

Certifiably Curious: Why do Second-Level Teachers Engage in Industry AI Certification?

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Abstract

Over the past two years, the CSinc Research Centre at TU Dublin has facilitated several NVIDIA-certified workshops, specifically on The Fundamentals of Deep Learning. Prior to these Artificial Intelligence workshops, other professional learning events which the research team facilitated, typically had very low attendance (5-8 teachers per workshop), where these included events on the upper second-level computer science curriculum covering more general topics such as data analytics or Python programming. Conversely, the NVIDIA workshops were very well attended by second-level teachers, with around 100 teachers attending each workshop.

Given the substantial increase in attendance, we aimed to investigate what motivates teachers to engage with this type of technical Continuous Professional Learning workshops. To this end, we conducted several surveys with participants, investigating why they elected to attend an industry-level certification workshop, their self-reported importance of AI concepts in the classroom and, finally, what follow-on resources and professional learning events they would like in order to support their teaching. Our initial results indicate that improving technical understanding is a priority for teachers (even over industry-level certification itself). Furthermore, teachers prioritised technical learning for themselves, but ethical/human-centred AI for students. A positive note is that teachers predominantly report that they believe that human-centred AI is the most important concept in second-level Artificial Intelligence education. Supports which teachers would like to see developed included: linking content to the curriculum; an introductory approach to Machine Learning and the generic use of Artificial Intelligence.

As the integration of AI into the evolving Irish upper second-level curriculum continues to develop, alongside an increasing emphasis on human-centred approaches to AI design and application, there is a growing need for structured Continuous Professional Learning (CPL) initiatives supported by accessible resources and pedagogically grounded supports for teachers.

1. Introduction

The landscape of Irish second-level education is currently undergoing a period of significant transformation with the redevelopment of the Leaving Certificate Computer Science (LCCS) curriculum. As outlined in the National Council for Curriculum and Assessment (NCCA) draft specification (National Council for Curriculum and Assessment (NCCA), 2024a) in October 2025:

The study of computer science deepens the students' awareness of the ethical and social role of computers in society, supporting them to become informed users and creators of technologies.

The curriculum is made up of three related strands, *Practices and Principles*, *Core Concepts*, and *Computer Science in Practice*. These challenges are best addressed by making the teachers feel supported, specifically by improving self-efficacy (Faherty, Quille, & Becker, 2022). Many second-level teachers taking on this subject are out-of-field teachers, and some may not have much experience with topics such as AI and Machine Learning (ML). To gauge interest for supporting the upcoming curriculum in the area of AI, an NVIDIA industry certification workshop was piloted, covering The Fundamentals of Deep Learning (NVIDIA, n.d.). This one-day in-person workshop introduced learners to the methods and tools used to train a deep learning model, through a combination of lectures and data-focused activities. It was envisioned that only a handful of teachers would attend (given prior experience and attendance at other workshops the team delivered). However, almost 100 teachers registered.

The workshop introduced attendees to the basics of what is present in AI today which included the past of AI, the base elements of neural networks and their training. Teachers were also exposed to more advanced topics such as convolutional neural networks, data augmentation techniques, and transfer learning, using industry-relevant tools and frameworks. These elements aimed to provide a structured yet accessible entry point into complex AI concepts for teachers with limited prior experience in LCCS. The unexpectedly strong response to this optional professional learning event provided the impetus for the research presented in this paper.

To this point, we propose three **Research Questions (RQs)**:

RQ1: Why do second-level teachers elect to attend professional development workshops focused on industry certification in deep learning?

RQ2: How do teachers rank the importance of key artificial intelligence concepts for student learning?

RQ3: What resources or learning events would teachers like, in order to support their teaching of AI in the classroom?

To answer these research questions, we developed a survey targeting different second-level teacher/school demographics. Both quantitative and qualitative analysis has been conducted. It is worth mentioning that, although Artificial Intelligence (AI), Machine Learning (ML), and Deep Learning (DL) are technically distinct concepts, they are at times discussed interchangeably in this study when reflecting participant language and perceptions arising from the workshop context.

2. Literature Review

2.1. Computing Education in Ireland

A 2022 report from Lero, the Irish Software Research Centre, found that only a small proportion (~15%) of teachers delivering Computer Science (CS) held formal qualifications in the subject (Lero, the Irish Software Research Centre, 2022). Similarly, a cross-jurisdictional survey of the UK and Ireland indicated that Irish second-level teachers were significantly more likely than their UK counterparts to teach Computer Science without subject-specific qualifications (Sentance et al., 2022). In practice, the majority of LCCS classes in Ireland continue to be delivered by experienced second-level teachers who have transitioned into the subject from related disciplines, rather than by fully specialised Computer Science teachers (Lero, the Irish Software Research Centre, 2022; Department of Education, 2021).

