Strand 2 Learning outcomes

| Students learn about | Students should be able to |
|---|---|
| **Sustainable use of materials**<br>• lifecycle of materials<br>• circular economy<br>• embodied carbon | **2.1** discuss the environmental impact of materials considering the lifecycle of materials within the context of the circular economy.<br>**2.2** justify how the sustainable use of materials can reduce the impact on the environment. |
| **Materials properties and use**<br>Properties<br>• density<br>• strength<br>• durability<br>• flexibility<br>• thermal conductivity<br>• vapour permeability<br>• workability<br>• appearance | **2.3** describe different types of construction materials, their properties, and their appropriate use.<br>**2.4** justify the selection and suitability of materials to inform decisions in the design and realisation of tasks. |

| Students learn about | Students should be able to |
|---|---|
| **Design skills** | **2.5** recognise good design, quality materials, and effective processes and techniques. |
| | **2.6** investigate and research tasks, design challenges and briefs. |
| | **2.7** create innovative solutions, including artefacts, for design problems, tasks, and briefs. |
| **Project management** | **2.8** devise a plan of action and personal goals necessary for the completion of tasks. |
| | **2.9** manage information and creative thinking when engaging with tasks. |
| | **2.10** evaluate their skills development and the progress of projects. |
| **Craft skills, processes and techniques**<br>• hand craft skills<br>• machine and power tool skills<br>• processes and techniques<br>• wood craft skills | **2.11** execute a range of craft skills, processes and techniques to a required level of proficiency. |
| | **2.12** justify the selection of craft skills, processes, and techniques in the creation of artefacts or tasks. |
| | **2.13** produce artefacts in response to a range of design tasks. |
| **Graphical communication**<br>• freehand sketching<br>• construction design detailing<br>• working drawings<br>• CAD modelling<br>• physical modelling or prototyping<br>• building information modelling (BIM) | **2.14** interpret graphical representations used to communicate design ideas and detailing. |
| | **2.15** communicate design ideas and concepts using a variety of graphical communication techniques. |
| | **2.16** recognise applications of building information modelling (BIM) in the construction industry. |
| **Communication skills** | **2.17** present their work in a clear, organised, and aesthetically engaging manner. |
| | **2.18** use a variety of presentation techniques and technologies to communicate ideas, thinking, and technical information to complete tasks. |
| **Personal reflection** | **2.19** evaluate their own learning to inform future decisions and choices. |




*NCCA, Leaving Certificate Construction Technology Specification*, pages 16-17.

## Strand 3: Building Fabric

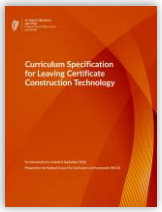
A study of the Building Fabric enables students to understand how sustainable buildings are designed and constructed using modern methods of construction (MMC). Through the students' evaluation of a range of building types, they develop an understanding of the architectural principles and detailing underpinning the creation of energy-efficient, resilient, sustainable, and aesthetically appealing buildings. They gain an appreciation of the importance of current standards and building regulations as they apply to domestic dwellings.

Students develop an awareness of the fragility of the environment and the importance of using resources economically in the construction, heating, lighting and operation of buildings. Students explore how the principles of passive design can help harness nature to reduce energy requirements and create pleasing homes.

### Strand 3 Learning outcomes

| Students learn about | Students should be able to |
|---|---|
| **Construction principles for a domestic dwelling**<br>• structural integrity<br>• thermal performance<br>• preventing moisture ingress<br>• airtightness<br>• water vapour control<br>• ventilation<br>• sound insulation<br>• fire prevention | **3.1** analyse the important principles in the design of the building fabric. |
| | **3.2** apply knowledge of building design principles to construction elements. |
| | **3.3** recognise how building design principles are integrated into the construction detailing of a domestic house. |
| | **3.4** describe methods of retrofitting the building fabric to improve the quality and function of existing dwellings. |
| **Functions of the building fabric in a domestic dwelling**<br>• protection from the weather<br>• thermal performance<br>• structural support and stability<br>• moisture control and ventilation<br>• acoustic performance<br>• aesthetic value and design<br>• fire safety<br>• durability and maintenance<br>• sustainability and environmental impact | **3.5** identify elements of building fabric and their function in a domestic dwelling. |
| | **3.6** analyse the design detailing within the building fabric. |

