

Postgraduate Certificate in 21st Century Teaching and Learning



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

School of Education
in association with
Trinity Access¹

Course Handbook 2023/24

¹ Trinity Access is a collaboration between the Trinity Access Programmes (TAP), the Bridge21 project from the Trinity Centre for Research in IT In Education, and the School of Computer Science & Statistics (SCSS)

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Note: Alternative formats of the Handbook can be made on request.

Postgraduate Certificate in Education (21st Century Teaching and Learning)

1. Introduction

This postgraduate certificate course focuses on assisting teachers in developing their capacity to exploit the potential of technology to create constructivist and constructionist learning opportunities for their students in accordance to the principles outlined in [Digital Strategy for Schools](#) and the focus on Key Skills espoused by the new Junior Cycle. There is a particular emphasis on STEM and the teaching of Computer Science (CS) with a view to helping teachers prepare to teach the Junior Certificate Coding short course and new Leaving Certificate Computer Science course. Another key element of the programme is to undergo experiential learning in student-centred, innovative pedagogies, which are team- and project-based, cross-curricular, and mediated through a range of digital technology tools for teaching and learning. The Certificate also focuses on the teacher as a change agent in their school and offers support in the areas of change management, inclusive policies, and the teacher as a researcher of their own practice. Finally, the Certificate offers support in the area of inclusive education which speaks especially to those who work in areas of socio-economic disadvantage.

The certificate is provided as part of the 'Trinity Access' project, which is a collaboration across College, and includes the Trinity Access Programmes (TAP) and Bridge21 and the expertise of the Schools of Education and Computer Science & Statistics. The PG Cert is situated within the School of Education's existing Division of Continuing Professional Development (CPD) and will draw on the School's significant experience in offering courses of this nature to teachers. The School of Education is one of the largest professional schools in College and organises its activities around teaching, learning and research. The School addresses educational issues at several levels: in initial teacher education, postgraduate teacher education, Continuing Professional Development (CPD), and through engagement in high quality research. There is a long tradition in the School of Education of educating high quality teachers to cover the full range of educational provision in Ireland, and of further supporting them during their career through the provision of targeted and specialised in-career and postgraduate programmes ranging from diploma to doctoral level. The certificate course is a core part of the School's strategic planning in relation to the provision of the continuum of lifelong learning for teachers. TAP has a long track record of developing innovative educational projects, courses and entry routes for students from socio-economically disadvantaged backgrounds while Bridge21 is an innovative, yet pragmatic, model of 21st Century (21C) teaching & learning.

2. Course Rationale

1.1. Purpose

The course modules reflect a number of intersecting concerns on the current landscape of Irish education, particularly the Digital Strategy for Schools; development of enhanced leadership capacity within schools and across the system generally; development of STEM/CS capacity within schools; and enhanced support for students from disadvantaged backgrounds. Thus, the Postgraduate Certificate in 21st Century Teaching and Learning provides educators with the opportunity to up-skill in relation to areas of their professional knowledge and practice, which are currently the subject of system level review and attention at national level.

1.2. Course Aims

The certificate aims to support the development of an innovative learning culture within schools, through working with participant teachers to develop a teaching and learning environment that is team-based, technology-mediated, project-focused and cross-curricular. Modules in the certificate reflect an additional focus on leading and managing change and building an understanding of the major current policy challenges within which the post-primary education system is operating.

The modules aim to enhance the expertise of the teaching cohort in new models of teaching and learning with particular emphasis on STEM/CS. Furthermore, the modules 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.

In summary, the certificate course aims are to:

- inform and support teachers through 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 innovation and change within their educational environment, both in the classroom and the wider school context;
- ensure that the opportunities presented by educational reforms are fully harnessed by schools across the socio-economic spectrum – including those closely linked to Trinity

College in low income communities near the University; and

- 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 21C learning environments.

1.3. Course Learning Outcomes

On successful completion of the Certificate in Education (21st Century STEM/CS Teaching and Learning) students should be able to:

- analyse the theory and practice underpinning a 21C learning environment;
- develop and research/evaluate a 21C learning environment;
- engage in the teaching of coding;
- employ computer programming and STEM knowledge and skills in their professional practice;
- relate educational theory in inclusive education, leadership and change management to the development of educational policy and provision;
- apply appropriate theories and practices related to leadership and change management within their own learning environments;
- develop reflective practice in collaborative teaching and learning contexts.

3. Academic and Administrative Staff

The Coordinator of this certificate course is [Dr Jake Byrne](#) in the School of Education.

The Head of the School of Education is [Dr Carmel O'Sullivan](#).

The course is administered by Ciarán Bauer, admin21@tcd.ie, based in the Trinity Access Office. Phone calls can be arranged if necessary.

A list of course academic and teaching staff is provided below.

School of Computer Science and Statistics:

Professor Brendan Tangney

Bridge21/Trinity Access:

Dr Kevin Sullivan

Dr Rebecca Long

Deirdre Fitzpatrick

Kate Maloney

Niamh Ellis

School of Education:

Dr Jake Byrne

Dr Aibhín Bray

Dr Gavin Murphy

Dr Donatella Camedda

External Examiner

The external examiner for 2023-2026 is [Dr Briony Supple](#) from University College Cork.

Course Coordinator: Dr Jake Byrne

Module Coordinators	Modules	Teaching Staff
Dr Jake Byrne	TA21-Mod-1: Digital Media Literacy and 21st Century Learning (Compulsory)	Jake Byrne Brendan Tangney Deirdre Fitzpatrick
Dr Brendan Tangney	TA21-Mod-2: Problem Solving in the 21st Century	Jake Byrne Brendan Tangney
Dr Jake Byrne	TA21-Mod-3: Introduction to Programming through Animation (Scratch 1)	Jake Byrne Brendan Tangney Kate Maloney Niamh Ellis
Dr Jake Byrne	TA21-Mod-4: Intermediate Programming through Game Design (Scratch 2)	Jake Byrne Brendan Tangney Kate Maloney Niamh Ellis
Dr Jake Byrne	TA21-Mod-5: Intermediate Programming: Exploring Computer Systems (Raspberry Pi)	Jake Byrne Brendan Tangney
Dr Jake Byrne	TA21-Mod-6: Advanced Programming with Python	Jake Byrne Brendan Tangney
Dr Aibhín Bray	TA21-Mod-7: Contextualised Mathematics	Aibhín Bray
Dr Jake Byrne	TA21-Mod-8: Science, Technology, Engineering & Mathematics (STEM) Pedagogy	Jake Byrne Kevin Sullivan
Dr Aibhín Bray	TA21-Mod-9: Bridge21 Advanced Methodology: Teacher as Co-Researcher	Aibhín Bray
Donatella Camedda	TA21-Mod-10: Inclusive Education	Donatella Camedda
Dr Gavin Murphy	TA21-Mod-11: Leadership & Change Management in Education	Gavin Murphy Deirdre Fitzpatrick
Dr Brendan Tangney	TA21-Mod-12: Information Literacy through Contextualised Inquiry	Brendan Tangney Rebecca Long Kevin Sullivan

4. Admissions/General Regulations of TCD Postgraduate Courses

Gaining admission to the programme will be competitive and participant schools/teachers will be required to demonstrate sustained commitment over the duration of the initiative.

It is desirable that each applicant to the Postgraduate Certificate in 21st Century Teaching and Learning meets the following academic and professional criteria:

Academic:

- Possess qualifications and competencies recognised at Level 8 of the National Framework of Qualifications (for example, a higher diploma or an honours degree).

Professional:

- Be registered with the Teaching Council of Ireland; and
- Have a minimum of one year's teaching experience in schools.

Applications to this course will be made through the SITS Direct Entry Application system. Selection will be made on the basis of:

- applicants' academic and professional qualifications;
- written commitment from the school management team to support the applicant in attending the course, and to facilitate the implementation of the new methodologies in the school setting.

5. Course Structure

5.1. Overview

The Postgraduate Certificate in Education (21st Century STEM/CS Teaching and Learning) is a part-time course which runs over one academic year. Students must select 6 modules from an available suite of 12 (see table above), each of which will require students to carry out practical application of the theory and concepts studied, attend workshops and lectures, and follow any course materials provided online. All students must take the first compulsory module, *Digital Media Literacy and 21st Century Learning*. In accordance with the Bologna requirements this Certificate is allocated 30 ECTS².

Core Module: 5 ECTS Credits	Student effort hours
Equivalent Hours	100
Workload: Contact Time (hours)	
Lectures	2
Seminars	2
Workshops/Presentations	4
Workload: Personal Study	
Pre-module reading/preparation	6
In-course reading	6
Practice elements within the classroom and school setting. Reflection, analysis and evaluation of approaches and theories in practice	40
Assignments	40
Total Student Effort Hours per Module	100

²ECTS is a European accreditation system.

Face-to-face contact time for each 5 ECTS module will be 8 hours (online or in person). Peer to peer and collaborative group learning will be a strong feature of the course. It is recognised that much of the shared learning will be the practice element of the modules where participants will reflect on, implement and evaluate learning from the modules within their teaching duties. A significant part of its practice element has been designed to overlap with participants' regular teaching and learning duties and participants will be encouraged to reflect on how best to incorporate the frameworks and models, principles or strategies experienced and discussed in the workshops and seminars into their teaching. They will also be encouraged to evaluate any interventions and approaches they embed in their teaching preparation and/or practice. Some directed reading will be required in advance of the classes ensuring that the main focus of the classes will be on contextualisation, critical discussion and enabling the application of theory into practice within the classroom and school setting. Thus, a large proportion of the workload will focus on self-directed and collaborative learning, with the workshops acting as a 'scaffold' to guide and support this approach.

5.2. Course Orientation

There will be a mandatory Orientation session prior to teaching commencing on the course. This Orientation will cover the course structure and expectations, as well as deliver crucial information on academic writing and academic reflection. The Orientation date is scheduled for: Friday 15th September 2023, from 6 – 7.30pm, on Zoom.

5.3. Schedule of Module Delivery within the Academic Year 2023/24

The following timetables are intended to be as accurate as possible; some amendments may be necessary over the course of the year; however, this is likely to be minimal.

The 'Digital Media Literacy' module is compulsory.

Module	Date	Times	Location
Orientation	15 th September	6-7.30pm	Zoom
Digital Media Literacy (compulsory)	16 th September	9.30am-5.00pm	TCD Campus
Digital Media Literacy Technical Check-In & Assignment Support Session (optional)	20 th September	6-8pm	Zoom
CS/STEM Day 1	14 th October	9.30am-5.00pm	TCD Campus
Teacher as Co-Researcher	11 th November	9.30am-5.00pm	TCD Campus
Leadership & Change Management in Education	8 th & 9 th December	9.30am-5.00pm	TCD Campus
CS/STEM Day 2	13 th January	9.30am-5.00pm	TCD Campus
Inclusive Education	10 th February	9.30am-5.00pm	TCD Campus
CS/STEM Day 3	24 th February	9:30am-5.00pm	TCD Campus
CS/STEM Day 4	9 th March	9:30am-5.00pm	TCD Campus

The School reserves the right to amend the list of available modules and, in particular to withdraw and add modules. Timetabling may restrict the availability of modules to individual students. Specific location will be communicated in advance.

5.4. The Online Learning Experience

All registered students will be enrolled in [Blackboard](#), the College Virtual Learning Environment (VLE). Students will use their college-provided username and password to access Blackboard. Once students have chosen their modules, a section on each of these modules will be visible to them upon logging into Blackboard.

Modules in Blackboard will be used to house all information relating to that module, including reading lists, any pre-module requirements, discussion boards, and the links to access the module sessions online.

Some guides to using Blackboard are available at this [TCD e-learning page](#).

5.5. Attendance

It is expected that students will attend and participate fully in all six modules. A student who attends for less than 100% may be returned as 'Non-Satisfactory'. In order to be eligible for the award of the Postgraduate Certificate a student must obtain credit for the academic year by satisfactory attendance at lectures/workshops and by carrying out the required course-work or other designated assignments. A student who is absent from attendance at prescribed courses due to illness may be required to submit a medical certificate to the course office within one week of the absence occurring.

Normally, postgraduate students must pursue their programme continuously. In exceptional circumstances the Dean of Graduate Studies, after consultation with the student's Programme Coordinators/Directors may permit students to go "off-books" (i.e. off-register) where to do so in the judgement of the Dean of Graduate Studies is in the best interests of the graduate student. Application to go "off-books" should be made to the Dean of Graduate Studies via the student's Programme Co-ordinator/administrator. During the period of interruption graduate students are not required to pay fees. Consequently, they will not have a student card during this period and will not have access rights to the college library or other college facilities.

"Off-books" permission is given for a definite period (usually one year). A re-admission request from the student to the Dean of Graduate Studies is required prior to re-registration if permission has been granted for medical reasons. Students who for reasons of ill-health, or other grave cause, have been allowed to go "off-books" can only be re-admitted, even in the current academic year, at the discretion of the Dean of Graduate Studies, who may require a satisfactory certificate from a medical referee nominated by him/her. Permission for an "off-books" period is given for a definite duration and the onus is on the student to ensure that they resume their studies at the designated time as otherwise they will be considered "withdrawn" from the programme.

6. Assessment

Each module on the PG Cert is individually assessed unless otherwise specified on the module assessment sheet. A student must complete all course work prescribed. As the course is focused on teachers' continuous professional development, evidence-based assessment is the preferred assessment method. There will be a focus on 'process' assessments and there will be no written examinations.

The specific mode of assessment is provided in each individual module description in Appendix 1 below.

- All modules are graded on a Distinction/Pass/Fail basis.
- There is no compensation across modules.
- A 50% Pass mark is required for each of the modules.
- In cases where students fail to achieve a minimum of 50% in a module, a resubmission will be permitted once. A maximum of two modules may be resubmitted.
- All modules are equally weighted.
- The Postgraduate Certificate may be awarded a mark of Distinction. The award of Distinction will require an overall credit-weighted average mark of at least 70% across all modules.

6.1. Assessment Criteria

In the interests of consistency and comparability the following criteria are considered in the assessment of module assignments.

- Inclusion of all required elements from the assignment brief
- Organisation and structure of the text.
- Range and understanding of literature/source material for investigating the topic.
- Analysis, presentation and interpretation of literature.
- Application to educational theory/practice and related reflection.
- Quality of conclusions/outcomes-recommendations/implications for future action.
- Structure and presentation: general layout, observations of academic conventions, quality of language, sentence construction, syntax and paragraphing.

6.2. Submission of Coursework

Module assignments must be submitted electronically via Blackboard before close of business on or before the due date specified. Within Blackboard, assignments are submitted to a database run by Turnitin, a plagiarism detection software. Students will have the chance to upload the assignments early and check for similarity to papers in the database and amend their submissions if necessary.

Digital artefacts submitted as part of the assignment are to be uploaded via the assignment submission link. Guides for creating and submitting via Blackboard and the assignment submission link will be sent to registered students ahead of assignment submission dates.

A submission is only considered valid when submitted electronically from the student's own Blackboard account. Any submission from a student's account will be considered entirely their own work. It will also be assumed that the content has not been substantially, or is concurrently being, used to meet the requirements for another module on this programme or for the award of another academic qualification, as this could be considered self-plagiarism. Where appropriate, students can use relevant examples from professional school experience in order to provide illustration for their argument and to demonstrate their ability to link theory with practice. However, all personal details concerning a school or work setting referred to should not be identifiable. Statements made in an assignment should be backed up by references to an author and an appropriate source (see Appendix 3 for referencing conventions) in order to avoid loose generalisations and plagiarism (see 6.10).

Assignments are normally submitted electronically five weeks after the module has been delivered. In the unlikely event that an assignment gets mislaid, students are required to keep a copy of all work submitted. Feedback Report Sheets are sent to a student after the work has been assessed.