Irish second-level education culminates in the Leaving Certificate (LC), and most Irish second-level students sit this examination (where ages typically range from 16-18 years old), selecting six to eight subjects from over 30 syllabi. Usually subjects offer examinations at two levels: Ordinary Level (OL) and Higher Level (HL). For most school leavers, LC performance is the main factor determining university entrance. LC exams are set and assessed centrally by government-approved bodies, and are typically studied during the final two years of second-level schooling, equivalent to grades 11-12 (the final two

years of high school) in the United States and many other regions (Brown et al., 2013; Faherty, Nolan, Quille, Becker, & Oldham, 2023).

Following extensive research (Keane & McInerney, 2017; Lehane, 2019), LCCS (National Council for Curriculum and Assessment and the Department of Education, Ireland (NCCA), 2023; National Council for Curriculum and Assessment (NCCA), 2024a) was introduced in 2018, marking a significant milestone in the Irish education system (National Council for Curriculum and Assessment (NCCA), 2024b; Faherty et al., 2023; Connolly, Byrne, & Oldham, 2022; Borges, McInerney, Exton, Harkin, & McGarr, 2024; Becker et al., 2023). The provision of LCCS in Irish second-level schools has been developing since 2015, when the Digital Strategy for Schools was published and highlighted the importance of coding and digital skills within the curriculum. 2018 then saw the introduction of LCCS as a full Leaving Certificate subject, initially rolled out to a selected group of pilot schools before broader national expansion (Department of Education and Skills, 2015; National Council for Curriculum and Assessment, 2018).

2.2. Lack of AI in CS Curriculum

In the Irish second-level context, AI is often introduced abruptly in non-formal settings, such as short-term workshops or extracurricular sessions, rather than through structured classroom instruction. Without explicit assessment requirements or detailed guidance, many schools rely on ad hoc experiences such as outreach initiatives or brief teacher-led activities to introduce AI concepts. Providers of online classroom supports for CS teachers in Ireland include *Scoilnet* (Scoilnet, 2025), *CS_{LINC}* (CS INC Team, 2025) ¹ and *Oide* (Oide, 2023). ²

Support for AI and digital competence is increasingly visible in Irish policy documents (Department of Education, Ireland, 2022; Department of Enterprise, Trade and Employment, Ireland, 2021; Government of Ireland, 2022a; Department of Education, Ireland, 2024; Government of Ireland, 2022b) alongside European-level frameworks (European Commission, 2022a, 2022b; Organisation for Economic Co-operation and Development (OECD), 2024; Miao & Holmes, 2023; European Commission and OECD, 2025). There are also examples of innovative use of GenAI in Irish universities (Schalk et al., 2025), and supports ³, guidance *The New Horizons for Higher Education: Teaching and Learning with Generative AI* report provides clear guidance and direction aimed at assisting institutional leaders shape policy and strategy for GenAI integration into teaching practice and analysis ⁴ is emerging in other contexts.

2.3. CS CPL in Ireland

A search of currently available Continuous Professional Learning (CPL) courses in CS was completed. The Education Support Centre Ireland (ESCI) (*Education Support Centres Ireland*, n.d.) website was used to gain insight into the types of computing-related courses are on offer to primary and post-primary teachers, see Table 1. "Computer Science" yielded two workshops related to training teachers for the Leaving Certificate curriculum. "Coding/Programming" highlighted sessions on basic visual programming language (Scratch). "AI" produced the highest number of results. None of these CPL offerings were directly related to how AI functioned nor did any relate to ML or statistics content. All of these

¹A range of free online courses are offered on the *CS_{LINC}* platform, including an AI/ML course, which is targeted at TY students (Mahon, Quille, Mac Namee, & Becker, 2022).

²A series of initiatives aimed at supporting teachers to integrate AI into education were launched in 2024. These included the *AI4EDU* pilot workshops held between March and December 2024 [https://ai4edu.eu/2024/03/14/irish-teachers-workshops-march-2024-dec/\[Workshops\]](https://ai4edu.eu/2024/03/14/irish-teachers-workshops-march-2024-dec/[Workshops]), and a large-scale educational AI pilot involving 300 teachers across 48 Irish schools. [https://www.lwebt.ie/mullingar-community-college-pioneers-ai-tech-in-classroom\[AI Pilot\]](https://www.lwebt.ie/mullingar-community-college-pioneers-ai-tech-in-classroom[AI Pilot]).