| Students learn about | Students should be able to |
| --- | --- |
| **Substructure**<br>• foundation construction<br>• ground floor construction | 3.7 explain the function of the substructure and superstructure elements in a domestic house.<br>3.8 evaluate the selection of building materials in the construction detailing of a domestic dwelling. |
| **Superstructure**<br>• external wall construction<br>  ◦ concrete<br>  ◦ timber<br>  ◦ composite<br>• upper floor construction<br>• roof construction<br>  ◦ pitch roof<br>  ◦ flat roof<br>• internal timber stairs<br>• internal wall construction<br>• external wall openings<br>• windows<br>• doors | 3.9 describe construction methods used in the building of a domestic dwelling.<br>3.10 explain key concepts of building design that contribute to creating energy-efficient, resilient, and sustainable building envelopes.<br>3.11 interpret and produce drawings of construction details and technical diagrams to demonstrate an understanding of dwelling house construction. |
| **Passive design** | 3.12 describe principles of passive design in a domestic dwelling. |
| **Resilient design**<br>• mitigate climate-related risks such as flooding, storms and extreme temperatures | 3.13 describe the impact of climate change on the built environment, and identify strategies to enhance resilience. |
| **Design for health, wellness and comfort**<br>• biophilic design<br>• design for delight<br>• indoor temperature<br>• air quality<br>• access to natural light<br>• views of nature<br>• spaces for social interaction<br>• flexible spaces | 3.14 demonstrate an understanding of the relationship between the built environment and wellness. |
| **Ecological building design**<br>• materials<br>• construction techniques | 3.15 analyse the environmental impact of building design, choice of materials, and construction techniques.<br>3.16 discuss solutions that minimise resource consumption, reduce carbon emissions, and promote biodiversity. |
| **Building regulations and standards** | 3.17 identify and apply current building regulations and standards as they apply to domestic dwellings. |




*NCCA, Leaving Certificate Construction Technology Specification*, pages 18-20.

# Strand 4: Services and Control Technology

The study of Services and Control Technology enables students to research, understand and explain the factors that contribute to a healthy indoor environment and the link between these factors and the health and wellbeing of the occupants.

Students develop an understanding of how buildings are heated and ventilated and how to evaluate the various means, both passive and active, used to heat and ventilate domestic dwellings. Students learn how the provision of renewable energies ensures that buildings have a light ecological footprint on the earth. They appreciate the importance of water conservation and of providing clean water for human consumption and understand and evaluate waste management systems used to treat and manage waste to ensure minimum environmental degradation.

Students gain an understanding of the design and application of various smart home technologies and how these technologies help reduce energy use in the home and enhance the indoor environment for the occupants.

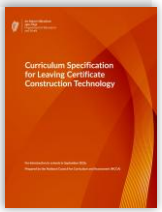
## Strand 4 Learning outcomes

| Students learn about | Students should be able to |
|---|---|
| **Indoor dwelling environment**<br>Aspects:<br>• space heating<br>• thermal comfort<br>• acoustic comfort<br>• visual comfort<br>• indoor air quality<br>• natural and artificial light<br>• ventilation<br>• olfactory comfort | **4.1** discuss the aspects that contribute to a comfortable and healthy internal environment of a dwelling house.<br>**4.2** analyse how these aspects influence the overall wellbeing of occupants. |
| **Heat energy and scientific calculations in dwellings**<br>• Heat energy<br>• heat transfer principles<br>  • Conduction • Convection • Radiation<br>• thermal conductivity (λ) of construction materials<br>• thermal resistance (R) of construction materials<br>• thermal resistivity (r)<br>• surface resistance<br>• thermal transmittance calculations<br>• U-value calculation<br>• calculate energy loss and its cost in a building element | **4.3** explain the principles of heat transfer.<br>**4.4** describe how thermal properties impact the energy efficiency of a dwelling.<br>**4.5** calculate U-value of domestic construction details and the rate, amount, and cost of energy loss in a dwelling.<br>**4.6** describe measures used to enhance the energy efficiency of new and existing dwellings. |

| Students learn about | Students should be able to |
| --- | --- |
| **Operational carbon of a domestic dwelling** | 4.7 discuss the impact on the environment of operational carbon of building materials and construction processes. |
| **Airtightness in a domestic dwelling** | 4.8 explore airtightness standards, methods, materials and testing for a domestic dwelling. |
| | 4.9 describe detailing to reduce energy loss in a domestic dwelling. |
| **Ventilation in a domestic dwelling** | 4.10 analyse the importance of indoor air-quality |
| | 4.11 describe ventilation systems and their suitability for use in domestic dwellings. |