Feedback on assignments and guidance on how academic performance may be improved is provided in the form of written comments on a standard Assignment Report Form (similar to that shown in Appendix 5). Where possible, we aim for a turn-around time of 4-6 weeks from the initial submission of assignments to receiving written feedback and a provisional grade. All provisional grades are subject to final approval at the annual Court of Examiners.

6.3. Deadlines for Submissions

Deadlines for submission are normally five weeks post the module delivery date and will be confirmed on the assignment sheets distributed during the assignment support sessions.

Submission dates for the modules are provisionally as follows:

- Digital Media Literacy— 22nd of October 2023
- Computer Science/STEM Day 1 (8th of October) – 26th of November 2023
- Teacher as Co-Researcher— 17th of December 2023

- Leadership and Change Management— 27th of January 2024
- CS/STEM Day 2 (14th January) – 25th of February 2024
- Inclusive Education— 24th of March 2024
- CS/STEM Day 3 (25th February) – 31st of March 2024
- CS/STEM Day 4 (11th March)– 28th of April 2024

These dates may be subject to change, but will all be at least five weeks after the corresponding module delivery date.

6.4. Request for extension to submit coursework

Where there are prescribed dates for submission of coursework, a student must meet these dates, unless prior approval has been given for an extension. An extension can only be granted by the Course Coordinator. Requests for an extension must be made in writing (email to admin21@tcd.ie). Extra than standard extensions may be granted on medical grounds (with medical certificate required for submission) or in respect of *ad misericordiam* situations.

6.5. Late submission and word limits

Work submitted outside of the prescribed deadline may not be accepted or incur penalties, unless prior extension permission has been sought and granted from the Course Coordinator. Submissions that are received within one week after the submission deadline will incur a 10% reduction in marks; those submitted after this will not be accepted and will be marked as incomplete (fail).

A tolerance of 10% is permitted in respect of the word count for assignments. A student who submits a piece of work which exceeds the permitted tolerance may not be accepted or may be marked down.

6.6. Marking scheme for module assignments: grade descriptions

All modular assessments are graded as Distinction, Pass or Fail. The examining lecturer assigns a provisional grade to a piece of work. Coursework and assignments are graded in accordance with the following conventions. These grade descriptions are intended to provide guidelines for the marking of coursework and assignments; they are not rigid prescriptions, but general indications of the qualities that are looked for at each level of classification. Please note that all grades are provisional until agreed by the Court of Examiners.

Distinction (70%+)	
Structure/Organisation (organisation and structure of the text; logic)	Text and argument systematically and explicitly organised; without any significant lacunae or repetition. Identifies and discusses pertinent issues in depth.
Analysis/Reflection (coherence of argument; reflection, distillation, criticality)	Critical review and synthesis of ideas; coherent, realistic and well-supported argument; perceptive appraisal of implication.
Support (range and understanding of sources)	Critical coverage of all major sources; systematic, analytical use of these sources.
Presentation (length, use of presentation conventions, referencing, spelling, grammar, language)	Competent control of length; appropriate presentation and use of referencing conventions; accurate grammar, spelling and use of language.
Overall	Work of outstanding quality, showing perceptive and critical insight

Pass (50%+)	
Structure/Organisation (organisation and structure of the text; logic)	Text and argument structured in a sustained way; all major structural elements present.
Analysis/Reflection (coherence of argument; reflection, distillation, criticality)	Ideas organised and grouped into a coherent, realistic and well-supported argument; incorporating some critical analysis and relevant/appropriate use of supporting sources.
Support (range and understanding of sources)	Use of a range of sources in the literature, though there may be some minor gaps all major relevant sources should be covered; systematic, analytical use of these sources.
Presentation (length, use of presentation conventions, referencing, spelling, grammar, language)	Length requirements observed; appropriate presentation and use of referencing conventions; grammar and spelling accurate in the main. Satisfactory use of language.
Overall	Work of good quality, showing knowledge and understanding

Fail (49% or below)	
Structure/Organisation (organisation and structure of the text; logic)	Poor or weak organisation/structure. Significant gaps or repetition in the argument/text.
Analysis/Reflection (coherence of argument; reflection, distillation, criticality)	Some evidence of understanding of ideas although mainly descriptive with limited critical analysis and support.
Support (range and understanding of sources)	Evidence of some reading in the field but largely descriptive. Little or no analysis or understanding evident.
Presentation (length, use of presentation conventions, referencing, spelling, grammar, language)	Basic command of presentation conventions and referencing, presentation occasionally marred by language/spelling errors affecting comprehensibility.
Overall	The work does not achieve the standards required at honours level

6.7. Processing of module assignments

A student is allowed to fail two modules only, and one re-submission per assignment is allowed. Their grade for any re-submitted assignment will be capped at the level of Pass for that module.

Where one or more forms of assessment apply within an individual module, a student must achieve a Pass in each component in order to pass that module overall. In such cases of multiple assessments within a module, normally a Distinction can only be achieved where a student achieves a Distinction in each graded component.

A Court of Examiners meets once a year in May, to formally process students' module assignments.

6.8. Compensation and Supplemental Coursework

Candidates are not permitted to pass by compensation across or within modules.

A candidate may submit supplemental coursework for a maximum of two failed modules, with the resubmissions capped at the Pass mark (50%). Failure of three or more modules will result in the candidate being excluded from the programme. Supplemental assignments may vary in nature from the original coursework assignments. In a module which is assessed via multiple components only the failed components need to be resubmitted.

6.9. Ethics and informed consent

There are a number of ethical concepts that all work in the School must address. These include:

- minimising risk of harm to participants
- informed consent and freedom to withdraw
- assurances of confidentiality and anonymity
- data storage, access, retention and destruction

If you wish to collect data from any participants as part of any of your assignments, you must adhere to the principles of informed consent and assure participants of confidentiality and anonymity in reporting any findings based on the data.

Similarly, if you are filming students in your class for any PG Cert assignment, you will need to obtain informed consent from the students themselves and from their parents prior to submitting this material to the University as part of your assignment. If you are filming in your class, you should avoid taking close-ups of individual students and aim to film in a way that participants are not readily identifiable (e.g. from the back of the classroom). It is not a requirement that you film students in your class as part of any assignment, but informed consent must be obtained if you wish to do so. All such materials submitted to the University will be stored securely and only viewed by designated members of the Course team and examiners for the purposes of assessment. Please see Appendix 6 for a draft consent form which you can use/amend for this purpose.

6.10. Plagiarism

6.10.1 General

Students should be aware of the University's policy regarding plagiarism. Plagiarism is the act of presenting the work or ideas of others as one's own, without due acknowledgement. Plagiarism can arise from deliberate actions and also through careless thinking and/or methodology. The offence lies not in the attitude or intention of the perpetrator, but in the action and in its consequences. It is the responsibility of the author of any work to ensure that he/she does not commit plagiarism. Plagiarism is considered to be academically fraudulent, and an offence against academic integrity that is subject to the disciplinary procedures of the University. The School of Education may employ plagiarism detection software such as Turnitin, or any other methods deemed appropriate, to check, randomly or otherwise, the sourcing of material submitted.

6.10.2 Examples of Plagiarism

Plagiarism can arise from actions such as: (a) copying another student's work; (b) enlisting another person or persons to complete an assignment on the student's behalf; (c) procuring, whether with payment or otherwise, the work or ideas of another; (d) quoting directly, without acknowledgement, from books, articles or other sources, either in printed, recorded or electronic format, including websites and social media; (e) paraphrasing, without acknowledgement, the writings of other authors. Examples (d) and (e) in particular can arise through careless thinking and/or methodology where students: (i) fail to distinguish between their own ideas and those of

others; (ii) fail to take proper notes during preliminary research and therefore lose track of the sources from which the notes were drawn; (iii) fail to distinguish between information which needs no acknowledgement because it is firmly in the public domain, and information which might be widely known, but which nevertheless requires some sort of acknowledgement; (iv) come across a distinctive methodology or idea and fail to record its source. All the above serve only as examples and are not exhaustive.

6.10.3 Plagiarism in the Context of Group Work

Students should normally submit work done in co-operation with other students only when it is done with the full knowledge and permission of the lecturer concerned. Without this, submitting work which is the product of collaboration with other students may be considered to be plagiarism. When work is submitted as the result of a group project, it is the responsibility of all students in the group to ensure, so far as is possible, that no work submitted by the group is plagiarised. In order to avoid plagiarism in the context of collaboration and groupwork, it is particularly important to ensure that each student appropriately attributes work that is not their own.

6.10.4 Self Plagiarism

No work can normally be submitted for more than one assessment for credit. Resubmitting the same work (all or part of) for more than one assessment for credit is normally considered self-plagiarism, including work previously submitted as part of other courses or at other educational institutions. Past work, including assignments, can be used as reference material but must not be copied directly and must be referenced correctly.

6.10.5 Avoiding Plagiarism

It is clearly understood that all members of the academic community use and build on the work of others. It is commonly accepted also, however, that we build on the work of others in an open and explicit manner, and with due acknowledgement. Many cases of plagiarism that arise could be avoided by following some simple guidelines:

- (i) Any material used in a piece of work, of any form, that is not the original thought of the author should be fully referenced in the work and attributed to its source. The material should either be quoted directly or paraphrased. Either way, an explicit citation of the work referred to should be provided, in the text, in a footnote, or both. Not to do so is to commit plagiarism.
- (ii) When taking notes from any source it is very important to record the precise words or ideas that are being used and their precise sources.
- (iii) While the Internet often offers a wider range of possibilities for researching particular themes, it also requires particular attention to be paid to the distinction between one's own work and the work of others.

Particular care should be taken to keep track of the source of the electronic information obtained from the Internet or other electronic sources and ensure that it is explicitly and correctly acknowledged. It is the responsibility of the author of any work to ensure that he/she does not commit plagiarism. Students should ensure the integrity of their work by seeking advice from their

lecturers, tutor or supervisor on avoiding plagiarism.

6.10.6 Plagiarism Formal Procedures

If plagiarism as referred to above is suspected, the Director of Postgraduate Teaching and Learning will arrange an informal meeting with the student, the lecturer concerned and the Course Coordinator, to put their concerns to the student and give the student the opportunity to respond. All procedures and penalties that may follow this meeting are detailed in the TCD Calendar, Part III, Sections 49-56: <https://www.tcd.ie/calendar/graduate-studies-higher-degrees/complete-part-III.pdf>

6.10.7 Plagiarism Resources and Mandatory Tutorial

All students should familiarise themselves with the Library Repository found at: <http://tcd-ie.libguides.com/plagiarism>. Additionally all students must complete the online tutorial on avoiding plagiarism 'Ready, Steady, Write', located at <http://tcd-ie.libguides.com/plagiarism/ready-steady-write>. A cover sheet (see Appendix 2) is required to be included with each assignment submitted for assessment as part of this course. The signature of the student submitting the work is required on the cover sheet, to confirm that the student has completed the Ready, Steady Write tutorial.

6.11. Protocols for Group Assignments

Some of the module assignments require team- and/or group-work. Assignments requiring a team- and/or group-work component will be clearly indicated during Assignment Support Session and on the Assignment Sheet of the relevant modules. In the first instance, Cert participants will be assigned a group to work in. If the assigned working group is unsuitable to the extent that it will not be possible to complete the assignment within the given team, members of the team should consult the Module Coordinator.

6.12. Assignment Check-list

- Have you included a correctly formatted Title Page and signed Cover Sheet (Appendix 2)?
- Do you have a clear introduction, main body (reflected in a number of headings) and conclusion? If there are headings/section titles provided in the assignment brief, have you included them all?
- Is there evidence of drawing on relevant supporting literature to support your assignment?
- Have all quotations and references been accurately and consistently recorded according to the format outlined in the Course Handbook (Appendix 3)?
- Has the final draft been checked for logical consistency? Do not stray from the main thrust of your argument as this will interrupt the flow of ideas.
- Is the language clear, concise and unambiguous? Avoid long sentences where the meaning is likely to get lost.
- Has the text been checked for spelling, syntax, grammatical and typing errors? Remember

to proofread the final draft. A critical friend can be a useful support at this stage of the process.

- Have you adhered to the word count (plus or minus 10%)?

7. College Regulations and Services

7.1. College Calendar

General Regulations: for Postgraduate Courses at Trinity College Dublin, these are published in the College Calendar, the 2022/23 version of which can be viewed here:

<https://www.tcd.ie/calendar/graduate-studies-higher-degrees/complete-part-III.pdf>

7.2. Data Protection

Data Protection: Please refer to the following statement regarding what type of student data is collected and how it is processed: https://www.tcd.ie/info_compliance/data-protection/student-data/

7.3. Academic Registry

Academic Registry deal with students on matter of applications, registration, fees, assessment and graduation. Please use the following link to find information and contact details: <https://www.tcd.ie/academicregistry/>

7.4. Library

Postgraduate Certificate students have access to the College's IT facilities including TCD email and the Library's on-line resources.

To access the Library, PG Cert students must be fully registered with College and have their College username and password. [Here](#) are some excellent guides to help get started using the Library.

The College Library run regular online training sessions for students, in areas such as essay writing, reading and note-making, and understanding plagiarism and referencing, which students of this course may find useful. You can see the schedule and register for sessions at [this training webpage](#). They also post recordings from some sessions if the times do not suit you.

The [School of Education library page](#) has some useful information for when you are searching library catalogues, so please consult it if you are having any issues accessing prescribed course material online.

If you have general enquiries about library services, you can email library@tcd.ie or use the CHAT WITH US tab on the homepage (www.tcd.ie/library) from 10am-4pm (Mon-Fri) to contact library staff live.

7.5. Postgraduate Services

PG Cert students may also access the Postgraduate Advisory Service. PAS is a unique and confidential service available to all registered postgraduate students in Trinity College. It offers a comprehensive range of academic, pastoral and professional supports dedicated to enhancing your student experience.



Who?

The Postgraduate Advisory Service is led by the Postgraduate Support Officer who provides frontline support for all Postgraduate students in Trinity. The Postgrad Support Officer will act as your first point of contact and a source of support and guidance regardless of what stage of your Postgrad you're at. In addition, each Faculty has three members of Academic staff appointed as Postgraduate Advisors who you can be referred to by the Postgrad Support Officer for extra assistance if needed.

Contact details of the Postgrad Support Officer and the Advisory Panel are available on our website: <https://www.tcd.ie/seniortutor/students/postgraduate/>

Where?

The PAS is located in the Senior Tutor's Office, ground floor, House 27. To request an appointment, please email the address below.

Email: postgrad.support@tcd.ie

What?

The PAS exists to ensure that all Postgrad students have a contact point who they can turn to for support and information on college services and academic issues arising. Representation assistance to Postgrad students is offered in the area of discipline and/ or academic appeals arising out of examinations or thesis submissions, supervisory issues, general information on Postgrad student life and many others. If in doubt, get in touch! All queries will be treated with confidentiality. For more information on what we offer see our website.

If you have any queries regarding your experiences as a Postgraduate Student in Trinity don't hesitate to get in touch with us.

Graduate Students' Union

The Graduate Students' Union (GSU) is the main representative body for postgrad students in Trinity College Dublin, The University of Dublin. This link describes what they do and who to contact if you need to: <https://www.tcdgsu.ie/>

APPENDIX 1 Module Outlines

MODULE SPECIFICATION

Programme(s) to which Module applies

Postgraduate Certificate in Education (21st Century STEM/CS Teaching and Learning)

1. Title of Module

Digital Media Literacy and 21st Century Learning

2. Module Code

TA21-Mod-1 Compulsory

3. Entry Requirements (if applicable)

None

4. Level (JF, SF, JS, SS, Postgraduate)

Postgraduate

5. Module Size (hours and number of weeks)

Eight student contact hours which will combine both workshops and seminars based around readings and tasks which encompass inquiry-based activities.

100 hours of total student effort.