³On the 10th June, 2025, the Department for Education in the UK published a set of free online training materials to support the safe and effective use of GenAI in education <https://www.gov.uk/government/collections/using-ai-in-education-settings-support-materials> [Training materials].

⁴The *Coding Ireland* STEM Report 2025 aims to evaluate the current landscape of STEM and Digital Skills education across Ireland. It is based on a 2025 survey (19th March - 9th May), with comparative data from their 2024 survey. Findings include: 85% of post-primary teachers surveyed cite lack of knowledge/training as a major barrier, only 44% have the necessary equipment, and only 24% report sufficient funding. 61% of schools expect STEM's presence to grow over the next decade, 75% of schools view STEM & Digital Skills as very/extremely important (Coding Ireland, 2025).

were related to using AI as a tool, whether it was for building rubrics, lesson plans, or brainstorming. "Math/statistics" did not have crossover with AI or machine learning. These CPL courses were related to teaching a mathematics class or helping students in this space.

Search Term	No. of Results	Notes
<i>Computer Science</i>	2	Courses and workshops for introduction to CS for the leaving certificate content. Including online resources and pedagogical practices.
<i>Coding/Programming</i>	1	Basic how-to on Scratch
<i>AI</i>	127	All of these results are courses on how to use AI to assist in teaching.
<i>Maths/Statistics</i>	8	Sessions on supporting tools and advice with respect to teaching mathematics.

Table 1 – Search results for teacher CPL courses related to Computer Science.

2.4. Summary

Given the current combination of factors within Ireland's Computer Science landscape at second-level, it is clear that there are several hurdles in place for teachers to build confidence in delivering new LCCS topics in the classroom. While a large amount of CS teachers are considered to be out-of-field, the lack of CPL opportunities further limits their chance to upskill and gain adequate teaching experience in the topic. Furthermore the AI strand of the newly updated LCCS curriculum will not only add to the technical workload of teachers, it may also further distance teachers from a feeling of self-efficacy in relation to teaching AI concepts in the classroom. We don't yet have adequate insight into the full extent of supports and resources which teachers require in order to successfully embed AI into their teaching of LCCS. Through this study, we will explore some teachers' requirements around achieving this goal.

3. Methodology

3.1. Survey Development

After several iterations of this NVIDIA workshop on The Fundamentals of Deep Learning, we aimed to better understand why teachers were interested in participating in the first place. A survey was developed and distributed among all teachers who had registered for this workshop between 2024 and 2026. The survey was structured in a way that teacher attendance on the day was not a requirement for their feedback, rather their interest in the topic itself. Survey questions can be found in the Appendix. Aside from teacher/school demographics, three research questions were posed. For RQ1, teachers were asked about their primary reason for registering for this workshop. This was an open-ended question. As part of RQ2, we then asked teachers to rank in order of preference "the most important concepts of AI which students should learn". For RQ2, we provided a list of eight possible responses, which the research team selected based on previous face-to-face discussions with teachers and other researchers within the field, as well as several face validity sessions of refinement. Finally, for RQ3, we asked teachers what they would like to learn more about, "in order to support their teaching in the classroom". In the case of RQ3, we asked teachers to answer this qualitative question from the perspective of any "specific resources or learning events". In terms of survey analysis, responses to RQ1 and RQ3 were thematically analysed by the research team and sorted as such based on overall similarities in topic. RQ2 was analysed based on response ranking the frequency of response selection at this ranking.

3.2. Quantitative and Qualitative Analysis

The analytic approach for each research question was selected based on the type of the corresponding survey items, and the following sections discuss this approach framed by each research question.

3.2.1. Analysis of RQ1: Motivations for Attending Professional Development

To address RQ1, responses to the open-ended survey were analysed using thematic analysis following the approach outlined by Braun and Clarke (Braun & Clarke, 2006). Three researchers acted as raters

and engaged in a collaborative, reflexive analytic process consistent with Braun and Clarke's guidance (Braun & Clarke, 2021). Analysis took place over three one-hour sessions. During the first session, raters familiarised themselves with the data and generated initial inductive codes. In the second session, codes were discussed and grouped into candidate themes. In the final session, themes were reviewed, refined, and agreed upon through discussion until consensus was reached. This process emphasised shared interpretation rather than statistical measures of inter-rater reliability, to which Braun and Clarke suggest over blind inter-rater investigations.

While theme frequencies were recorded (as presented in section 4.1) to support transparency and coherence in theme development, the analysis focused on understanding the range and nature of teachers' motivations rather than on quantitative comparison. Examples of the theme "Technical Understanding" included:

To get an idea of what AI was all about and what was behind it.

and

I wanted to learn more about NVIDIA and AI. AI is changing all the time.

