



Trinity College Dublin
Coláiste na Tríonóide, Baile Átha Cliath
The University of Dublin



POSTGRADUATE CERTIFICATE IN 21ST CENTURY TEACHING AND LEARNING

With the School of Education, the School of Computer Science and Statistics, and the Trinity Access 21 programme



Applications are now open for the 'PG Cert' in 21st Century Teaching and Learning (level 9, part-time).

The aim of this course is to equip in-service teachers with the requisite knowledge, skills and competence to support the development of an innovative learning culture within schools, which is team-based, technology mediated, project-focused and cross curricular. The course modules aim to enhance the expertise of participant teachers in new models of teaching and learning with particular emphasis on, but not limited to, Science, Technology/Computer Science, Engineering, and Maths (STEM). In particular, the Bridge21 pedagogical model (more about which can be found at www.bridge21.ie).

The modules also aim to address complex challenges related to developing an inclusive educational environment and preparing all school students for higher academic aspiration and progression, through a focus on whole school culture, leadership and change management. It is intended that participant teachers will learn how to develop and lead a 'cultural change process' within the classroom and the wider school community.

COURSE CONTENT

The course commitment includes attendance on six modules and each module runs on a full Saturday (Digital Media comprises a full Saturday and one Friday evening). Certificate participants complete one assignment for each module.

INTRODUCTORY MODULES

Digital Media Literacy (Compulsory Module)

Digital media is all around us in our daily lives. This workshop aims to **develop** teacher's **confidence** to design lessons that **use digital technology**, communication tools, and the internet creatively and innovatively. This module provides the participants with an **immersive experience**, where they will see and experience the **Bridge21 Model** in action.

Problem Solving in the 21st Century (Computational Thinking)

At the heart of all computer programming is the ability to "think like a computer". This workshop looks at developing 21st century thinking skills such as problem solving, data visualisation, modelling **real world problems** and **developing algorithms**. There are no pre-requisites and teachers of any subject can attend and benefit from this module.

Contextual Mathematics (Project Maths and the Bridge21 Model)

Research in TCD has developed a set of guidelines for the design of **maths learning** activities which are **technology-mediated**, **contextualised** and which resonate with a view of mathematics as a **problem-solving** activity in which students construct their own knowledge through the solution of **real world problems**. This workshop is suitable for Junior and Senior cycle maths/applied maths/physics teachers.

STEM Pedagogy

Science Technology Engineering and Mathematics (STEM) teaching and learning in post-primary education, particularly the subjects of Science and Mathematics, has undergone major development in recent years. Teachers will learn how to create learning opportunities for students to develop key skills, such as cooperative and collaborative learning, creativity and problem-solving. Suitable for STEM teachers.

Information Literacy

The main means by which students at post-primary and third level seek out information is via Internet searching. Participating teachers will learn how to use the internet effectively as a research resource, design their own contextualised inquiry activity, and plan and implement strategies to teach inquiry skills in the classroom context. This module is suitable for teachers of all subjects.

PROGRAMMING/CODING MODULES

Introduction to Programming through Animation

This module is for those who are new to programming and provides a quick introduction into algorithmic thinking (“how to think like a computer”). We use a simple drag and drop, block based interface (e.g. Scratch, Snap!) that is suitable for developing basic animations. This is suitable for teachers of all subjects.

Intermediate Programming through Game Design

This module builds on the “Introduction to Animation” module, and is centered on **designing a multi-level game** using a block based programming environment (e.g. Scratch). Prior Scratch (or similar) experience is recommended. This is suitable for teachers of all subjects.

Text-based Programming (Python Introduction)

The **Python programming language** is the next level beyond block based programming and is used extensively as an introduction to text-based coding. This module will focus on a mix of Python basics that will then be used to build a more complex application. Participation in the Problem Solving and Introductory Programming modules is recommended. This is suitable for teachers of all subjects.

Exploring Computer Systems (Raspberry Pi, Arduino and Micro:bit Introduction)

Embedded computing technologies, such as those found in ATMs, traffic lights and wearable technologies, are becoming ubiquitous, readily available, cheap and easily modified for a variety of applications. A number of platforms such as Raspberry Pi, Arduino and Micro:bit come with a set of **easily programmable interfaces**. This module provides an introduction into the world of computers and controllers. The workshop will focus on hands on activities exploring **light electronics, buttons and game controllers**.