6. ECTS Value

5 ECTS

7. Rationale and Aims

Rationale

New digital media can be very effective when utilised within an overarching 21st century learning paradigm which emphasises communication, creativity and problem solving. In particular, a 21st century pedagogical approach is strongly encouraged by the new Junior Cycle programme, as is the development of digital media skills. This module adheres to a principal of learning by doing in which the students develop their digital media skills by participating in a 21st century learning experience. The participants are then required to create, deliver and critically reflect upon a media rich learning experience for a group of learners of their choice.

Aims

- Introduce students to the key components of 21st century learning models using the Bridge21 methodology as a concrete example.
- Develop students' skills and capabilities in using current and emerging digital media technologies for teaching & learning.

8. Learning Outcomes

On successful completion of this module, the student should be able to

1. Create learning materials in a variety of digital formats.
2. Plan learning activities according to the Bridge21 model of 21C learning.
3. Incorporate digital media material into Bridge21 learning activities.
4. Evaluate the educational merits of using a variety of media in different learning contexts.

5. Critically reflect upon the planned learning experience.

9. Course Content and Syllabus

Digital Media Literacy:

- Theoretical background to Digital Media Literacy.
- Digital Media Literacy skills and competencies (access, manage, integrate, evaluate and create).
- Practical approaches for implementing Digital Media Literacy activities.

21st Century Learning:

- Frameworks for 21C Learning.
- 21C Learning skills and competencies.
- The Bridge21 model of 21C Learning.
- Reflection as an essential component of 21C learning

10. Teaching and Learning Methods

A flipped classroom approach will be followed and the face to face student contact sessions will be delivered according to the Bridge21 methodology.

Students will be encouraged to participate in a community of practice with their peers which will be supported by course's on-line community.

College guidelines on universal accessibility will be followed.

11. Required Equipment and Resources (if applicable)

Flexible learning space with ready-at-hand access to computers, the Internet, cameras (video and still), digital projector, sound recording, media editing and presentation tools.

12. Methods of Assessment (for example, essay, seminar paper, examination, presentation)

Students will be required to submit an evidence-based assignment (EBA) based on the creation and delivery of a media-rich, 21C learning experience with a group of learners of their choice. They will be required to reflect upon the lessons learned from the experience both for themselves as practitioners and for the target group of learners.

The EBA will comprise of the following items:

1. Description of the planned learning experience and its theoretical underpinnings.
2. A media presentation on an aspect of the delivery of the learning experience.
3. A structured reflection on the experience.

Students are free to use whatever digital media they wish for their submission, but the written component should not exceed 2,500 words.

The assessment criteria are:

Demonstrating an understanding of how to create and deliver a 21C learning experience.
Demonstrating technical competence in a number of digital formats. The depth and richness of the reflection provided. Each of the above criteria are weighted equally.

13. Pass Requirement and assessment components to be listed in SITS

50% overall and 50% in each of the 3 components, weighted equally

14. Method of Supplemental Assessment

Failure in one component requires it to be resubmitted. Failure in 2 or more requires all 3 to be resubmitted.

15. Recommended Reading Materials / Indicative Resources

21C Learning:

Beetham, H., & Sharpe, R. (2013). Rethinking pedagogy for a digital age: Designing for 21st century learning: Routledge.

Bridge21 (2017). On-line resources. <http://tft-project.eu/>

Dede C. (2010). Comparing Frameworks for 21st Century Skills. In J. Bellanca & R. Brandt (Eds.), 21st Century Skills (pp. 50-75). Bloomington: Solution Tree Press.

Department of Education and Skills (2017). Digital Learning Framework. <https://www.education.ie/en/Schools-Colleges/Information/Information-Communications-Technology-ICT-in-Schools/digital-learning-framework-post-primary.pdf>

Department of Education and Skills (2015). Digital Strategy for Schools. <https://www.education.ie/en/Publications/Policy-Reports/Digital-Strategy-Action-Plan-2017.pdf>

Garrison, D. R. (2011). E-learning in the 21st century: A framework for research and practice: Taylor & Francis.

Partnership for 21st Century Skills. (2011). P21 Common Core Toolkit: A Guide to Aligning the Common Core State Standards with the Framework for 21st Century Skills. Tucson, AZ, USA.

Ravenscroft, A. (2001). Designing e-learning interactions in the 21st century: Revisiting and rethinking the role of theory. *European Journal of Education*, 133-156.

Trilling, B., & Fadel, C. (2009). 21st century skills: Learning for life in our times: John Wiley & Sons.

Voogt J., & Pelgrum H. (2005). ICT and curriculum change. *Human Technology - an Interdisciplinary Journal on Humans in ICT Environments*, 1(2), 157-175.

Voogt J., & Roblin N.P. (2012). A comparative analysis of international frameworks for 21st century competences: implications for national curriculum policies. *Journal of Curriculum Studies*, 44(3), 299-321.

The Bridge21 Model:

Conneely, C., Girvan, C., Lawlor, J., Tangney, B., *An Exploratory Case Study into the Adaption of the Bridge21 Model for 21st Century Learning in Irish Classrooms*, in editor(s) Butler, D., Marshall, K., Leahy, M., *Shaping our Future: How the lessons of the past can shape educational transformation*, Dublin, Liffey Press. 2015, pp 348-381.

Girvan C., Conneely C., Tangney B., *Extending experiential learning in teacher professional development*. *Teaching and Teacher Education* 58:129-139 · August 2016. DOI: 10.1016/j.tate.2016.04.009

Johnston K., Conneely C., Murchan D., Tangney B., (2014). "Enacting key skills-based curricula

in secondary education: lessons from a technology-mediated, group-based learning initiative." *Technology, Pedagogy and Education*: 1-20.

Lawlor J., Conneely C., Oldham E., Marshall K., Tangney B., *Bridge21: Teamwork, Technology and Learning - A pragmatic model for effective 21C Team-based Learning*, *Technology, Pedagogy and Education* (In Press)

Lawlor J., Marshall K., Tangney B., *Bridge21 – Exploring the potential to foster intrinsic student motivation through a team-based, technology mediated learning model*, *Technology, Pedagogy and Education*, 2015, 1-20

Digital Media Literacy:

Alessi, S. M. & Trollip, S. R. (2001). *Multimedia for learning: Methods and development*. London: Allyn& Bacon.

Jonassen, D. H. (2000). *Computers as Mindtools for Schools: Engaging Critical Thinking* (2nd ed.). Upper Saddle River, NJ: Prentice-Hall, inc.

Jenkins, H. et. al. (2006). *Confronting the Challenges of Participatory Culture: Media Education for the 21st Century*. MacArthur; Chicago Ill.

Lankshear, C., & Knobel, M. (2008). *Digital Literacies: Concepts, Policies and Practices*: Peter Lang.

16. Evaluation

An on-line module survey will be administered at the end of the module and this will be considered by the course team.
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17. Module Coordinator

Dr Jake Byrne

18. Module Teaching Team

Dr Jake Byrne; Professor Brendan Tangney; Dr Kevin Sullivan; others

MODULE SPECIFICATION

Programme(s) to which Module applies

Certificate in Education (21st Century STEM/CS Teaching and Learning)

1. Title of Module

Problem Solving in the 21st Century

2. Module Code

TA21-Mod-2 Optional

3. Entry Requirements (if applicable)

TA21-Mod-1

4. Level (JF, SF, JS, SS, Postgraduate)

Postgraduate

5. Module Size (hours and number of weeks)

Eight student contact hours which will combine both workshops and seminars based around readings and tasks which encompass inquiry-based activities. 100 hours of student effort.

6. ECTS Value

5 ECTS

7. Rationale and Aims*Rationale*

Creative and practical problem solving are essential skills for working in the 21st century. As there has been a recent focus on developing these skills within formal education, a number of strategies and approaches have been developed to hone these skills. These approaches largely involve hands on, practical learning experiences. This module introduces a number of such activities that provide practical introductory examples to help students solve problems, with a focus on logical issues that have relevancy to coding and programming, but do not involve using a computer. This computer orientated approach to problem solving is commonly known as computational thinking.

This module adheres to a principal of learning by doing in which the students develop their skills by participating in a 21st century learning experience. The participants are required to create, deliver and critically reflect upon a problem-based learning experience for a group of learners of their choice.

Aims

- Introduce students to the relevancy of various practical problem solving strategies as they relate to coding and programming, without needing to use a computer.
- Introduce students to the concepts of algorithms and algorithmic thinking.
- To build foundational knowledge for students before they move on to programming activities.
- Develop students' skills and capabilities in using and developing problem-based activities for use with a group of learners of their choice.

8. Learning Outcomes

On successful completion of this module, the student should be able to

1. Identify and describe some problem solving strategies.
2. Describe and explain some algorithms and algorithmic thinking.
3. Solve problems which have more than one possible solution.
4. Plan a 21C learning experience which incorporates algorithmic thinking & problem solving activities.
5. Critically reflect upon and evaluate the planned learning experience.

9. Course Content and Syllabus

Problem Solving and Computational thinking: Problem solving strategies.
Algorithms.
Problem solving and computational thinking skills and competencies
Practical approaches for implementing computational thinking and problem based activities.

10. Teaching and Learning Methods

A flipped classroom approach will be followed and the face to face student contact sessions will be delivered according to the Bridge21 methodology.

Students will be encouraged to participate in a community of practice with their peers which will be supported by course's on-line community

College guidelines on universal accessibility will be followed.

11. Required Equipment and Resources (if applicable)

Flexible learning space with ready-at-hand access to computers, the Internet, cameras (video and still), digital projector, sound recording, media editing and presentation tools.

12. Methods of Assessment (for example, essay, seminar paper, examination, presentation)

Students will be required to submit an evidence-based assignment (EBA) based on the creation and delivery of a computational thinking 21C learning experience with a group of learners of their choice. They will be required to reflect upon the lessons learned from the experience both for themselves as practitioners and for the target group of learners.

The EBA will comprise of the following items:

1. Description of the planned learning experience and its theoretical underpinnings.
2. A media presentation on an aspect of the delivery of the learning experience.
3. A structured reflection on the experience.

Students are free to use whatever digital media they wish for their submission, but the written component should not exceed 2,500 words.

The assessment criteria are:

Demonstrating their understanding of computational thinking and problem based learning.
Demonstrating an understanding of how to create and deliver a 21C learning experience involving computational thinking.
The depth and richness of the reflection provided.

Each of the above criteria are weighted equally.

13. Pass Requirement and assessment components to be listed in SITS

50% overall and 50% in each of the three components (weighted equally).

14. Method of Supplemental Assessment

Failure in one component requires it to be resubmitted. Failure in 2 or more requires all 3 to be resubmitted.

15. Recommended Reading Materials / Indicative Resources

Nishida, T., Kanemune, S., Idosaka, Y., Namiki, M., Bell, T., & Kuno, Y. (2009, March). A CS unplugged design pattern. In *ACM SIGCSE Bulletin* (Vol. 41, No. 1, pp. 231-235). ACM.

Taub, R., Ben-Ari, M., & Armoni, M. (2009). The effect of CS unplugged on middle-school students' views of CS. *ACM SIGCSE Bulletin*, 41(3), 99-103.

Taub, R., Armoni, M., & Ben-Ari, M. (2012). CS unplugged and middle-school students' views, attitudes, and intentions regarding CS. *ACM Transactions on Computing Education (TOCE)*, 12(2), 8.

Wing, J. M. (2006). Computational thinking. *Communications of the ACM*, 49(3), 33-35.

16. Evaluation

An on-line module survey will be administered at the end of the module and this will be considered by the course team.

17. Module Coordinator

Professor Brendan Tangney

18. Module Teaching Team

Dr Jake Byrne; Professor Brendan Tangney; others

Programme(s) to which Module applies

Certificate in Education (21st Century STEM/CS Teaching and Learning)

1. Title of Module

Introduction to Programming through Animation

2. Module Code

TA21-Mod-3 Optional

3. Entry Requirements (if applicable)

TA21-Mod-1

4. Level (JF, SF, JS, SS, Postgraduate)

Postgraduate

5. Module Size (hours and number of weeks)

Eight student contact hours which will combine both workshops and seminars based around readings and tasks which encompass inquiry based activities. 100 hours of student effort.

6. ECTS Value

5 ECTS

7. Rationale and Aims*Rationale*

This module provides an introduction to programming for beginners through the use of a number of technologies that provide novice programmers the opportunity to explore basic programming skills and knowledge, without the issues associated with debugging syntax and spelling.

This module adheres to a principal of learning by doing in which the students develop their programming skills in the context of a 21st century learning experience. The participants are required to create, deliver and critically reflect upon an introductory programming learning experience for the cohort of their choice.

Aims

- Introduce students to basic programming concepts.
- To build a practical and foundational knowledge for students before they move on to more advanced programming concepts.
- Develop students' skills and capabilities in using tools and approaches designed to aid in the learning of basic programming skills.
- To apply programming knowledge in other teaching & learning contexts.

8. Learning Outcomes

On successful completion of this module, the student should be able to

1. Plan and implement introductory programming learning activities according to the Bridge21 model of 21C learning.
2. Identify and illustrate ways in which programming will enliven and enrich their classroom teaching.
3. Illustrate an understanding of basic programming concepts such as loops and initialisation.
4. Relate basic programming concepts to basic animation actions.
5. Critically reflect upon the planned learning experience.

9. Course Content and Syllabus

Areas to be covered include:

- Basic programming concepts (loops and initialisations).
- Practical introductory technical skills, including basic proficiency with tools such as Scratch for animation.
- Practical approaches for implementing an introductory programming-based learning activity.

10. Teaching and Learning Methods

A flipped classroom approach will be followed and the face to face student contact sessions will be delivered according to the Bridge21 methodology.

Students will be encouraged to participate in a community of practice with their peers which will be supported by course's on-line community

College guidelines on universal accessibility will be followed.

11. Required Equipment and Resources (if applicable)

Flexible learning space with ready-at-hand access to computers, the Internet, cameras (video and still), digital projector, sound recording, media editing and presentation tools.

12. Methods of Assessment (for example, essay, seminar paper, examination, presentation)

Students will be required to submit an evidence-based assignment (EBA) based on the creation and delivery of programming-based 21C learning experience with a group of learners of their choice. They will be required to reflect upon the lessons learned from the experience both for themselves as practitioners and for the target group of learners.

The EBA will comprise of the following items:

1. Description of the design of the learning experience and its theoretical underpinnings.
2. A media presentation of some aspect of the delivery of the learning experience.
3. A structured reflection on the experience.

Students are free to use whatever digital media they wish for their submission but the written component should not exceed 2,500 words.

The assessment criteria are:

Demonstrating their technical competence using an introductory programming interface or piece of software.

Demonstrating an understanding of basic programming concepts and of how to create and deliver a 21st century learning experience to introduce programming.

The depth and richness of the reflection provided.

Each of the above criteria are weighted equally.

13. Pass Requirement and assessment components to be listed in SITS

50% overall and 50% in each of the 3 components, weighted equally

14. Method of Supplemental Assessment

Failure in one component requires it to be resubmitted. Failure in 2 or more requires all 3 to be resubmitted.

15. Recommended Reading Materials / Indicative Resources

Maloney, J. H., Peppler, K., Kafai, Y., Resnick, M., & Rusk, N. (2008, March). Programming by choice: urban youth learning programming with scratch. In *ACM SIGCSE Bulletin* (Vol. 40, No. 1, pp. 367-371). ACM.

Maloney, J., Resnick, M., Rusk, N., Silverman, B., & Eastmond, E. (2010). The scratch programming language and environment. *ACM Transactions on Computing Education (TOCE)*, 10(4), 16.

Meerbaum-Salant, O., Armoni, M., & Ben-Ari, M. (2013). Learning computer science concepts with scratch. *Computer Science Education*, 23(3), 239-264.

Resnick, M., Maloney, J., Monroy-Hernández, A., Rusk, N., Eastmond, E., Brennan, K. & Kafai, Y. (2009). Scratch: programming for all. *Communications of the ACM*, 52(11), 60-67.