An example of "NA / Not Valid" where we simply could not apply a theme, was:

It was an interesting opportunity to attend and learn. I was unable to attend in the end. But would love an opportunity to attend in the future if it was run again. Thank you for the opportunity.

3.2.2. Analysis of RQ2: Ranking of AI Concepts

RQ2 was examined using responses from a structured ranking question. Participants were asked to identify and rank AI concepts from a predefined list. The analysis involved aggregating ranking selections to identify relative prioritisation across concepts. Frequencies were calculated for inclusion within the top three rankings, as well as for the last ranking frequency. This approach enabled examination of both highly prioritised concepts and those that were infrequently selected, providing insight into areas teachers perceive as more or less important for second-level AI education.

3.2.3. Analysis of RQ3: Desired Learning Events and Supports

To address RQ3, responses to the open-ended survey were analysed using Braun and Clarke's thematic analysis approach (Braun & Clarke, 2006, 2021). The same three raters participated in the analysis, following an identical three-session structure to that used for RQ1.

During theme refinement, responses were organised into two higher-level categories that emerged from the data (inductive approach (Braun & Clarke, 2006)): *Learning Events* (L) and *Supports/Resources* (S). Learning events captured requests related to professional learning experiences, instructional focus, and curricular alignment, while supports/resources referred to classroom-ready materials, examples, activities, and implementation aids. Responses that could not be meaningfully coded were categorised as not.

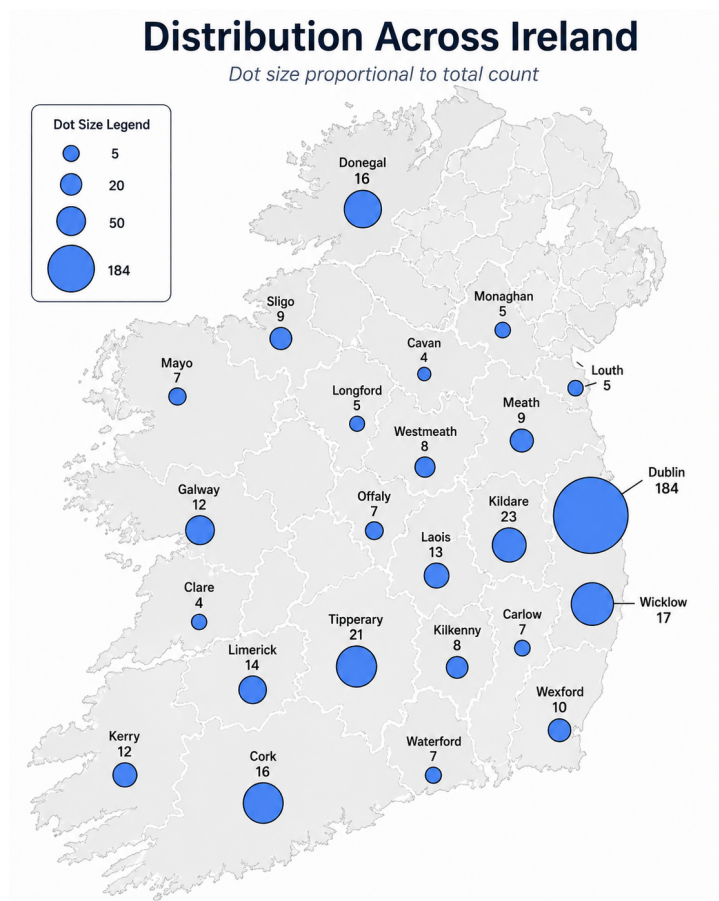


Figure 1 – Geographical distribution of registered participants across Ireland. Dot size is proportional to the total number of registrations from each county.

An example of the theme "L: Generic AI use" included:

How to use it to build teaching resources and activities. How to teach students to use it effectively for course work, activities and assessment.

An example of "NA" was:

I am very open-minded when it comes to areas of study and continuous professional development. In-person learning events are the most beneficial in my opinion.

An example of "S: Resources":

More student-level friendly resources and activities

Finally, an example of "L: Maths for AI":

More of the maths behind the model for the students who want to engage on a deeper level

3.3. Profile of Teachers' Schools

This section outlines the demographic profile of the schools in which teachers, who registered for the training, teach. We collected the unique school ID (role number) and then mapped to a Government school database to obtain school demographic data. Three workshops were delivered during the 2024–2026 academic years. In total, 525 participants registered across the three sessions. Teachers were drawn from across Ireland, with the geographical distribution of registrations illustrated in Figure 1. The dot size in the figure is proportional to the number of registrations from each county.