LEADING CULTURE CHANGE IN SCHOOLS MODULES

Leadership and Change Management in Education

This module helps teachers to critically examine the role that leadership has in promoting change in schools and reflect on their own part in this process. On successful completion of this module, participants should be able to: 1. Identify and critically discuss key issues related to educational leadership, 2. Taking context into account, reflect critically on change theories and their implementation in practice, 3. Evaluate their conceptualisation of leadership within the context of their own schools.

Inclusive Education: issues related to equality, diversity and (dis)advantage in educational settings

This module explores the socio-cultural factors that impact on the distribution of educational access, participation and advantage/disadvantage within the compulsory context. On successful completion of this module, participants should be able to: 1. Identify and critically describe key issues related to educational (dis)advantage, 2. Evaluate and apply educational theory to an analysis of educational access, participation, advantage and disadvantage and marginalisation in the Irish context, 3. Reflect on the relevance of sociological perspectives and concepts interrogated through the module.

Teacher as Co-Researcher

This module will provide participants with a critical grounding in the principles and practices that underpin the generation of research-based evidence, with a specific focus on its effect on policy and practice in the domain of education. It is intended in this module to provide participants with the capacity to undertake their own research, but to do so from a theoretically and methodologically informed perspective, to enact evidence-based change within their school context.



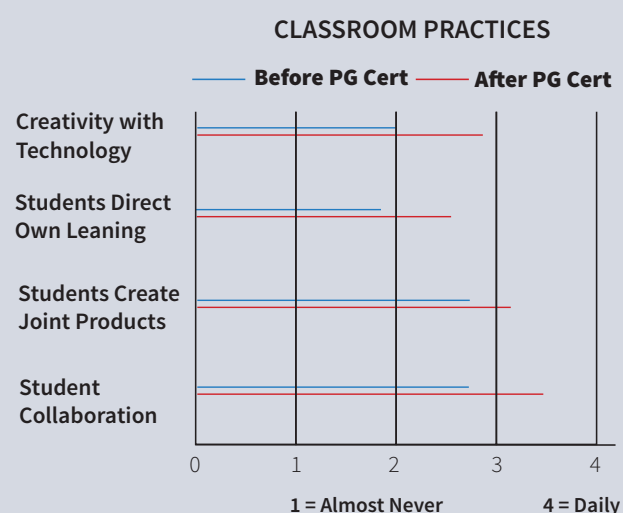
AIMS OF THE CERT

In summary, the certificate course aims are to:

- inform and support teachers in addressing national educational reform initiatives – such as the Digital Strategy for Schools, the Junior Certificate coding short course, and the Leaving Certificate Computer Science course;
- further develop the capacity and confidence of participating teachers to lead and manage innovative teaching and learning experiences (including coding) and culture change within their educational environment;
- ensure that the opportunities presented by educational reforms are fully harnessed by schools across the socio-economic spectrum;
- involve participant teachers and schools in a learning and research programme that will enable professional development as well as the development of exemplar schools in the context of 21st Century learning environments.

DATA AND TESTIMONIALS

KEY FINDINGS:



PG CERT TEACHERS

Following participation in the PG Cert teachers report;

- An increased feeling of autonomy in their teaching practice;
- Increased levels of confidence to use technology in the classroom;
- Better relationships with their students.

Teacher testimonials of the PG Cert:

“Participating in the Postgraduate Certificate has helped our school introduce and embrace 21st century skills in our classrooms. We have developed a team of teachers and students that are engaged in project-based learning in the Arts, Sciences and Technology using the Bridge21 model of teaching and learning. Personally, I am enjoying a more facilitatory, creative role in my classroom, and my students have become more active learners”.

Deirdre Brennan, Moyle Park College (PG Cert 2016-17)

“I continue to apply teaching practices that I was introduced to in the Cert year. In my Computer Studies classes I have embedded the Bridge21 activity model into my lessons. As these classes are incredibly busy creating technical projects, getting students to help each other is one of the many key practices that works consistently in class”.

Helen O’Kelly, Stratford College (PG Cert 2015-16)

How to apply:

Applications can be made by visiting this webpage:
www.tcd.ie/courses/postgraduate/az/course.php?id=DPCED-TCTL-1P09

For more information contact:

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