Rizvi, M., Humphries, T., Major, D., Jones, M., & Lauzun, H. (2011). A cs0 course using scratch. *Journal of Computing Sciences in Colleges*, 26(3), 19-27.

Utting, I., Cooper, S., Kölling, M., Maloney, J., & Resnick, M. (2010). Alice, Greenfoot, and Scratch--a discussion. *ACM Transactions on Computing Education (TOCE)*, 10(4), 17.

16. Evaluation

An on-line module survey will be administered at the end of the module and this will be considered by the course team.
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17. Module Coordinator

Dr Jake Byrne

18. Module Teaching Team

Dr Jake Byrne; Professor Brendan Tangney; others
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MODULE SPECIFICATION

Programme(s) to which Module applies

Certificate in Education (21st Century STEM/CS Teaching and Learning)

1. Title of Module

Intermediate Programming through Game Design

2. Module Code

TA21-Mod-4 Optional

3. Entry Requirements (if applicable)

TA21-Mod-1

4. Level (JF, SF, JS, SS, Postgraduate)

Postgraduate

5. Module Size (hours and number of weeks)

Eight student contact hours which will combine both workshops and seminars based around readings and tasks which encompass inquiry based activities. 100 hours of student effort.

6. ECTS Value

5 ECTS

7. Rationale and Aims*Rationale*

This module provides an intermediate level introduction to programming for those who already understand basic programming concepts such as initialisation, loops and how to decipher what an algorithm might do. This module will build on the introduction to programming module with the use of a number of technologies that provide novice programmers the opportunity to explore basic programming skills and knowledge, without the issues associated with debugging syntax and spelling.

This module adheres to a principal of learning by doing in which the students develop their programming skills in the context of a 21st century learning experience. The students are required to create, deliver and critically reflect upon a learning experience based on game design for a group of learners of their choice.

Aims

- Introduce students to intermediate programming concepts.
- To progress students' knowledge in preparation for more advanced programming concepts.
- Develop students' skills and capabilities in using tools and approaches designed to aid in the learning of intermediate programming skills.
- To apply programming knowledge in other teaching and learning contexts.

8. Learning Outcomes

On successful completion of this module, the student should be able to

1. Plan and implement game design learning activities according to the Bridge21 model of 21C learning.
2. Identify and illustrate ways in which programming will enliven and enrich their classroom teaching.
3. Create a technical artefact that demonstrates the use of intermediate programming concepts such as variables, events and concurrency.
4. Relate intermediate programming concepts to basic game design elements.
5. Critically reflect upon the planned learning experience.

9. Course Content and Syllabus

Areas to be covered include:

- Intermediate programming concepts (variables, events, concurrency, inputs).
- Technical skills, including intermediate proficiency with tools such as Scratch.
- Practical approaches for implementing a learning activity based on game design.

10. Teaching and Learning Methods

A flipped classroom approach will be followed and the face to face student contact sessions will be delivered according to the Bridge21 methodology.

Students will be encouraged to participate in a community of practice with their peers which will be supported by course's on-line community.

College guidelines on universal accessibility will be followed.

11. Required Equipment and Resources (if applicable)

Flexible learning space with ready-at-hand access to computers, the Internet, cameras (video and still), digital projector, sound recording, media editing and presentation tools.

12. Methods of Assessment (for example, essay, seminar paper, examination, presentation)

Students will be required to submit an evidence-based assignment (EBA) based on the creation and delivery of a 21C learning experience based on game design with a group of learners of their choice. They will be required to reflect upon the lessons learned from the experience both for themselves as practitioners and for the target group of learners.

The EBA will comprise of the following items:

1. Description of the design of the learning experience and its theoretical underpinnings.
2. A media presentation of some aspect of the delivery of the learning experience.
3. A structured reflection on the experience.

Students are free to use whatever digital media they wish for their submission but the written component should not exceed 2,500 words.

The assessment criteria are:

Demonstrating their technical competence using an intermediate programming interface or piece of software for game design and understanding of intermediate programming concepts.

Demonstrating an understanding of how to create and deliver a 21C learning experience involving programming for game design.

The depth and richness of the reflection provided.

Each of the above criteria are weighted equally.

13. Pass Requirement and assessment components to be listed in SITS

50% overall and 50% in each of the 3 components, weighted equally

14. Method of Supplemental Assessment

Failure in one component requires it to be resubmitted. Failure in 2 or more requires all 3 to be resubmitted.

15. Recommended Reading Materials / Indicative Resources

Hayes, E. R., & Games, I. A. (2008). Making Computer Games and Design Thinking A Review of Current Software and Strategies. *Games and Culture*, 3(3-4), 309-332.

Kafai, Y. B. (1995). *Minds in play: Computer game design as a context for children's learning*. Routledge.

Leutenegger, S., & Edgington, J. (2007). A games first approach to teaching introductory programming. *ACM SIGCSE Bulletin*, 39(1), 115-118.

Wang, L. C., & Chen, M. P. (2010, April). Learning programming concepts through game design: A PCT perspective. In *Digital Game and Intelligent Toy Enhanced Learning (DIGITEL), 2010 Third IEEE International Conference on*(pp. 219-221). IEEE.

16. Evaluation

An on-line module survey will be administered at the end of the module and this will be considered by the course team.

17. Module Coordinator

Dr Jake Byrne

18. Module Teaching Team

Dr Jake Byrne; Professor Brendan Tangney; others

MODULE SPECIFICATION

Programme(s) to which Module applies

Certificate in Education (21st Century STEM/CS Teaching and Learning)

1. Title of Module

Intermediate Programming: Exploring Computer Systems

2. Module Code

TA21-Mod-5 Optional

3. Entry Requirements (if applicable)

TA21-Mod-1

4. Level (JF, SF, JS, SS, Postgraduate)

Postgraduate

5. Module Size (hours and number of weeks)

Eight student contact hours which will combine both workshops and seminars based around readings and tasks which encompass inquiry based activities. 100 hours of student effort.

6. ECTS Value

5 ECTS

7. Rationale and Aims*Rationale*

Embedded computing technologies, such as smart phones and wearable technology, are becoming ubiquitous, readily available, cheap and easily modified for a variety of applications. This module introduces a number of such technologies that provide practical introductory examples to assist students in exploring this emerging area of 21C technological development.

The module adheres to a principal of learning by doing in which the students develop their skills with embedded systems in the context of they themselves participating in a 21st century learning experience. The participants are required to create, deliver and critically reflect upon an embedded system learning experience for the cohort of their choice.

Aims

- To introduce students to the relevancy of inputs and outputs as they relate to computing and computers that are becoming pervasive in everyday life.
- To build a practical and foundational knowledge in relation to embedded systems.
- To develop students' skills and capabilities in using current and emerging embedded systems for teaching and learning.

8. Learning Outcomes

On successful completion of this module, the student should be able to

1. Plan and implement an embedded systems learning activity according to the Bridge21 model of 21C learning.
2. Construct basic electronics circuits and code to interface with electronic components.
3. Relate their use of embedded systems to real world applications.
4. Identify the set up and support requirements of an embedded systems 21C learning activity.
5. Critically reflect upon the planned learning experience.

9. Course Content and Syllabus

Computers and Computing:

- Computing in everyday life, with a focus on inputs and outputs
- Intermediate embedded system skills and competencies (electronics and programming).
- Practical approaches for implementing learning activities involving embedded systems.

10. Teaching and Learning Methods

A flipped classroom approach will be followed and the face to face student contact sessions will be delivered according to the Bridge21 methodology.

Students will be encouraged to participate in a community of practice with their peers which will be supported by course's on-line community.

College guidelines on universal accessibility will be followed.

11. Required Equipment and Resources (if applicable)

Flexible learning space with access to computers, spare monitors, keyboards, mice, cameras, digital projector, assortment of embedded systems (including the Raspberry Pi) and accessories.

12. Methods of Assessment (for example, essay, seminar paper, examination, presentation)

Students will be required to submit an evidence-based assignment (EBA) based on the creation and delivery of an embedded systems 21C learning experience with a group of learners of their choice. They will be required to reflect upon the lessons learned from the experience both for themselves as practitioners and for the target group of learners.

The EBA will comprise of the following items:

1. Description of the design of the learning experience and its theoretical underpinnings.
2. A media presentation of some aspect of the delivery of the learning experience.
3. A structured reflection on the experience.

Students are free to use whatever digital media they wish for their submission but the written component should not exceed 2,500 words.

The assessment criteria are:

Demonstrating their technical competence in using an embedded system of their choice.
 Demonstrating an understanding of how to plan and implement a 21C learning experience involving embedded systems.

The depth and richness of the reflection provided.

Each of the above criteria are weighted equally.

13. Pass Requirement and assessment components to be listed in SITS

50% overall and 50% in each of the 3 components, weighted equally

14. Method of Supplemental Assessment

Failure in one component requires it to be resubmitted. Failure in 2 or more requires all 3 to be resubmitted.

15. Recommended Reading Materials / Indicative Resources

Banzi, M. (2009). *Getting Started with arduino*. " O'Reilly Media, Inc."

Buechley, L., Eisenberg, M., Catchen, J., & Crockett, A. (2008, April). The LilyPad Arduino: using computational textiles to investigate engagement, aesthetics, and diversity in computer science education. In *Proceedings of the SIGCHI conference on Human factors in computing systems* (pp. 423-432). ACM.

Byrne, J. R., O'Sullivan, K., & Sullivan, K. (2017). An IoT and Wearable Technology Hackathon for Promoting Careers in Computer Science. *IEEE Transactions on Education*, 60(1), 50-58.

Chui, M., Löffler, M., & Roberts, R. (2010). The internet of things. *McKinsey Quarterly*, 2, 1-9. Monk, S. (2013). *Programming the Raspberry Pi: Getting Started with Python*.

McGraw-Hill. Upton, E., & Halfacree, G. (2013). *Raspberry Pi User Guide*. John Wiley & Sons.

Sentance, S., Waite, J., Hodges, S., MacLeod, E., & Yeomans, L. (2017, March). Creating Cool Stuff: Pupils' Experience of the BBC micro: bit. In *Proceedings of the 2017 ACM SIGCSE Technical Symposium on Computer Science Education* (pp. 531-536). ACM.

Yoo, Y. (2010). Computing in Everyday Life: A Call for Research on Experiential Computing. *Mis Quarterly*, 34(2).

16. Evaluation

An on-line module survey will be administered at the end of the module and this will be considered by the course team.

17. Module Coordinator

Dr Jake Byrne

18. Module Teaching Team

Dr Jake Byrne; Professor Brendan Tangney; others

MODULE SPECIFICATION

Programme(s) to which Module applies

Certificate in Education (21st Century STEM/CS Teaching and Learning)

1. Title of Module

Advanced Programming with Python

2. Module Code

TA21-Mod-6 Optional

3. Entry Requirements (if applicable)

TA21-Mod-1

4. Level (JF, SF, JS, SS, Postgraduate)

Postgraduate

5. Module Size (hours and number of weeks)

Eight student contact hours which will combine both workshops and seminars based around readings and tasks which encompass inquiry based activities. 100 hours of student effort.

6. ECTS Value

5 ECTS

7. Rationale and Aims*Rationale*

This is an advanced programming module for those who already understand basic and intermediate programming concepts such as initialisation, loops, how to decipher what an algorithm might do, variables, events and concurrency. This module will introduce students to a syntax specific, text-based programming language, building on their knowledge and experience using graphical interfaces or block based languages encountered in previous modules (if applicable).

The module adheres to a principal of learning by doing in which the students develop their programming skills in the context of a 21C learning experience. The participants are required to create, deliver and critically reflect upon a learning experience using a text-based programming language for the group of learners of their choice.

Aims

- To introduce students to text based programming languages.
- To introduce students to the relevancy of text based programming languages and their use in everyday computing tasks.
- To develop students' skills and capabilities in using tools and approaches designed to aid in the learning of text based programming languages.
- To apply advanced programming knowledge in other teaching & learning contexts.

8. Learning Outcomes

On successful completion of this module, the student should be able to do the following.

1. Plan and implement a learning activity using a text based programming language in the context of the Bridge21 model of 21C learning.
2. Identify and illustrate ways in which programming will enliven and enrich their classroom teaching.
3. Create a technical artefact that demonstrates proficiency in the use of a text based programming language.
4. Relate programming tasks to real world applications.
5. Critically reflect upon the planned learning experience.

9. Course Content and Syllabus

Areas to be covered include:

- Advanced Programming concepts (including syntax and debugging).
- Advanced technical skills, including proficiency with programming languages such as Python.
- Practical approaches and best practice for implementing a learning activity using a text based programming language.

10. Teaching and Learning Methods

A flipped classroom approach will be followed and the face to face student contact sessions will be delivered according to the Bridge21 methodology.

Students will be encouraged to participate in a community of practice with their peers which will be supported by course's on-line community.

College guidelines on universal accessibility will be followed.

11. Required Equipment and Resources (if applicable)

Flexible learning space with ready-at-hand access to computers, the Internet, cameras (video and still), digital projector, sound recording, media editing and presentation tools.

12. Methods of Assessment (for example, essay, seminar paper, examination, presentation)

Students will be required to submit an evidence-based assignment (EBA) based on the creation and delivery of an advanced programming 21C learning experience with a group of learners of their choice. They will be required to reflect upon the lessons learned from the experience both for themselves as practitioners and for the target group of learners.

The EBA will comprise of the following items:

1. Description of the design of the learning activity and its theoretical underpinnings.
2. A media presentation of some aspect of the delivery of the learning experience.
3. A structured reflection on the experience.

Students are free to use whatever digital media they wish for their submission but the written component should not exceed 2,500 words.

The assessment criteria are:

Demonstrating their competence to program using a text based language.

Demonstrating an understanding of how to create and deliver a 21C learning experience involving an advanced (text-based) programming language.

The depth and richness of the reflection provided.

Each of the above criteria are weighted equally.

13. Pass Requirement and assessment components to be listed in SITS

50% overall and 50% in each of the 3 components, weighted equally

14. Method of Supplemental Assessment

Failure in one component requires it to be resubmitted. Failure in 2 or more requires all 3 to be resubmitted.

15. Recommended Reading Materials / Indicative Resources

Ceder, V., & Yergler, N. (2003). Teaching Programming with Python and PyGame. *Apresentado na PyCon*.

Chun, W. J. (2006). *Core Python programming*. Prentice Hall PTR.

Nikula, U., Sajaniemi, J., Tedre, M., & Wray, S. (2007). Python and roles of variables in introductory programming: experiences from three educational institutions. *Journal of Information Technology Education: Research*, 6, 199-214.

Radenski, A. (2006, June). Python First: A lab-based digital introduction to computer science. In *ACM SIGCSE Bulletin* (Vol. 38, No. 3, pp. 197-201). ACM.

16. Evaluation

An on-line module survey will be administered at the end of the module and this will be considered by the course team.

17. Module Coordinator

Dr Jake Byrne

18. Module Teaching Team

Dr Jake Byrne; Professor Brendan Tangney; others

Programme(s) to which Module applies

Certificate in Education (21st Century STEM/CS Teaching and Learning)

1. Title of Module

Contextualised Mathematics

2. Module Code

TA21-Mod-7 Optional

3. Entry Requirements (if applicable)

TA21-Mod-1

4. Level (JF, SF, JS, SS, Postgraduate)

Postgraduate

5. Module Size (hours and number of weeks)

Eight student contact hours which will combine both workshops and seminars based around readings and tasks which encompass inquiry based activities. 100 hours of student effort.

6. ECTS Value

5 ECTS

7. Rationale and Aims*Rationale*

A major trend in mathematics education is towards contextualised learning in which the real world properties and relevance of mathematics are to the fore. This is very much the philosophy behind the Project Maths syllabus, which has been running for several years in secondary schools. This approach is in turn an instance of the broader trend towards 21st century teaching and learning which emphasises key skills such as problem solving and managing information. However, in practice many so called real world maths problem based learning activities are actually classic text book, decontextualised, problems with a thin veneer wrapped around them.