Where school-level information was provided (~ 430), participants represented a range of school contexts, including mixed, all-boys and all-girls schools; DEIS and non-DEIS schools (DEIS stands for

Table 2 – Summary of school characteristics

Variable	Category	Total
Gender	Mixed	314
Gender	Boys / Male	58
Gender	Girls / Female	57
DEIS status	DEIS	69
DEIS status	non-DEIS	261
Language medium	Gaelscoil	11
Language medium	English	419
Fee-paying status	Fees / Fee-paying	37
Fee-paying status	Free / Non-fee-paying	393

"Delivering Equality of Opportunity in Schools" and represents schools which have been categorised as educationally disadvantaged by the Department of Education ⁵); English-medium and Irish-medium schools; and fee-paying and non-fee-paying schools. The distribution of these school characteristics is shown in Table 2.

Overall, the registration demographics indicate that the workshops attracted a broad national audience, with participants registering from across multiple counties. The second-level school profile data also suggests diversity across participating school contexts. Registrants included participants from mixed, all-boys and all-girls schools, as well as DEIS and non-DEIS schools, English-medium and Irish-medium settings, and fee-paying and non-fee-paying schools. This indicates that the workshops was of interest to a varied educational audience. This demographic data provides a profile of those who registered for the workshops and highlights the range of educational contexts interested in this training. It should also be noted that totals vary across categories because not all participants provided complete demographic or school-level information during registration.

3.4. Study Limitations

- There were more than 500 registrations and 400+ schools. However, engaged survey responses were considerably lower (n=34).
- Bias: Teachers who registered for this workshop and are already interested in AI completed these surveys. Hence our findings may over-represent highly motivated or AI-positive teachers (but not all Irish teachers).
- Research Question 2 (RQ2) used pre-defined categories.

4. Results

This section presents the results in relation to the three RQ's. Section 5 subsequently analyses each set of findings, first in relation to the individual RQ's and then holistically, in order to offer a broader interpretative perspective.

4.1. RQ1: Why do second-level teachers elect to attend professional development workshops focused on industry certification in deep learning?

Table 3 presents the frequency of themes that were reported by teachers. Some open-ended responses included more than one theme, thus the total frequency of themes reported exceeds the $n = 34$ teacher responses. The highest number of themes reported from a single teacher response was four, where 61% of responses only reported one theme.

⁵<https://www.gov.ie/en/department-of-education/policy-information/deis-delivering-equality-of-opportunity-in-schools/>

Table 3 – Themes and Frequencies for RQ1

Theme	Frequency
Technical understanding	24
Certification	6
General AI application	5
Professional networking	3
Teaching about AI	3
NA / Not valid	2
Ethical AI	1
Confidence for teaching	1
Use cases	1
Student future jobs	1

For the theme **Technical Understanding** some of the teachers quoted:

"To gain further insight into machine learning, LLMs and data science."

and

"The opportunity to learn more about AI as well as NVIDIA certification would have been a huge bonus."

For the theme **NA / Not Valid**, there were two responses, where one teacher did not attend, and the other quoted (a note of thanks):

"It was an interesting opportunity to learn. I was unable to attend in the end. But would love an opportunity to attend in the future if it was run again. Thank you for the opportunity."

4.2. How do teachers rank the importance of key artificial intelligence concepts for student learning?

To answer RQ2, Figure 2 indicates distinct differences in how teachers prioritised the importance of key AI concepts for student learning in second-level schools across first, second and third rankings. Overall, the theme of *"The human-centred nature of AI, i.e., ethics and bias"* was the first-place votes ($n = 15$), as well as the highest cumulative top-three ranking ($n = 23$) (see Table 4). This also demonstrates that there are 15 out of 34 teachers who listed it as a strong preference for learning the concepts of ethical and societal AI.

The second most prioritised cumulative top three ranking theme was *"A broader understanding of where AI can be applied across the world"*, which received a high number of top 3 votes ($n = 17$), whereas relatively first-place ranking ($n = 3$). However, it had the most votes in second ranking ($n = 8$) and the second most votes in third ranking ($n = 6$). It shows that teachers perceive this theme as broadly important for students, though not their top priority.

Meanwhile, ranking results of the theme *"The general use of AI in education (i.e., ChatGPT in the classroom, in any subject)"* showed middle rankings of importance of key AI concepts at first, second and third ranking ($n = 5, 7, 4$), resulting in a third highest overall top-three ranking ($n = 16$).