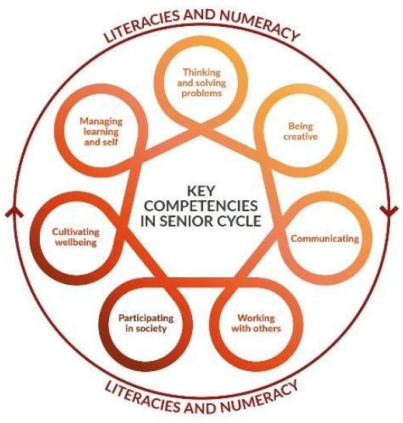
| | |
|---|---|
| **Energy sources and space heating systems in domestic houses**<br>• boilers<br>• biomass/biofuel<br>• heat pumps<br>• renewable<br>• solar<br>• onsite microgeneration | 4.12 discuss the appropriateness of energy sources used in the built environment.<br>4.13 evaluate different space heating systems for a domestic house.<br>4.14 describe how space heating systems distribute heat in a dwelling house. |
| **Water supply in a domestic dwelling**<br>• cold water supply<br>• hot water supply<br>• renewable supply and conservation | 4.15 describe the functions of components and systems used in the cold and hot water supply.<br>4.16 illustrate the design layout of cold and hot water systems.<br>4.17 describe the integration of renewable energy heat sources into a hot water system. |
| **Electricity in a domestic dwelling**<br>• distribution to and within the domestic dwelling<br>• principles of electrical safety and wiring<br>• electricity intake<br>• consumer unit<br>• onsite electricity generation | 4.18 explain how electrical energy is delivered to a dwelling through electricity intake and consumer unit.<br>4.19 explain the principles of electrical safety in a house.<br>4.20 illustrate the wiring layout in a domestic dwelling.<br>4.21 analyse the integration of renewable energy systems into a domestic dwelling. |
| **Drainage systems for a domestic dwelling**<br>• above ground pipework layout<br>  ◦ single stack system<br>• below ground pipework layout<br>  ◦ onsite treatment systems | 4.22 identify the design principles of drainage systems, distinguishing between surface water drainage and foul water drainage.<br>4.23 illustrate the pipework layout of drainage systems for a domestic dwelling.<br>4.24 explain the components and functions of on-site wastewater treatment systems for a domestic dwelling.<br>4.25 evaluate how wastewater treatment methods, contribute to effective waste management, water conservation and reuse, and environmental sustainability. |
| **Smart home technologies**<br>• home hubs<br>• lighting<br>• heating and ventilation<br>• security system<br>• smoke and carbon monoxide detectors<br>• energy monitoring and power controls | 4.26 evaluate how smart technologies contribute to the efficient use and management of services in a domestic dwelling. |

*NCCA, Leaving Certificate Construction Technology Specification*, pages 21-23.




## Activity 4:

## How do the action verbs in the Learning Outcomes influence the learning experience?




| Students learn about | Students should be able to |
|---|---|
| **Drainage systems for a domestic dwelling**<br>• above ground pipework layout<br>  ◦ single stack system<br>• below ground pipework layout<br>  ◦ onsite treatment systems | 4.22 identify the design principles of drainage systems, distinguishing between surface water drainage and foul water drainage.<br>4.23 illustrate the pipework layout of drainage systems for a domestic dwelling.<br>4.24 explain the components and functions of on-site wastewater treatment systems for a domestic dwelling.<br>4.25 evaluate how wastewater treatment methods, contribute to effective waste management, water conservation and reuse, and environmental sustainability. |

**Knowledge**

**Skills**

**Values & Dispositions**

| | |
|---|---|
| Action Verb(s) | |
| What does the action verb imply? (Glossary) | |
| What does this verb look like in action within this learning outcome, and how could we bring it to life for students through practical examples? | |
| How do you capture the learning and assess it? | |