There is also a movement towards the use of technology in maths education but teachers are faced with a myriad of tools without a clear pedagogical basis for their use.

Models of 21C teaching and learning offer a pedagogical framework within which a contextualised approach to maths education sits more naturally. Equally such a framework is more suitable for the exploitation of the potential of technology to enhance the learning process.

Aims

- Introduce students to the wide variety of ICT tools for teaching mathematics and to provide them with a conceptual framework for understanding the nature of technology-enhanced learning interventions.
- Provide students with a set of guidelines for developing innovative maths learning activities.
- Introduce students to how innovative contextualised maths education activities can be devised for a 21C learning scenario.
- Provide students with the skills necessary in order to design and deliver such activities.

8. Learning Outcomes

On successful completion of this module, the student should be able to

1. Identify suitable ICT tools for use in the teaching of mathematics.
2. Design, plan and deliver innovative mathematical learning activities using the Bridge21 model of 21C teaching and learning.
3. Critically reflect upon the planned and implemented technology mediated mathematics learning experiences.

9. Course Content and Syllabus

Issues in maths education.
Contextualised maths pedagogy.
Acceptance models for technology enhanced learning interventions. Classification of maths learning tools.
Bridge21 and maths education.
Design principles for 21C math learning activities.

10. Teaching and Learning Methods

A flipped classroom approach will be followed and the face to face student contact sessions will be delivered according to the Bridge21 methodology.

Students will be encouraged to participate in a community of practice with their peers which will be supported by course's on-line community.

College guidelines on universal accessibility will be followed.

11. Required Equipment and Resources (if applicable)

Flexible learning space with ready-at-hand access to computers, the Internet, cameras (video and still), digital projector, sound recording, media editing and presentation tools.
Maths learning tools including GeoGebra and Woofram Alpha.

12. Methods of Assessment (for example, essay, seminar paper, examination, presentation)

Students will be required to submit an evidence-based assignment (EBA) based on the creation and delivery of a number of contextualised mathematical learning activities with a group of learners of their choice. They will be required to reflect upon the lessons learned from the experience both for themselves as practitioners and for the target group of learners.

The following items need to be submitted for grading.

1. Description of the design of the learning experience and its theoretical underpinnings.
2. A media presentation on some aspect of the delivery of the learning experience.
3. A structured reflection on the experience.

Students are free to use whatever digital media they wish for their submission but the written component should not exceed 2,500 words.

The assessment criteria are:

Demonstrating an understanding of how to create and deliver a 21C mathematics learning experience.

The depth and richness of the reflection provided.

Each of the above criteria are weighted equally.

13. Pass Requirement and assessment components to be listed in SITS

50% overall and 50% in each of the 3 components, weighted equally

14. Method of Supplemental Assessment

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Failure in one component requires it to be resubmitted. Failure in 2 or more requires all 3 to be resubmitted.

15. Recommended Reading Materials / Indicative Resources

Beetham, H., & Sharpe, R. (2013). Rethinking pedagogy for a digital age: Designing for 21st century learning: Routledge. Gravemeijer, K., R. Rainero and H. Vonk (1994). Developing realistic mathematics education, Freudenthal institute Utrecht, The Netherlands.

Boaler, J. (2009). The Elephant in the Classroom: Helping Children Learn and Love Maths: Souvenir Press.

Bray A., Tangney B., Technology Usage in Mathematics Education Research - A Systematic Review of Recent Trends, Computers & Education [Volume 114](#), November 2017, Pages 255-273

Bray A. and Tangney B. (2013). Mathematics, Technology Interventions and Pedagogy - Seeing the Wood From the Trees. 5th International Conference on Computer Supported Education, Aachen, Germany, 57-63.

Chambers, P. Teaching Mathematics: Developing as a Reflective Secondary Teacher. London: Sage, 2008.

Stein, J. D. (2008). How Math Explains the World: A Guide to the Power of Numbers, from Car Repair to Modern Physics. NY: HarperCollins.

Tangney B. and Bray A. (2013). Mobile Technology, Maths Education & 21C Learning. 12th World Conference on Mobile and Contextual Learning (mLearn 2013). Qatar, International Association of Mobile Learning: 20-27.

Bray A. and Tangney B. (2014). Barbie Bungee Jumping, Technology and Contextualised Learning of Mathematics. 6th International Conference on Computer Supported Education. Barcelona: In press.

Lawlor J., Marshall K., Tangney B., Bridge21 – Exploring the potential to foster intrinsic student motivation through a team-based, technology mediated learning model, Technology, Pedagogy and Education, in press.

Tangney B., Bray A. and Oldham E. Realistic Mathematics Education, Mobile Technology & The Bridge21 Model For 21st Century Learning – A Perfect Storm. Mobile Learning and Mathematics: Foundations, Design, and Case Studies. Crompton H. and Traxler J., Routledge, in press.

16. Evaluation

An on-line module survey will be administered at the end of the module and this will be considered by the course team.

17. Module Coordinator

Dr. Aibhín Bray

18. Module Teaching Team

Dr. Aibhín Bray; others

MODULE SPECIFICATION

Programme(s) to which Module applies

Certificate in Education (21st Century STEM/CS Teaching and Learning)

1. Title of Module

Science, Technology, Engineering & Maths (STEM) Pedagogy

2. Module Code

TA21-Mod-8 Optional

3. Entry Requirements (if applicable)

TA21-Mod-1

4. Level (JF, SF, JS, SS, Postgraduate)

Postgraduate

5. Module Size (hours and number of weeks)

Eight student contact hours which will combine both workshops and seminars based around readings and tasks which encompass inquiry based activities. 100 hours of student effort.

6. ECTS Value

5 ECTS

7. Rationale and Aims*Rationale*

STEM teaching and learning in post-primary education, particularly the subjects of Science and Mathematics, has undergone major development in recent years. Furthermore, the new programme for Junior Cycle requires a 21st century pedagogical approach, with implications for both the theory and practice of STEM education. Teachers are now required to create learning opportunities for students to develop key skills, such as cooperative and collaborative learning, creativity and problem-solving. Other new developments in STEM pedagogy include the Nature of Science; constructivist and socio-cultural approaches; Project Maths and assessment for learning (AfL) in Science and Mathematics.

Aims

- Familiarise students with new developments in the area of STEM teaching and learning, including nature of science, introduction of problem-based, cooperative learning strategies, etc.
- Support students to acquire and develop practical skills and capabilities to use emerging approaches in their day-to-day teaching.
- Facilitate students to collaborate with their peers to develop their pedagogical skills, for example: planning and running practical and inquiry-based STEM lessons; questioning; assessment (including assessment for learning (AfL) techniques).
- Encourage students to collaborate with one another in their practices (e.g. in co-teaching, lesson study), and to develop their awareness of continuous professional development.
- Support students to develop a range of strategies to teach STEM as both creative and rigorous subjects.

8. Learning Outcomes

On successful completion of this module the student should be able to:

1. Explain the key tenets of social constructivist views of students' learning in science.
2. Differentiate between forms of pedagogical practice, and use of creative, discursive, practical and problem-based activities, as a means of developing students' literacy and numeracy skills.
3. Develop a research-informed approach to teaching and learning which can be implemented through the science curriculum.
4. Evaluate the application of inclusive education principles in the science classroom, and discuss how to promote an inclusive learning and teaching environment, showing awareness of and facilitating individual pupil needs.
5. Develop a self-reflective approach to their own teaching, reflecting on and improving their practice, and taking responsibility for identifying and meeting their developing professional and academic needs.

9. Course Content and Syllabus

- Approaches to teaching the theoretical and practical aspects of science courses in second level schools in Ireland.
- Innovations in practical work and ICT in science teaching and learning.
- Theories of teaching and learning in science.
- Student attitudes to science in school.
- Focus on questioning to develop student learning in science.
- Numeracy and literacy in the context of science.
- Developing learning communities in the science classroom.
- Methods of collaboration in learning and teaching science.

10. Teaching and Learning Methods

Teaching will be delivered using the Bridge21 methodology, to include teamwork, problem-based, cooperative learning, collaborative learning and whole class teacher input and discussion. This will offer learners a flexible approach to teaching and learning.

Peer teaching, with special reference to practical science.

College guidelines on universal accessibility will be followed.

11. Required Equipment and Resources (if applicable)

Flexible learning space with ready-at-hand access to computers, with Internet access. Presentation facilities.

12. Methods of Assessment (for example, essay, seminar paper, examination, presentation)

Assignment, structured as follows:

1. Design and implement a series of lessons based on a chosen teaching and learning theory or approach relevant to improving science learning, and provide a description of how to implement the theory or approach.
2. Critically evaluate their implementation of the theory or approach to demonstrate what occurred during the lessons and whether the lesson objectives were met, and to reflect on the approach within this specific classroom and a self-reflection on the impact of the exercise on their own teaching practices.

13. Pass Requirement and assessment components to be listed in SITS

On line portfolio 50%

14. Method of Supplemental Assessment

15. Recommended Reading Materials / Indicative Resources

- Berry, M. R., Chalmers, C., & Chandra, V. (2012). STEM futures and practice, can we teach STEM in a more meaningful and integrated way? 2nd International STEM in Education Conference
- Bishop, K. and Denley, P. (2007) Learning Science Teaching. Berkshire: Open University Press.
- Black, P. and Harrison, C. (1990) Science inside the Black Box. King's College London (booklet)
- Driver, R. (1983) The Pupil as Scientist? Milton Keynes: Open University Press.
- Fraser, B., Tobin, K. and McRobbie, C. (Eds.) (2012) Second International Handbook of Science Education, Volumes 1 and 2. London: Springer.
- Gilbert, J. (Ed.) (2004) The RoutledgeFalmer Reader in Science Education. London: RoutledgeFalmer.
- Goldacre, B. (2009). Bad science. London: Fourth Estate Press.
- Keeley, P. D. (2008) Science Formative Assessment. Corwin Press.
- Kind, V. (2008) Teaching Secondary How Science Works. London: Hodder.
- Lionni, L. (1974) Fish is Fish. Random House Publications.
- Monk, M. and Osborne, J. (eds) (2000) Good Practice in Science Teaching. Buckingham: Open University Press.
- Mortimer, E. F. & Scott, P. H. (2003) Meaning Making in Secondary Science Classrooms. Maidenhead: Open University Press.
- Osborne, J. and Dillon, J. (2010) Good Practice in Science Teaching: what research has to say. London: Open University Press.
- Parkinson, J. (2002) Reflective Teaching of Science 11-18. London: Continuum.
- Ratcliffe, M. and Grace, M. (2003) Science Education for Citizenship. Maidenhead: Open University Press.
- Reiss, M. (2011) Teaching Secondary Biology. London: Hodder.
- Sang, D. (2011) Teaching Secondary Physics. London: Hodder.
- Taber, K. (2012) Teaching Secondary Chemistry. London: Hodder.
- Toplis, R. (Ed) (2010) Learning to Teach Science in the Secondary School. London: Routledge.
- Wellington, J. & Osborne, J. (2001) Language and Literacy in Science Education. Buckingham: Open University Press.
- Wellington, J. & Ireson, G. (2012) Science Learning, Science Teaching. London:

Routledge. Willingham, D. T. (2012) When Can You Trust the Experts? New York: Wiley.

16. Evaluation

An on-line module survey will be administered at the end of the module and this will be considered by the course team.

17. Module Coordinator

Dr Jake Byrne

18. Module Teaching Team

Dr Kevin Sullivan; others

MODULE SPECIFICATION

Programme(s) to which Module applies

Certificate in Education (21st Century STEM/CS Teaching and Learning)

1. Title of Module

Teacher as Co-Researcher

2. Module Code

TA21-Mod-9 Optional

3. Entry Requirements (if applicable)

TA21-Mod-1

4. Level (JF, SF, JS, SS, Postgraduate)

Postgraduate

5. Module Size (hours and number of weeks)

Eight student contact hours which will combine both workshops and seminars based around readings and tasks which encompass inquiry based activities. 100 hours of student effort.

6. ECTS Value

5 ECTS

7. Rationale and Aims

Rationale

This module builds on the introductory module on 21C learning using the Bridge21 methodology, with increased emphasis on the role of the teacher in critically monitoring and researching their own professional practice in the context of a learning community involving other teachers and researchers.

This module will provide students with a critical introduction to the principles and practices that underpin the generation of research-based evidence. The development of educational practitioners' abilities to critically reflect on and deconstruct secondary research has been a core set of competencies in the area of continuing professional development since the late 1960s. In developing this tradition, it is intended in this module to provide students with the capacity to undertake their own research, but to do so from a theoretically, reflexively and methodologically informed perspective.

Aims

- To provide students with a critical grounding in the key debates around research-based evidence
 - To introduce students to the range of research methodologies and research tools that can be applied by practitioners to generate and evaluate evidence.
 - To develop students' critical understanding of the reflexive dimensions associated with research-based evidence.
-
- To develop students understanding of the analytical techniques which can be applied in the context of evidence-based research.
 - To develop students' capacity to interpret and critique, from a methodological perspective, empirical forms of evidence.
 - To enable students to collaboratively design, plan and carry out a small research study.

8. Learning Outcomes

On successful completion of this module students should be able to:

1. Identify and critically discuss the range of methodological approaches that can be applied in educational research, with an emphasis on practitioner inquiry and case study.
2. Apply the research process to investigate either instance of a 21C teaching and learning intervention or any other appropriate 'school culture' issue;
Be able to distinguish between appropriate research methods and/or approaches for specific research questions.
3. Articulate the rationale from which the analysis proceeds and from which evidence and explanations are assessed
4. Write in a clear style and adhere to conventional academic practice with regards citations, footnotes, and referencing.

9. Course Content and Syllabus

Critically explore the underpinning principles of research-based policy and practice. Also, critically consider the tools and techniques used to generate data.
Fabricating evidence? The role of analysis and data representation and dissemination within research-based evidence policy and practice.
Design, development, implementation, evaluation and reporting of a technology enhanced project.
Overview of the research process & its key principles.
Research methods.
Data Collection Instruments. Data analysis.

10. Teaching and Learning Methods

A flipped classroom approach will be followed and small group workshop sessions.

Students will be encouraged to participate in a community of practice with their peers which will be supported by course's on-line community.

11. Required Equipment and Resources (if applicable)

Flexible learning space with access to computers, the Internet, digital projector.

12. Methods of Assessment (for example, essay, seminar paper, examination, presentation)

Students will be required to undertake a small piece of collaborative research as per a practical application of the foundational concepts and methodologies covered in the module.

Successful completion of the research will involve constructing a research proposal, conducting a research intervention which will allow them to generate and analyse data in order to present results and findings in the form of a report of 2,500 words. The report will include a critical evaluation and self-reflection on the impact of the research exercise on their own professional practice.

The assessment will be based on the written report of 2500 words.

13. Pass Requirement and assessment components to be listed in SITS

50%

14. Method of Supplemental Assessment

Resubmission of assignment

15. Recommended Reading Materials / Indicative Resources

- Bassey, M (1999). *Case study research in educational settings*. Buckingham: OUP.
- Becker, H. (1998). *Tricks of the Trade: how to think about your research while you're doing it*. Chicago: University of Chicago Press: Chicago.
- Blakie, N. (2012) *Designing Social Research (2nd Edition)*. London: Sage.
- Bradbury, H. and Reason, P. (2008) *Handbook of action research (2nd Ed)*. London: Sage.
- Bryman, A. (2016). *Social Research Methods*. OUP: Oxford.
- Denzin, N.K. & Lincoln, Y.S. (2011). *Handbook of Qualitative Research*. Thousand Oaks, Dey, I. (1993). *Qualitative Data Analysis: A user-friendly guide for social scientists*. London: Routledge.
- Dey, I. (1993). *Qualitative Data Analysis: A user-friendly guide for social scientists*. London: Routledge.
- Loxley, A. and Seery, A. (2008). 'Some Philosophical and other Related Issues of Insider Research' in Sikes, P. and Potts, A. (eds) *Doing Insider Research*. London: Routledge.
- Punch K. (2009). *Introduction to research methods in education*. London, SAGE.
- St. John, E. (2013) *Research, Actionable Knowledge and Social Change, Reclaiming Social Responsibility through Research Partnerships*, Virginia: Stylus.
- Thomas, G. (2012) *How to do your case study : a guide for students*. London: Sage.
- Tomas., G. and Pring, R. (2004) *Evidence-based practice in education*. OUP: Maidenhead.
- Yin, R. K. (2009). *Case study research: Design and methods*, Sage.