Two themes, *"Understanding and evaluating AI models"* (Top-three: $n = 14$) and *"Using AI tools in a CS classroom, in order to support programming or other CS activities"* (Top-3: $n = 11$), are mid-ranks at overall top-three ranking list. In particular, the theme *"Understanding and evaluating AI models"* has been voted as the second priority concept. The results indicate that both conceptual understanding and applied classroom integration are of moderate interest; teachers might have applied these in their teaching activities, though they are not considered top priorities.

Lower-ranked themes are related to AI techniques: *"Using AI tools in a CS classroom, in order to support programming or other CS activities"* (Top three: $n = 11$) and *"Building AI from scratch in*

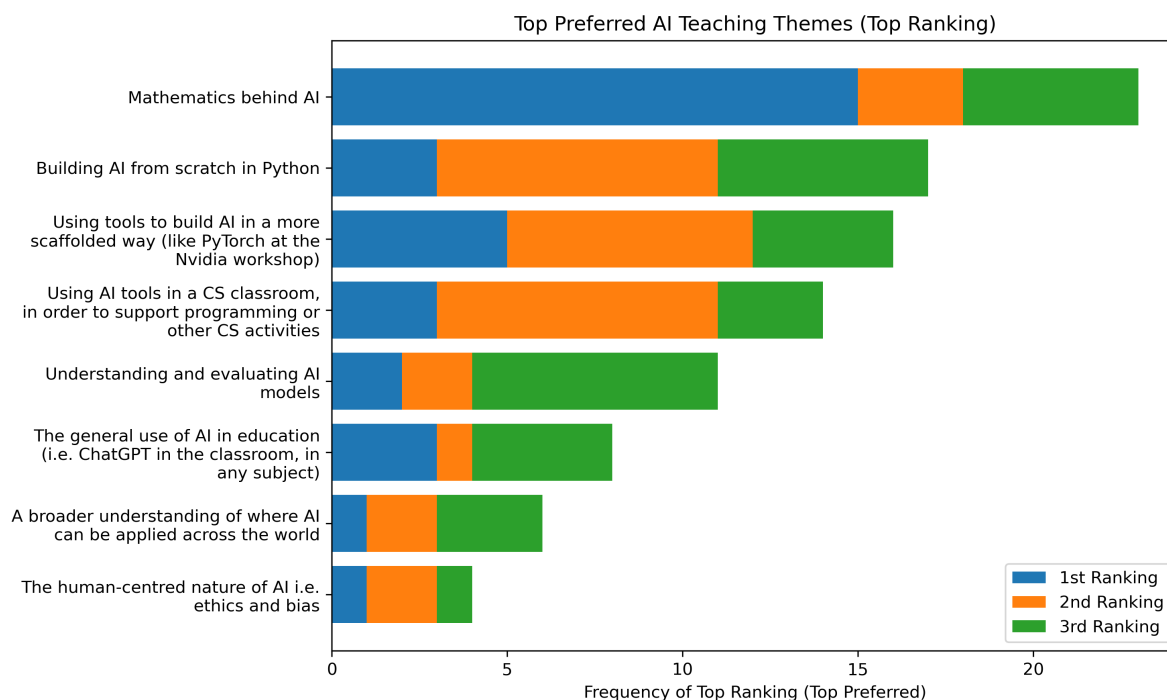


Figure 2 – Top Frequency Ranking AI Teaching Themes

Python” (Top-three: $n = 6$). These can indicate that demands for AI techniques and developments are of lower importance in post-primary education. Finally, *“The mathematics behind AI”* is ranked lowest overall (Top three: $n = 4$), with only one teacher ranking it as first-place.

To further investigate teachers’ preferences of learning AI, Table 5 illustrates that the distribution of last-place rankings, based on the concepts which teachers are least curious to learn about. Eight teachers each ranked *“AI from scratch in Python”* and *“The mathematics behind AI”* as the lowest preferences, which suggests that these technically intensive topics are the least appealing. Followed by *“Using tools to build AI in a more scaffolded way (like PyTorch at the NVIDIA workshop)”* ($n = 5$), while *“The general use of AI in education (i.e., ChatGPT in the classroom, in any subject)”* and *“Using AI tools in a CS classroom, in order to support programming or other CS activities”* ($n = 4$ each) ranked mid-levels of last-place rankings, which is similar to results of top-preferred rankings.