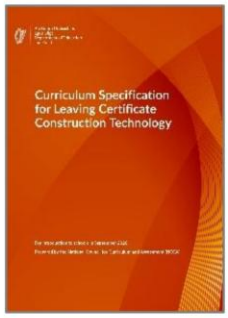
| Action verb | Students should be able to |
|---|---|
| **Analyse** | study or examine something in detail, break down in order to bring out the essential elements or structure; identify parts and relationships, and to interpret information to reach conclusions |
| **Apply** | select and use information and/or knowledge and understanding to explain a given situation or real circumstances |
| **Assess** | judge, evaluate or estimate the nature, ability, quality or value of something |
| **Calculate** | obtain a numerical answer showing the relevant stages in the working |
| **Collaborate** | work jointly with another or others on an activity or project |
| **Communicate** | present using appropriate language in a suitable format |
| **Create** | bring something into existence; to cause something to happen as a result of one's actions |
| **Demonstrate** | prove or make clear by reasoning or evidence, illustrating with examples or practical application |
| **Describe** | give a detailed account of the main points of the topic, using words, diagrams, sketches, and/or images |
| **Design** | conceive, create and execute according to plan |
| **Develop** | advance a piece of work or an idea from an initial state to a more advanced state |
| **Devise** | plan, develop or create something by careful thought |
| **Discuss** | offer a considered, balanced review that includes a range of arguments, perspectives, factors or hypotheses, grounded in appropriate evidence |
| **Evaluate (data/ information)** | collect and examine data to make judgments and appraisals; describe how evidence supports or does not support a conclusion in an inquiry or investigation; identify the limitations of data in conclusions; make judgments about the ideas, solutions or methods |
| **Evaluate (ethical judgement)** | collect and examine evidence to make judgments and appraisals; describe how evidence supports or does not support a judgement; identify the limitations of evidence in conclusions; make judgments about the ideas, solutions or methods |
| **Examine** | look closely at arguments, data, information and/or stories in order to uncover origins, assumptions, perspectives, trends and/or relationships |
| **Execute** | to carry out fully, to put completely into effect |
| **Explain** | give a detailed account supported by reasons or causes |
| **Identify** | recognise patterns, facts, or details; provide an answer from a number of possibilities; recognise and state briefly a distinguishing fact or feature |
| **Illustrate** | use drawings or examples to describe something |
| **Interpret (data)** | use knowledge and understanding to recognise trends and draw conclusions from given information |
| **Interpret (non-data)** | express ideas about the intended meaning of |
| **Investigate** | observe, study or examine in detail in order to establish facts, and reach new insights and/or conclusions |
| **Justify** | give valid reasons or evidence to support an answer or conclusion |
| **Manage** | to work upon or try to alter for a purpose |
| **Present** | make objects perceivable to others |
| **Produce** | make or manufacture from components or raw materials |
| **Recognise (data/ information)** | identify facts, characteristics or concepts that are critical (relevant/appropriate) to the understanding of a situation, event, process or phenomenon |
| **Research** | inquire specifically, through collecting, organising and analysing evidence in order to draw conclusions |
| **Use** | apply knowledge or rules to put theory into practice |


*NCCA, Leaving Certificate Construction Technology Specification*, pages 33-34.

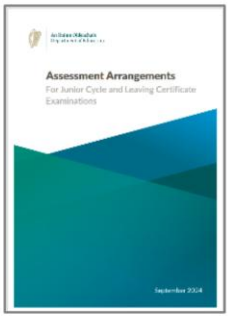
## Recording Technological and Visual Literacy

| Key Term & Definition | Real-World Example | Why it matters? | Sketch/Diagram |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |

## Scan the QR codes to access the relevant documents

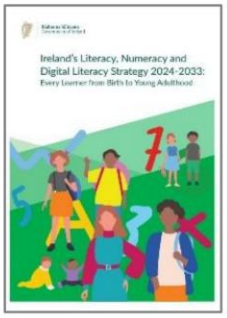



Curriculum Specification for Leaving Certificate Construction Technology

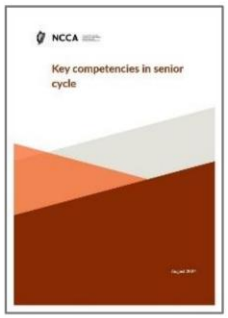



Assessment Arrangements for Junior Cycle and Leaving Certificate Examinations 2026

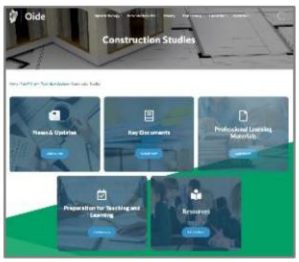

Looking at Our School 2022: A Quality Framework for Post-Primary Schools




Ireland's Literacy, Numeracy, and Digital Literacy Strategy 20242033




Key Competencies in Senior Cycle




Oide Resources

Mailing List

Seirbhís Tacaíochta de chuid na Roinne Oideachais agus Óige
A Department of Education and Youth Schools' Support Service

Oifig an Stiúrthóra Bainistíochta, Sráid an tSéipéil, Dún Dealgan, A91 C7D8.
Managing Director's Office, Chapel Street, Dundalk, A91 C7D8.



Oide
Tacú leis an bhFoghlaim Ghairmiúil i measc Ceannairí Scoile agus Múinteoirí
Supporting the Professional Learning of School Leaders and Teachers