Relevant Websites

<http://www.nova.edu/ssss/QR/index.html> /
<http://www.bera.ac.uk/>
<http://www.britsoc.co.uk/>
<http://www.aera.net/>

Online relevant journals accessible via TCD library

Students are strongly encouraged to use some of the following journals as part of their time on the module, which they should also use during their thesis work.

Journal of Mixed Methods Research
Qualitative Social Research
Harvard Educational Review
International Journal of Qualitative Studies in Education
Qualitative Inquiry
International Journal of Educational Research and Method
Qualitative Inquiry
Qualitative Research

16. Evaluation

An on-line module survey will be administered at the end of the module and this will be

considered by the course team.

17. Module Coordinator

Dr Aibhin Bray

18. Module Teaching Team

Dr Aibhin Bray; others

MODULE SPECIFICATION

Programme(s) to which Module applies

Certificate in Education (21st Century STEM/CS Teaching and Learning)

1. Title of Module

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

2. Module Code

TA21-Mod-10 Optional

3. Entry Requirements (if applicable)

TA21-Mod-1

4. Level (JF, SF, JS, SS, Postgraduate)

Postgraduate

5. Module Size (hours and number of weeks)

Eight student contact hours which will combine both workshops and seminars based around readings and tasks which encompass inquiry based activities. 100 hours of student effort.

6. ECTS Value

5 ECTS

7. Rationale and Aims

Rationale

This module explores the socio-cultural factors that impact on the distribution of educational access, participation and advantage/disadvantage within the compulsory context. More specifically it will critically explore the socio-cultural and economic influences on equity and equality which are examined through discourses around inclusion that are related to issues pertinent to contemporary professional practice.

Aims

- To engage with policy and provision matters within education for students who are experiencing/have experienced or are at risk of marginalisation within educational environments.
- To explore the range of policy responses and modes of practice, nationally and internationally, which attempt to address issues relating to educational access, widening participation, 'fair access' and disadvantage.
- To examine theoretical understandings of 'power' and 'empowerment' as they relate to differential access, participation and outcomes in education contexts.

8. Learning Outcomes

On successful completion of this module, the student should be able to:

1. Identify and critically describe key issues related to educational (dis)advantage, including socioeconomic influences, 'diversity and difference', additional needs, access, marginalising factors.
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, as they relate to students' experiences of school and society with the intention of developing critical engagement and analyses of their daily school life

9. Course Content and Syllabus

The course content is set within the Irish legislative framework and national/international literature examining the emergence and impact of Inclusion as an ideology and practice. It also explores socio-cultural theories and approaches significant to widening participation and fair access.

10. Teaching and Learning Methods

The teaching strategy is a mixture of seminars and workshops structured around pre-session readings.

11. Required Equipment and Resources (if applicable)

Flexible learning space with ready-at-hand access to computers, the internet, digital projector.

12. Methods of Assessment (for example, essay, seminar paper, examination, presentation)

Students will be required to submit an evidence-based assignment (EBA) in 'portfolio' or essay format which will facilitate the opportunity to draw on any multi-media tools and techniques, demonstrating reflection-in-action. A choice of topics for this assignment will focus on issues relating to educational inclusion, educational access and/or participation.

The portfolio will provide a number of presentation options which will include: an essay; or a combination of media in light of the underlying aims of the entire programme, e.g. the use of digital technology; and/or the possibility of drawing from critical engagement with creative methodologies, e.g. visual, audio etc.

13. Pass Requirement and assessment components to be listed in SITS

Portfolio 50%

14. Method of Supplemental Assessment

Re-submission of assignment

15. Recommended Reading Materials / Indicative Resources

Core Readings

Bourdieu, P. and Passeron, J. (1977) *Reproduction in Education, Culture and Society*. London: Sage

Coffee, H. and Geys, B. (2007) 'Toward an Empirical Characterization of Bridging and Bonding' Social Capital. *Nonprofit and Voluntary Sector Quarterly*. 36: 121-140.

Coleman, J.S. (1988) 'Social capital in the creation of human capital'. *American Journal of Sociology*. 94: 95-121.

Department of Education and Science. (2005a). *Literacy and numeracy in disadvantaged schools: Challenges for teachers and learners*. Dublin: Department of Education and Science.

Department of Education and Science. (2005b). *DEIS (delivering equality of opportunity in schools) an action plan for educational inclusion*. Dublin: The Stationery Office.

Devine, D., & Kelly, M. (2006). 'I just don't want to get picked on by anybody' - Dynamics of inclusion and exclusion in a newly multi-ethnic Irish primary school. *Children and Society*, 20(2), 128-139.

- Drudy, S., & Kinsella, W. (2009). Developing an inclusive system in a rapidly changing European society. *International Journal of Inclusive Education*, 13(6), 647-663.
- Fleming, T. and Gallagher, A. (2003) Power, Privilege and Points: The Choices and Challenges of Access in Dublin: A review of current practice. Dublin Employment Pact
- Foucault, M. (1977) *Discipline and Punish*. London: Penguin Books.
- Grenfell, M. (2008) *Pierre Bourdieu: key concepts*. Stocksfield, UK: Acumen.
- Griffin, S. & Shevlin, M., (2011) *Responding to Special Educational Needs, An Irish Perspective* (2nd Edition). Dublin: Gill and Macmillan
- Giroux, H. (2011) *Education and the Crisis of Public Values: Challenging the Assault on Teachers, Students and Public Education (Counterpoints: Studies in the Postmodern Theory of Education)*. New York: Peter Lang Publishing.
- Giroux, H. (1984) *Ideology, Culture and the Process of Schooling*. Lewes: Falmer.
- Government of Ireland. (1998). *Education Act*. Dublin: Stationery Office.
- Government of Ireland of (2000a). *Education Welfare Act*. Dublin: Stationery Office.
- Government of Ireland. (2000b). *Equal status act*. Dublin: Stationery Office.
- Hanifin, L. (1916) 'The Rural School Community Centre'. *Annals of the American Academy of Political and Social Science*. 67: 130-138.
- HEA (2008) *The National Plan for Equity of Access to Higher Education 2008-13*. Dublin: HEA.
- HEA (2004) *Achieving Access to Higher Education in Ireland: National action plan 2005-07*. Dublin: HEA.
- HEA (2006) *National Plan for Equity of Access to Higher Education*. Dublin: HEA.
- Hooks, B. (1994) *Education as the Practice of Freedom*. London: Routledge.
- Hyatt, C., & Hornby, G. (2017). Will UN Article 24 lead to the demise of special education or to its re-affirmation?. *Support for Learning*, 32(3), 288-304.
- Lynch, K., & Lodge, A. (2002). *Equality and power in schools: Redistribution, recognition and representation*. London: Routledge Falmer.
- McCarthy, P. and Shevlin, M. (2017). Opportunities and challenges in secondary education for blind/vision-impaired people in the Republic of Ireland. *Disability and Society*. Taylor and Francis Online: <http://dx.doi.org/10.1080/09687599.2017.1337564>.
- Meyer, H-D., St. John, E., Chankseliani, M. & Uribe, L. (2013) *Fairness in Access to Higher Education in a Global Perspective: Reconciling Excellence, Efficiency, and Justice*. Rotterdam: Sense Publishers.
- O'Brien, S., & Ó Fathaigh, M. (2007). *Learning partnerships for social inclusion: Exploring lifelong learning contexts, issues and approaches*. Cork: Oak Tree Press.

Programme School Completion. (2004). *School completion programme: Guidelines towards best practice*. Dublin: Author.

Rabinow, P. (1986) *The Foucault Reader: An introduction to Foucault's thought*. London: Penguin Books.

Richardson, T. D., Jindal-Snape, D., & Hannah, E. F. (2017). Impact of legislation on post-school transition practice for young people with additional support needs in Scotland. *British Journal of Special Education*.

Rogers, C. (2012) Inclusive education, exclusion and difficult difference: a call for humanity? *British Journal of Sociology of Education*, 33(3) 475-485.

Sapon-Shevin, M. (2007). *Widening the circle: The power of inclusive classrooms*: Beacon Press.

Share, M. & Carroll, C. (2013) *Ripples of Hope: The Family & Community Impact of TAP Graduates of TCD*. Children's Research Centre: TCD.

Shevlin, M., Winter, E., Flynn, P., Developing inclusive practice: teacher perceptions of opportunities and constraints in the Republic of Ireland, *International Journal of Inclusive Education*, 17, (10), 2013, p1119 – 1133

Smyth, E., McCoy, S., & Kingston, G. (2015). Learning from the Evaluation of DEIS. *Dublin: Economic and Social Research Institute*.

St John, E. (2011) *Breaking Through The Access Barrier: How Academic Capital Formation Can Improve Policy in Higher Education*. New York: Routledge.

TAP (2010) *What Happened Next? The Employment & Further Study Experiences of TAP Graduates of TCD, 2002-8*. Dublin: TCD.

UNESCO (2005) *Guidelines for Inclusion: Ensuring Access to Education for All*. Paris: UNESCO.

Winter, E. & O'Raw, P. (2010) *Literature Review of the Principles, and Practices relating to Inclusive Education for Children with Special Educational Needs*. Dublin: NCSE

Supplementary Reading List

Christenson, S.L., Sinclair, M.F., Lehr, C.A., & Godber, Y. (2001). Promoting successful school completion: Critical conceptual and methodological guidelines. *School Psychology Quarterly*, 16, 468-484.

Clancy, P. (1995). Education in the Republic of Ireland: The project of modernity? In S. Drudy, P.

Clancy, K., Lynch, & L. O'Dowd, (Eds.), *Irish society: Sociological perspectives*. Dublin: Institute of Public Administration

Cigman, R (2007) A Question of Universality: Inclusive Education and the Principle of Respect. *Journal of Philosophy of Education*, 41(4) 775-793

Illich, I. (1971) *De-schooling Society*. London: Calder & Boyars.

Skillbeck, M. and O'Connell Skilbeck, M. and Connell, H. (2000) *Meeting the Equity Challenge in Higher Education: An International Perspective on Issues and Strategies*. Dublin: Higher Education Authority.

Thomas, G. and Loxley, A. (2007) *Deconstructing Special Educational Needs and Reconstructing Inclusion*. Open University Press.

Thomas, G. & Vaughan, M. (Eds.) (2004) *Inclusive Education, readings and reflections*. Maidenhead, England and Two Penn Plaza, New York: Open University Press.

Walsh, J. 2009. *The politics of expansion: The transformation of educational policy in the Republic of Ireland, 1957–72*. Manchester: Manchester University Press.

Websites

<http://www.cso.ie/en/index.html> (Central Statistics Office) <http://www.esri.ie> (Economic and Social Research Council)

<http://www.heai.ie/en/policy/national-access-office> (Higher Education Authority National Access Office)

16. Evaluation

An on-line module survey will be administered at the end of the module and this will be considered by the course team.
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17. Module Coordinator(s)

Dr Donatella Camedda

18. Module Teaching Team

Dr Donatella Camedda; and others

MODULE SPECIFICATION

Programme(s) to which Module applies

Certificate in Education (21st Century STEM/CS Teaching and Learning)

1. Title of Module

Leadership and Change Management in Education

2. Module Code

TA21-Mod-11 Optional

3. Entry Requirements (if applicable)

TA21-Mod-1

4. Level (JF, SF, JS, SS, Postgraduate)

Postgraduate

5. Module Size (hours and number of weeks)

Eight student contact hours which will combine both workshops and seminars based around readings and tasks which encompass inquiry based activities. 100 hours of student effort.

6. ECTS Value

5 ECTS

7. Rationale and Aims

Rationale

This module helps students to critically examine the role that leadership has in promoting change in schools and reflect on their own part in this process.

Aims

- To develop an understanding of leadership as a social and ethical practice with profound implications for learning, school and society.
- To introduce students to the theory, research, policy and practice of leadership and change management with specific reference to the field of education.
- To explore values and ideologies which underpin the current wave of structural reform and change in education; and their implications for school-level leadership and management.

8. Learning Outcomes

On successful completion of this module, the student should be able to:

1. Identify and critically discuss key issues related to educational leadership including influences of policy and governance, and change management at school level.
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.

9. Course Content and Syllabus

This will be set within the context of national and international literature on educational leadership and management and will provide an opportunity to consider the school/community/teaching profession/society as a social system.

10. Teaching and Learning Methods

The teaching strategy is a mixture of seminars and workshops structured around pre-session readings.

11. Required Equipment and Resources (if applicable)

Flexible learning space with ready-at-hand access to computers, the Internet, digital projector.

12. Methods of Assessment (for example, essay, seminar paper, examination, presentation)

Students will be required to submit an evidence-based assignment (EBA) in 'portfolio' form, drawing on any multi-media tools and techniques, demonstrating reflection-in-action. The assignment will explore a school/student focused strategy within the context of leadership and change management.

The portfolio will provide a number of presentation options which will include: an essay; or a combination of media in light of the underlying aims of the entire programme, e.g. the use of digital technology; and/or the possibility of drawing from critical engagement with creative methodologies, e.g. visual, audio etc.

13. Pass Requirement and assessment components to be listed in SITS

Portfolio 50%

14. Method of Supplemental Assessment

Re-submission of the assignment.

15. Recommended Reading Materials / Indicative Resources

Ainscow, M., & Sandill, A. (2010) Developing inclusive education systems: the role of organisational cultures and leadership. *International Journal of Inclusive Education*, 14(4), 401-416.

Ahrweiler, P. (ed.) (2010) *Innovation in complex social systems*. London: Routledge.

Baker, J., Lynch, K., Cantillon, S. and Walsh, J. (2004) *Equality: from Theory to Action*. Basingstoke: Palgrave Macmillan.

Bottery, M. (2006) Educational Leaders in a globalising world: a new set of priorities. *School Leadership and Management* 26 (1) pp. 5 – 22.

Bush, T. and Glover, D. (2014) School leadership models: what do we know? *School Leadership and Management*, 34(5), 553-571

Cameron, E. and Green, M. (2012) *Making sense of change management : a complete guide to the models, tools, and techniques of organizational change*. London: Kogan Page

Crawford, M. (2012) Solo and Distributed Leadership: Definitions and Dilemmas, *Educational Management Administration & Leadership*, 40: 610-620.

Dalin, P. (2005) Developing the Twenty-First Century School: A Challenge to Reformers. In D. Hopkins, (Ed.) *The Practice and Theory of School Improvement - International Handbook of Educational Change* (25-39). Dordrecht: Springer.

Evans, R. (1996). *The Human Side of School Change: Reform, Resistance, and the Real-Life Problems of Innovation*. San Francisco: Jossey-Bass Education Series.