In contrast, in the case of the themes *“A broader understanding of where AI can be applied across*

Table 4 – The frequency of Top Themes for RQ2

Responses	Top 3	1st	2nd	3rd
The human-centred nature of AI (i.e. ethics and bias)	23	15	3	5
A broader understanding of where AI can be applied across the world	17	3	8	6
The general use of AI in education (i.e. ChatGPT in the classroom, in any subject)	16	5	7	4
Understanding and evaluating AI models	14	3	8	3
Using AI tools in a CS classroom, in order to support programming or other CS activities	11	2	2	7
Using tools to build AI in a more scaffolded way (like PyTorch at the NVIDIA workshop)	8	3	1	4
Building AI from scratch in Python	6	1	2	3
The mathematics behind AI	4	1	2	1

Table 5 – The frequency of the last ranking for RQ2

Responses	Frequency of the Last Ranking
Building AI from scratch in Python	8
The mathematics behind AI	8
Using tools to build AI in a more scaffolded way (like Py-Torch at the NVIDIA workshop)	5
The general use of AI in education (i.e., ChatGPT in the classroom, in any subject)	4
Using AI tools in a CS classroom, in order to support programming or other CS activities	4
A broader understanding of where AI can be applied across the world	2
The human-centred nature of AI (i.e. ethics and bias)	2
Understanding and evaluating AI models	0

the world” and *“The general use of AI in education (i.e. ChatGPT in the classroom, in any subject)”* ($n = 2$ each), results showed that only two teachers each listed these two topics as the least significant topics, indicating relatively higher acceptance. Notably, no teacher ranked the theme *“Understanding and evaluating AI models”* in last place ($n = 0$), indicating that it is valued by all teachers, although it was at mid-ranking in the Top-three ranking list (see Table 4). For the details of the number of last-place rankings, see Table 5.

4.3. What resources or learning events would teachers like, in order to support their teaching of AI in the classroom?

Table 6 shows the frequency of themes identified from teachers’ responses about their learning needs and the supports required for teaching AI in the classroom. Responses were categorised into two overarching themes: **Learning Events** and **Supports/Resources**, with several teachers identifying multiple themes within a single response. The most frequently identified learning needs related to generic AI use, introductory approaches to machine learning, and linking AI content to the LCCS curriculum – each reported six times. In terms of supports, requests for practical examples were most prominent, indicating a strong demand for concrete, classroom-ready materials.

Within the **Learning Events** theme, teachers highlighted the importance of developing a stronger understanding of AI concepts and building confidence in their own knowledge:

“I want to dig as deep as I can into this area so that I can understand it in such a way that I can teach my students confidently ...”

This was further reflected in concerns around the timing and use of AI tools in the classroom:

“If we introduce AI tools too early ... we risk skipping over the fundamentals ... how to think, how to design, how to persevere, how to debug ... More emphasis needs to be on the ‘about AI’ rather than the ‘how to use it’.”

In contrast, responses within the **Supports/Resources** theme focused on the need for practical examples and classroom-ready materials:

“Examples of where teaching of AI in the classroom works and examples where it doesn’t. Methods that can be used and resources.”

Examples of responses which were considered **NA/Not Valid**, include:

“I am very open minded when it comes to areas of study and continuous professional development. In person learning evens are the most beneficial in my opinion.”

Table 6 – The frequency of requested learning events and resources

Learning Events and Supports/Resources	Frequency
L: Generic AI use	6
L: Introductory Approach ML	6
L: Linking to LCCS	6
L: Additional NVIDIA	3
L: Maths for AI	3
L: AI in Block Based Environments	2
L: Generic Ethical use	2
L: AI in Primary	1
L: Ethics for LCCS	1
L: GenAI for Coding	1
L: General Understanding	1
L: Introductory No/Low Code ML	1
L: More Depth	1
S: Examples	4
S: Applications in Real World	2
S: Resources	2
S: Activities	1
S: Additional Models	1
S: Pre-made Classes (i.e. lesson plans, classroom activities)	1
S: NA/Not Valid	5

and

"I would love to attend another event as I missed the February one"

5. Discussion

This section approaches the discussion through a dual analytical lens. Firstly, it examines the implications of our findings in relation to each individual research question, with particular attention to their significance for teacher professional learning in the context of teaching about AI. This involves critically interpreting how the results inform current understandings of reasons to attend, instructional practices, and the supports required for educators to effectively engage with AI-related content in classroom settings.

Secondly, this section brings together these discrete insights to construct a more holistic, integrative perspective. By drawing together the outcomes associated with each research question, it provides an “aerial view” of the broader implications for the LCCS with respect to teacher professional learning. This is of value to the authors as a research centre as well as national professional learning providers where this may also be applicable to providers internationally, where AI is being integrated into second-level curricula.