- Evans, R. (2010). *Change is What It Means*. [Online]. Available from: www.rodelfoundationde.org
- Fitzgerald, T. (2009) The tyranny of bureaucracy: continuing challenges of leading and managing from the middle. *Educational Management, Administration & Leadership*, 37 (51)
- Fitzgerald, T., & Gunter, H. M. (2008) Contesting the orthodoxy of teacher leadership. *International Journal of leadership in Education*, 11(4), 331-340.
- Fullan, M. (2007) *The New Meaning of Educational Change*, Oxon: Routledge.
- Fullan, M. (2009) Large Scale Reform Comes of Age, *Journal of Educational Change* 10(2 & 3): 101-113.
- Grek, S. (2009) Governing by numbers: the Pisa effect in Europe, *Journal of Education Policy*, 24(1) 23-37
- Hall, G. & Hord (2006) *Implementing Change: patterns, principles and potholes*. Boston: Allyn & Bacon
- Hargreaves, A. (2009). A Decade of Educational Change and a Defining Moment of Opportunity - An Introduction. *Journal of Educational Change* 10(2 & 3): 89-100.
- Harris, A. (2013) Distributed Leadership: Friend or Foe? *Educational Management Administration & Leadership* 41(5)
- Hoban, G. F. (2002) *Teacher Learning for Educational Change: A Systems Thinking Approach*. Buckingham, Open University Press.
- Lambert, L. (2003) Leadership redefined: an evocative context for teacher leadership, *School Leadership & Management* 23:4, 421-430
- Larusdottir, S.H. and O'Connor, E. (2017): Distributed leadership and middle leadership practice in schools: a disconnect? *Irish Educational Studies* Published online by Taylor and Francis, 05 Jun 2017
- Lingard, B., Hayes, D., Mills, M. & Christie, P. (2003) *Leading learning: making hope practical in schools*, Maidenhead, Open University Press.
- Lynch, K., Grummel, B., & Devine, D. (2012) *New managerialism in education: commercialisation, carelessness and gender*, Basingstoke: Palgrave
- Muijs, D., & Harris, A. (2003) Teacher leadership—Improvement through empowerment? An overview of the literature, *Educational Management Administration & Leadership*, 31(4), 437-448
- Murray, J. & McDowall Clark, R. (2013) Reframing leadership as a participative pedagogy: the working theories of early years professionals, *Early Years: An International Research Journal*, 33:3, 289-301
- O'Sullivan, H. and West-Burnham, J. (2011) *Leading and Managing Schools*. London: Sage
- Schein, E. H. (2004) *Organisational Culture and Leadership*. San Francisco, Jossey Bass
- Shields, C. (2013) *Transformative leadership in education: equitable change in an uncertain and complex world*. London: Routledge.

Spillane, J. P., R. R. Halverson, et al. (2001). "Investigating School Leadership Practice: A Distributed Perspective." *Educational Researcher* 30(3): 23-27.

St. John, E. (2013) *Research, Actionable Knowledge and Social Change, Reclaiming Social Responsibility through Research Partnerships*, Virginia:Stylus.

Sugrue, C. (2006). A Critical Appraisal of the Impact of International Agencies on Educational Reforms and Teachers' Lives and Work: The Case of Ireland? *European Educational Research Journal*, 5, 181-195

Sugrue, C. (2008). *The Future of Educational Change*, San Francisco, Routledge.

Thompson, P., Lingard, B. & Wrigley, T. (2012) Ideas for changing educational systems, educational policy and schools, *Critical Studies in Education*, 53 (1), 1–7

West-Burnham, J. (2003) *Learning to Lead: Handbook of Educational Leadership and Management*. J.

West-Burnham and B. Davis. London, Pearson Longman.

16. Evaluation

An on-line module survey will be administered at the end of the module and this will be considered by the course team.
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17. Module Coordinator

Dr Gavin Murphy

18. Module Teaching Team

Dr Gavin Murphy; Dr Ronan Smith; and others

MODULE SPECIFICATION

Programme(s) to which Module applies

Certificate in Education (21st Century STEM/CS Teaching and Learning)

1. Title of Module

Information Literacy through Contextualised Inquiry

2. Module Code

TA21-Mod-12 Optional

3. Entry Requirements (if applicable)

TA21-Mod-1

4. Level (JF, SF, JS, SS, Postgraduate)

Postgraduate

5. Module Size (hours and number of weeks)

Eight student contact hours which will combine both workshops and seminars based around readings and tasks which encompass inquiry based activities. 100 hours of student effort.

6. ECTS Value

5 ECTS

7. Rationale and Aims

Rationale

The main means by which students at post-primary and third level seek out information is via Internet searching. Many post-primary and third-level students consider themselves to have good ICT skills, but these skills do not naturally equate to good information literacy. This module will encourage students to reflect upon and develop their own information literacy skills while engaging in genuine, contextualised inquiry. As such, the core principles of inquiry-based learning will also be outlined and demonstrated in practice. Grounded in the Bridge21 model, this course will require students to critically reflect on processes for finding and assessing information. In doing so they will learn about how they learn, and gain an understanding of how they think about knowledge. Emerging from this process, students will then be required to design and deliver their own inquiry-based scenario that promotes the development of information literacy rooted in their own discipline. The module will examine how an 'information skills rich' inquiry can be used in tandem with plenary and whole class discussion to create dynamic learning experiences.

Aims

- To introduce the 6 core concepts of information literacy.
- To introduce Inquiry Based Learning and empower students to design their own discipline specific inquiries.
- To encourage students to reflect upon and develop their own research skills.

8. Learning Outcomes

On successful completion of this module, the student should be able to.

1. Use the internet effectively as a research resource.
2. Design their own contextualised inquiry.
3. Plan and implement strategies to teach inquiry skills in the classroom context.
4. Reflect upon their own learning.

9. Course Content and Syllabus

Information Literacy:

The emerging standards for Information Literacy
The core skills attendant to meeting these standards
The application of these standards through problem and inquiry based learning

Inquiry Based Learning:

The process of inquiry design, resourcing and implementation
Discerning the balance between inquiry and content, situating the inquiry in learning
The design, delivery and critical assessment of a contextualised inquiry

10. Teaching and Learning Methods

A flipped classroom approach will be followed and the face to face student contact sessions will be delivered according to the Bridge21 methodology.

Learners will be encouraged to participate in a community of practice with their peers which will be supported by College's VLE platform.

College guidelines on universal accessibility will be followed.

11. Required Equipment and Resources (if applicable)

Flexible learning space with ready-at-hand access to computers, the Internet, cameras (video and still), digital projector, sound recording, media editing and presentation tools.

12. Methods of Assessment (for example, essay, seminar paper, examination, presentation)

Students will be required to submit an evidence-based assignment (EBA) based on the creation and delivery of an inquiry based-learning experience with a group of learners of their choice. They will be required to reflect upon the lessons learned from the experience both for themselves as practitioners and for the target group of learners.

The EBA will comprise of the following items:

1. Description of the planned learning experience and its theoretical underpinnings.
2. A media presentation on an aspect of the delivery of the learning experience.
3. A structured reflection on the experience.

Students are free to use whatever digital media they wish for their submission but the written component should not exceed 2,500 words.

The assessment criteria are:

Demonstrating an understanding of information literacy and inquiry-based learning principles
Demonstrating an understanding of how to plan and implement a 21stC inquiry based learning experience
The depth and richness of the reflection provided.

Each of the above criteria are weighted equally.

13. Pass Requirement and assessment components to be listed in SITS

50% overall and 50% in each of the 3 components, weighted equally

14. Method of Supplemental Assessment

Failure in 1 component requires it to be resubmitted. Failure in 2 or more requires all 3 to be

resubmitted.

15. Recommended Reading Materials / Indicative Resources

21st Century Learning

Beetham, H., & Sharpe, R. (2013). Rethinking pedagogy for a digital age: Designing for 21st century learning: Routledge.

Lawlor J., Marshall K., Tangney B., Bridge21 – Exploring the potential to foster intrinsic student motivation through a team-based, technology mediated learning model, Technology, Pedagogy and Education, in press.

Conneely, C., Girvan, C., Tangney, B., Technology, An Exploratory Case Study into the Adaption of the Bridge21 Model for 21st Century Learning in Irish Classrooms, in editor(s) Marshall, K., , Shaping our Future: How the lessons of the past can shape educational transformation, Dublin, Liffey Press, in Press.

Information Literacy

Asselin, M. (2005) "Teaching information skills in the information age: An examination of trends in the middle grades", *School Libraries Worldwide*, 11(1), 17-36.

Asselin, M. (2002) "I wish someone had taught me": Information literacy in a teacher education programme, *Teacher Librarian* 30(2), 10-17

Breen, E., Fallon, H., 9 (2005) "Developing student information literacy to support project and problem-based learning" in Barrett, T., Mac Labhrainn, I., Fallon, H., (eds.) *Handbook of Enquiry and Problem Based Learning*, Galway: CELT. <http://www.aishe.org/readings/2005-2/index.html>

Bundy, A. (ed.) (2004) *Australian and New Zealand Information Literacy Framework: Principles, Standards and Practice*, 2nd edition. Adelaide: Australian and New Zealand Institute for Information Literacy. <http://www.library.unisa.edu.au/learn/infolit/infolit-2nd-edition.pdf>

Bundy, A. (2005) "Changing and connecting the educational silos: the potential of the information literacy framework", paper presented to the LILAC conference, Imperial College, UK. <http://www.lilacconference.com/dw/archive/resources/2005/bundy.pdf>

Crouse, W.F., Kasbohm, K.E. (2004), (2004). Information literacy in teacher education: A collaborative model. *Educational Forum*, 69, 44–52.

Graftstein, A. (2002). A discipline-based approach to information literacy. *The Journal of Academic Librarianship*, 28, 197–204.

Libutti, P.O., Gratch, B. (eds.) (1995) (Eds.) (1995). *Teaching information retrieval and evaluation skills to education students and practitioners: A casebook of applications*. Chicago: ACRL.

Rockman, I.F. (2003), (2003). Integrating information literacy into the learning outcomes of academic disciplines: A critical 21st-century issue. *College & Research Libraries News*, 64, 612–615.

Shinew, D.M., Walter, S. (Eds.) (2003). *Information literacy instruction for educators: Professional knowledge for an information age*. Binghamton, NY: The Haworth Information Press.

Witt, S.W., Dickinson, J.B., (2004). Teaching teachers to teach: Collaborating with a university education department to teach skills in information literacy pedagogy. *Behavioral & Social Sciences Librarian*, 22(1), 75–95.

Enquiry Based Learning

Markham, T., (2013) Inquiry Learning Vs. Standardised Content: Can they Coexist?
<http://thommarkham.com/index.php/edge-ucation-blog/entry/inquiry-based-learning-vs-standardized-content-can-they-coexist>

16. Evaluation

An on-line module survey will be administered at the end of the module and this will be considered by the course team.

17. Module Coordinator

Dr Brendan Tangney

18. Module Teaching Team

Dr Rebecca Long; Dr Kevin Sullivan; others
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APPENDIX 2 Assignment Cover Sheet & Title Sheet

TRINITY COLLEGE

School of Education in association with School of Computer Science & Statistics (SCSS), Centre for Research in IT in Education (CRITE) and Trinity Access Programme (TAP)

Cover Page for Postgraduate Certificate in 21st Century Teaching and Learning Assignment Submission

Please ensure that this completed form accompanies your assignment.

SURNAME: _____

FIRST NAME: _____

STUDENT NUMBER: _____

MODULE TITLE: _____

TITLE OF ASSIGNMENT: _____

MODULE TUTOR: _____

DATE SUBMITTED: _____

WORD COUNT: _____

I hereby declare that the work in this assignment is entirely my own and that the content has not been substantially, or is concurrently being used to meet the requirements for another module on this programme or for the award of another academic qualification. It includes the published and unpublished work of others, which is duly acknowledged in the text wherever relevant. I have read and I understand the plagiarism provisions in the General Regulations of the University Calendar for the current year, found at: <http://www.tcd.ie/calendar>. I have also completed the Online Tutorial on avoiding plagiarism 'Ready, Steady, Write', located at: [http://tcd-
ie.libguides.com/plagiarism/ready-steady-write](http://tcd.ie.libguides.com/plagiarism/ready-steady-write)

SIGNED:

University of Dublin

Trinity College

[Module Title]

[Assignment Title]

by

[YOUR NAME]

[YOUR STUDENT NUMBER]

A paper submitted to the School of Education, Trinity College Dublin, in partial fulfilment of the requirements for the award of the Postgraduate Certificate in 21st Century Teaching and Learning, [DATE]

APPENDIX 3 Referencing Conventions

Introduction

Using citations in your writing allows you to credit the ideas of others, whilst simultaneously increasing the credibility of your work. Citations also enable the reader to find the sources you have used. The citation style adopted by the School of Education is that of the American Psychological Association (APA), 7th Edition. The full APA 7th Edition guide can be found through the Trinity Library:

https://stella.catalogue.tcd.ie/iii/encore/record/C__Rb20328570_Smanual%20of%20the%20american%20psychological%20association_Orightresult_U_X6?lang=eng&suite=cobalt

If using citation software, you should format all entries as APA (7th Edition). It is the responsibility of the student to ensure that in-text and reference list citations are formatted according to the APA 7th Edition conventions, whether using citation software or not.

There are two primary components of a citation, **IN-TEXT** citations, and **REFERENCE LIST** citations. The following indicates how cited work should be included both in the text of your written coursework and in the list of references at the end of the assignment.

IN-TEXT CITATIONS:

When you reference another source, use an **IN-TEXT** citation in the main body of your submission. The APA citation style uses two types of in-text citations, **parenthetical**, and **narrative**.

Parenthetical: includes the author(s) and the date of publication within parentheses.

Narrative: links the author as part of the sentence with the date of publication (in parentheses).

Type of Author	Parenthetical:	Narrative:
1 Author	(Bruen, 2013)	According to Bruen (2013) ...
2 Authors	(Braun & Clarke, 2006)	Braun and Clarke (2013) argue that...
3-20 Authors	(Devine et al., 2008)	Research by Devine et al. (2008) suggests that...
21+ Authors	(Vos et al., 2019)	Vos et al.'s (2019) research indicates that...
Group/ Corporate Author	First time with an abbreviation: (Organisation for Economic Co-operation and Development [OECD], 2019) Then all subsequent citations: (OECD, 2019)	According to the Organisation for Economic Cooperation and Development (OECD, 2019)...
Unknown Author	Cite the source by its title. Titles of books and reports are italicized; titles of articles, chapters, and web pages are in quotation marks: (<i>How to Reference Correctly</i> , 2003)	In the book, <i>How to Reference Correctly</i> (2003) it is highlighted that...

Direct Quotations:

Paraphrasing or summarizing the key findings from a research article is the preferred method of citing sources in APA style, however if you are directly quoting or borrowing from another work, you should include the page number at the end of the citation. Short quotations of 40 words or less are quoted in the text, however long quotations over 40 words (block quotes) are laid out in a separate, indented paragraph of text without quotation marks.

1. Direct Short Quotation with Narrative Reference:

According to the Irish National Teachers' Organisation (INTO, 2022): "Access to home language instruction (including teaching materials), encouragement to speak existing languages on a day-to-day basis and the creation of a welcoming environment for children that values their languages, culture and home backgrounds is crucial" (p. 4).

2. Direct Short Quotation with Parenthetical Reference:

Effective teams can be difficult to describe because "high performance along one domain does not translate to high performance along another" (Ervin et al., 2018, p. 470).

NOTE: For quotes spanning multiple pages, use the abbreviation "pp." and separate the page range with an en dash (e.g., pp. 47–48).

3. Quoting References that Cite Other Works:

It is preferable to cite primary sources. However, when using secondary sources, cite the original author in parentheses followed by the author of the secondary source. Include page numbers if possible.

In text Citation: Include the author and year of both the original and secondary sources. Add "as cited in" between the sources in the in-text citation.

In Winne and Butler's (1994) study (as cited in Hattie & Timperley, 2007), it is argued that the benefits of feedback are heavily dependent...

...on which the benefits of feedback are heavily dependent (Winne & Butler, 1994, as cited in Hattie & Timperley, 2007).

Reference List: provide the details of the work in which you found the quotation or idea (i.e. the secondary source).

Hattie, J., & Timperley, H. (2007). The power of feedback. *Review of Educational Research*, 77(1), 81–112. <https://doi.org/10.3102/003465430298487>

REFERENCE LIST CITATIONS:

Complete citations for all the sources you have used in your assignment should be presented in a **REFERENCE LIST** at the end of your submission. References are organized by the author's last name in alphabetical (A-Z) order.

Basic Format:

Author, A. A., & Author, B. B. (Date). Title of the work. Source where you can retrieve the work. URL or DOI if available.

Reference list general rules:

1. Begin your list of references on a new page, headed with the word “References” in bold at the top and centred;
2. References are to be in a hanging indent format, meaning that the first line of each reference is set flush to the left-hand margin, with subsequent lines indented 0.5 in.;
3. Order the list of references alphabetically by author's last name. Authors' first and middle names should be written as initials;
4. Give the last name and first/middle initials for all authors of a particular work up to and including 20 authors;
5. If there is no author given, start with the first significant word in the title;
6. For several works by the same author, or authors listed in the same order, list the works in chronological order (earliest to most recent);
7. For titles of works, capitalise only the first word of the title and subtitle, and proper names;
8. Periodical titles should be written in full with both capital and lower case letters, and in italics;
9. Double space the entire list.

What is a DOI / URL?

The DOI (Digital Object Identifier) or URL (Uniform Resource Locator) is the last entry in a reference. A DOI is a unique identifier that provides a link to the original location of the source on the internet. The URL is a similar method of specifying the digital location of information on the internet. The URL is what is found in the address bar of your internet browser. According to APA 7th edition, DOI's should be included for all sources that have them. Failing the presence of a DOI, a URL should be used when referencing websites. The DOI or URL should be presented as hyperlinks (usually blue font, underlined), as follows:

<https://doi.org/xxxxx>.....

Example:

McCauley, S. M., & Christiansen, M. H. (2019). Language learning as language use: A cross-linguistic model of child language development. *Psychological Review*, 126(1), 1–51.

<https://doi.org/10.1037/rev0000126>

Single Vs. Multiple Authors

The following rules for sources by a single/multiple authors apply to **ALL** references in your reference list, regardless of the type of work (book, article, electronic resource, etc.).

Type of Author:	Guidance:	Reference:
1 Author	Last name first, followed by author initials.	Bruen, J. (2013). Towards a national policy for languages in education: The case of Ireland. <i>European Journal of Language Policy</i> , 5(1), 99–114. https://doi.org/10.3828/ejlp.2013.5
2 Authors	List by their last names and initials. Separate author names with a comma. Use the ampersand instead of "and."	Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. <i>Qualitative Research in Psychology</i> , 3(2), 77–101. https://doi.org/10.1191/1478088706qp063oa
3-20 Authors	List by last names and initials; commas separate author names, while the last author name is preceded again by ampersand.	Devine, D., Kenny, M., & Macneela, E. (2008). Naming the 'other': Children's construction and experience of racisms in Irish primary schools. <i>Race, Ethnicity and Education</i> , 11(4), 369–385. https://doi.org/10.1080/13613320802478879
21+ Authors	List by last names and initials; include the first 19 authors' names, insert an ellipsis (three dots) but no ampersand, and then add the final author's name.	Vos, T., Lim, S. S., Abbafati, C., Abbas, K. M., Abbasi, M., Abbasifard, M., Abbasi-Kangevari, M., Abbastabar, H., Abd-Allah, F., Abdelalim, A., Abdollahi, M., Abdollahpour, I., Abolhassani, H., Aboyans, V., Abrams, E. M., Abreu, L. G., Abrigo, M. R. M., Abu-Raddad, L. J., Abushouk, A. I., ...Murray, C, J. L. (2020). Global burden of 369 diseases and injuries in 204 countries and territories, 1990–2019: A systematic analysis for the Global Burden of Disease Study 2019. <i>The Lancet</i> , 396(10258), 1204–1222. https://doi.org/10.1016/S0140-6736(20)30925-9
Group/ Corporate Author	Treat the organization the same way you treat the author's name and format the rest of the citation as normal. Be sure to give the full name of the group author in your reference list.	Organisation for Economic Co-operation and Development. (2019). <i>Education at a glance 2019: OECD indicators</i> . OECD Publishing. https://doi.org/10.1787/f8d7880d-en .
Unknown Author:	Move the title of the work to the beginning of the references; follow with the date of publication.	<i>How to Reference Correctly</i> . (2003). Merriam-Webster.

EXAMPLES OF REFERENCES FROM DIFFERENT SOURCES:

1. Textual Works:

1.1. Periodicals:

Article without DOI:

Scruton, R. (1996). The eclipse of listening. *The New Criterion*, 15(3), 5–13.

Article with DOI/URL:

Bielsa, E. (2005). Globalisation and translation: A theoretical approach. *Language and Intercultural Communication*, 5(2), 131–144. <https://doi.org/10.1080/14708470508668889>

Magazine Article without DOI:

Rodgers, J. (2006, July). Extreme psychology. *Psychology Today*, 39(4), 86–93.

Magazine Article with DOI/URL:

Freedman, D. H. (2012, June). The perfected self. *The Atlantic*.
http://www.theatlantic.com/magazine/archive/2012/06/the-perfected-self/8970/4/?single_page=true

Newspaper Article without DOI:

Schultz, S. (2001, August 3). New drug appears to sharply cut risk of death from heart failure. *The Washington Post*, 1A, 2A.

News Article with DOI/URL:

Johnson, K. (2017, January 16). Rwanda takes vital baby steps for preschool education. *East African*. <https://www.theeastafrican.co.ke/Rwanda/News/Rwanda-takes-vital-baby-steps-for-preschool-education/1433218-3519704-bi37kl/index.html>

Special Issue of a Journal

Daller, M., Kuiken, F., Trenkic, D., & Vedder, I. (2021). Linguistic predictors of academic achievement amongst international students and home students in higher education [Special Issue]. *International Journal of Bilingual Education and Bilingualism*, 24(10).

<https://doi.org/10.1080/13670050.2021.1909452>

1.2. Books and Reference Works:

Book without DOI:

Bourdieu, P. (1991). *Language and symbolic power*. Polity Press.

Bloomberg, L. D., & Volpe, M. (2015). *Completing your qualitative Dissertation: A road map from beginning to end*. Sage.

Book with DOI/URL:

Baker, C., & Wright, W. E. (2021). *Foundations of bilingual education and bilingualism*. Multilingual Matters. <https://www.multilingual-matters.com/page/detail/?k=9781788929899>

Edited Book without DOI:

Strathern, M. (Ed.). (2000). *Audit cultures: Anthropological studies in accountability, ethics and the academy*. Routledge.

Edited Book with DOI/URL:

Triandafyllidou, A. (Ed.). (2018). *Handbook of migration and globalisation*. Edward Elgar. <https://doi.org/10.4337/9781785367519>

Chapter in a Book without DOI:

Kawulich, B., & Holland, L. (2012). Qualitative data analysis. In C. Wagner, B. Kawulich, & M. Garner (Eds.), *Doing social research: A global perspective* (pp. 228–245). McGraw-Hill Higher Education.

Chapter in a Book with DOI/URL:

Blackledge, A., & Creese, A. (2016). A linguistic ethnography of identity: Adopting a heteroglossic frame. In S. Preece (Ed.), *The Routledge handbook of language and identity* (pp. 272–288). Routledge. <https://doi.org/10.4324/9781315669816>

Electronic/ Kindle/ Audio Books without a DOI or database URL:

Cain, S. (2012). *Quiet: The power of introverts in a world that can't stop talking* (K. Mazur, Narr.) [Audiobook]. Random House Audio. <http://bit.ly/2G0BpbI>

1.3. Reports

ERIC Document

Asio, J. M. R., & Gadia, E. D. (2019). *Awareness and understanding of college students towards teacher bullying: Basis for policy inclusion in the student handbook* (ED595107). ERIC. <https://eric.ed.gov/?id=ED595107>

Government Report (Group Author)

United States Government Accountability Office. (2019). *Performance and accountability report: Fiscal year 2019*. <https://www.gao.gov/assets/710/702715.pdf>

National Cancer Institute. (2019). *Taking time: Support for people with cancer* (NIH Publication No. 18-2059). U.S. Department of Health and Human Services, National Institutes of Health. <https://www.cancer.gov/publications/patient-education/takingtime.pdf>

Government Report (Individual Author)

Gilmore, J., Woollam, P., Campbell, T., McLean, B., Roch, J., & Stephens, T. (1999). *Statistical report on the health of Canadians: Prepared by the Federal, Provincial and Territorial Advisory Committee on Population Health*. Health Canada, Statistics Canada, Canadian Institute for Health Information. <https://www150.statcan.gc.ca/n1/pub/82-570-x/4227736-eng.pdf>

Pearson, C. (2015). *The impact of mental health problems on family members*. Statistics Canada. <https://www150.statcan.gc.ca/n1/pub/82-624-x/2015001/article/14214-eng.pdf>

2. Reviews

Book Review without DOI:

King, N. (2009). The psychology of personal constructs [Review of the book *George Kelly: The psychology of personal constructs*, by T. Butt]. *History & Philosophy of Psychology*, 11(1), 44–47.

Book Review with DOI/URL:

Amrita, K. (2021). Book review: Writing about learning and teaching in higher education: Creating and contributing to scholarly conversations across a range of genres [Review of the book *Writing About Learning and Teaching in Higher Education: Creating and Contributing to Scholarly Conversations Across a Range of Genres*, by Healy, M., Matthews, K., & Cook-Sather, A.]. *Frontiers in Education*, 6 (6), 58–59. <https://doi.org/10.3389/feduc.2021.649647>

3. Reference Sources:

Entry In A Dictionary, Thesaurus, Or Encyclopaedia (Group Author)

Merriam-Webster, Incorporated. (1997). Goat. In *Merriam Webster's collegiate dictionary* (10th ed., pp. 499-500). Merriam-Webster, Incorporated.

Entry In A Dictionary, Thesaurus, Or Encyclopaedia (Individual Author)

Martin, M. (2018). Animals. In L. A. Schintler & C. L. McNeely (Eds), *Encyclopaedia of big data*. SpringerLink. https://doi.org/10.1007/978-3-319-32001-4_7-1

4. Dissertations:

Unpublished Dissertation:

O'Regan, M. (2022). *Networked in or networked out? Learners' experiences of completing a PhD on a part-time basis* [Unpublished doctoral Dissertation]. University of Dublin.

5. Other Electronic Sources

Webpage on a website:

National Institute of Mental Health. (2018, July). *Anxiety disorders*. U.S. Department of Health and Human Services, National Institutes of Health. <https://www.nimh.nih.gov/health/topics/anxiety-disorders/index.shtml>

Film or Movie:

Fleming, V. (Director). (1939). *Gone with the wind* [Film]. Selznick International Pictures; Metro-Goldwyn-Mayer.

TV Series:

Benioff, D., Casady, G., Doelger, F., Gerardis, V., & Weiss, D. B. (Executive Producers). (2011–2019). *Game of thrones* [TV series]. Television 360; Grok! Studio; Generator Entertainment; Bighead Littlehead; Home Box Office.

TV Series Episode:

Moran, D. (Writer), Linehan, G. (Writer & Director), & Wood, N. (Director). (2000). Cooking the books (Series 1, Episode 1) [TV series episode]. In W. Burdett-Coutts (Executive producer), *Black books*. Big Talk.

Data-set:

Grantmakers in the Arts. (2019). *Arts funding trends, United States, 1994-present* (ICPSR 37337) [Data set]. National Archive of Data on Arts & Culture. <https://www.icpsr.umich.edu/icpsrweb/NADAC/studies/37337>

PowerPoint Slides:

Jones, J. (2016, March 23). *Guided reading: Making the most of it* [PowerPoint slides]. SlideShare. <https://www.slideshare.net/hellojenjones/guided-reading-making-the-most-of-it>

Online Forum Post:

Lowry, L. [Lois-Lowry]. (2015, June 18). *Hi reddit! I am Lois Lowry, author of The Giver - AMA!* [Online forum post]. Reddit. <https://bit.ly/2CoiOTq>

Tweet:

National Geographic [@NatGeo]. (2020, January 12). *Scientists knew African grays are clever, but now they've been documented assisting other members of their species—even strangers* [Tweet]. Twitter. <https://twitter.com/NatGeo/status/1216346352063537154>

Blog Post:

Flores, N. (2020, August 26). *Nice white parents and dual language education* [Blog post]. The Educational Linguist. <https://educationallinguist.wordpress.com/2020/08/26/nice-white-parents-and-dual-language-education/>

Podcast:

Meraji, S. M., & Demby, G. (Hosts). (2016–present). *Code switch* [Audio podcast]. National Public Radio. <https://www.npr.org/podcasts/510312/codeswitch>

Podcast Episode:

Delaney, S. (Host). (2022, June 05). Social and emotional learning with Sara Rimm-Kaufman (No. 425) [Audio podcast episode]. In *Inside Education*. Spotify. <https://open.spotify.com/episode/2rh0P2YRNOpFRrtPaqjF2H>

APPENDIX 4 Critical Reflection Template

Critical Reflection involves a deeper analysis of personal actions within wider socio-politico-historical-economic-cultural contexts.

A model for critical reflection is to answer these questions:

“What Happened?”

“So What?”

“Now What?”

Thompson, N., & Pascal, J. (2012). Developing critically reflective practice. *Reflective Practice*, 13(2), 311-325.

Also refer to Bridge21’s “Teacher Reflective Practice Post-Workshop Page”, adapted from Adapted from Rolfe et al (2001): *Framework for Reflective Practice*

Workshop Reflection

1. What...?

PROMPT Qs: *What happened during this workshop? What did you observe? What did you achieve? What did your students achieve? What went well? What didn't go well?*

2. So What...?

PROMPT Qs: *What did you like/dislike about the workshop? How did you respond? How did you feel? Did you learn anything about yourself? Did you learn anything about your students?*

3. Now What...?

PROMPT Qs: *How will you apply what you have learned today in your teaching? How will it help you develop your students' learning further? How will you develop your learning further? What information can you share with colleagues?*

APPENDIX 5 Assignment Report Form

University of Dublin

Trinity College

Assignment Report Form for Postgraduate Certificate in 21st Century Teaching and Learning

Student Name:

Student Number:

Date of Submission:

Module Title:

Strengths of Assignment:

1.

2.

3.

Areas for Improvement:

1.

2.

3.

General Comments:

Provisional grade and mark awarded: (**SUBJECT TO THE AGREEMENT OF THE COURT OF EXAMINERS**)

Grade: Distinction [] Pass [] Fail []

Mark (%): _____

Signed: _____

Date:

APPENDIX 6 Draft Consent Form

Consent Form

The School of Education, Trinity College Dublin recognises the need to ensure the welfare and safety of all young people taking part in any activity associated with our organisation.

In accordance with this we do not permit photographs, video or other images of young people to be taken without the consent of the parents/carers and children. As your child will be taking part in a Digital Media Literacy project being undertaken by (*insert teacher's name*) during class time, we would like to ask for your consent to take photographs/videos/audio recordings of the event or activity that may contain images of your child. It is likely that these images may be used as

- a record of the activity or the event
- in a written assignment of the activity or event that will be viewed and evaluated by the course team in the School of Education, Trinity College Dublin, and by examiners for the purpose of assessment. It will not be subject to any public viewing.

The School of Education will take all steps to ensure these images are stored securely and used solely for the purposes they are intended.

We would be grateful if you and your child could complete this form and return it to (*insert teacher's name*) by the (*insert the date that you would like the completed form to be returned by*).

Parental consent

I _____ (*insert parent/carer name*) consent/do not consent (strike out as appropriate) to (*insert teacher's name*) photographing or videoing _____ (*insert name of child*) for the Digital Media Literacy project. I understand that these images may be submitted to Trinity College as part of a related assignment.

Date: _____

Signature: _____

Child Consent

I _____ (*insert name of child*) consent to (*insert teacher's name*) photographing or videoing my involvement in the Digital Media Literacy project. I understand that these images may be submitted to Trinity College as part of a related assignment.

Date: _____

Signature: _____