5.1. RQ1

The findings for RQ1, which examine the motivations underpinning educators’ attendance at an NVIDIA CPL workshop, reveal a clear prioritisation of technical capacity-building over pedagogical or ethical considerations, substantially outweighing all other categories. This strong emphasis suggests that educators perceive a significant need to develop foundational and advanced knowledge of AI systems, likely reflecting both the novelty of the domain and perceived knowledge gaps in their existing professional preparation. From a professional learning perspective, this indicates that teachers are primarily motivated by content mastery and conceptual clarity when engaging with AI-related CPL opportunities.

A secondary, though considerably less prominent, motivation relates to industry-level certification ($n = 6$). We initially hypothesised that this would be the most popular reason for attendance, as this NVIDIA certification is typically valued at \$500, which could have been perceived as a strong motivator. Nevertheless, this finding points to the instrumental value placed on formal recognition of learning and the value of the workshop (as it was free for teachers) or its perceived monetary value.

Professional networking was not expected to feature as highly, and although a small number reported it, teachers perceive that there is value in attending an event like this to network with their peer. While this may be applicable to many forms of professional learning, it was reported as important to some teachers in this particular context.

Notably and finally for RQ1, themes relating to broader societal and educational implications, such as ethical AI ($n = 1$), are minimally represented. The scarcity of references to ethical considerations is particularly striking given the prominence of ethics in AI discourse and in both the current and the draft NCCA specification. This could indicate a gap in teacher awareness or prioritisation of responsible AI practices within their professional learning trajectories.

5.2. RQ2

Analysis in Section 4.2 showed that concepts related to human-centred and application-oriented AI topics are more important for teachers than technical and theoretical AI content. These themes are related to the general use of AI and tools in education, indicating that teachers value relevant practice, rather than simply focusing on a methodology of building AI systems. In other words, teachers may be more interested in understanding where AI can be applied and how it can be integrated into their teaching and learning environments.

From the results of what teachers ranked last (least important), building AI from scratch in Python and understanding mathematics in AI themes were the lowest ranked. In particular, in the case of the theme of understanding and evaluating AI models, teachers still recognise the importance of interpreting and assessing AI systems, though they may not need to apply AI technical implementation. To this point, it is clear that there is a potential need for understanding and evaluating approaches to applying or teaching AI concepts through classroom activities, but not purely AI technical training or instruction.

Therefore, the results of rankings from teachers suggest that a human-centred approach to AI in education, combining ethics, applications and evaluating AI technical understanding may be the most effective approach to match teachers' needs within an industry AI training setting. Interestingly, this aligns closely with the new NCCA draft LCCS curriculum.

5.3. RQ3

The results of the frequency of requested learning events and resources reflect that teachers have strong motivations to learn generic examples and foundational understanding, as they need to follow the LCCS syllabus when teaching students. We can see this from the top three results of learning events in Table 6. Moreover, this is further re-enforced with the highest result in the supports/resources section, regarding examples. The second highest, "Applications in Real World" and "Resources", also serve as a good contextual cue for the classroom. Currently most CPL courses regarding AI are related to the use of AI (see Section 2.3). From our results, it shows that teachers are more interested in the practical foundations and examples of AI and ML.

6. Conclusion

The findings from this study provide early insights into second-level teachers' motivations, priorities, and professional learning needs related to AI education within the Irish curriculum context. When considered in conjunction, the findings from RQ1 and RQ2 present an apparent tension regarding the role of ethical and human-centred AI (HCAI) in teacher priorities. Specifically, while ethical and human-centred considerations are largely absent in teachers' self-reported motivations for attending CPL (RQ1), they emerge as comparatively highly valued when teachers are prompted to rank AI-related topics (RQ2). This divergence may be interpreted as a confounding finding; however, a closer analysis suggests a more nuanced explanation rooted in teachers' conceptual framing, experience, and professional learning needs.

One plausible interpretation is that this discrepancy reflects a distinction between implicit valuation and explicit articulation. In RQ1, where responses were open-ended, teachers overwhelmingly foregrounded technical understanding, likely because this represents a perceived deficit area in their knowledge base. Ethical AI, by contrast, may not be spontaneously articulated as a priority because it is either:

- (a) less well understood as a distinct domain,
- (b) perceived as secondary to foundational knowledge, or
- (c) subsumed within broader notions of “application” or “responsible use” without being explicitly named.

This suggests a potential issue of language and conceptual awareness, where teachers may value HCAI principles but lack the disciplinary vocabulary or confidence to express these as standalone professional learning goals. In contrast, RQ2 required teachers to engage with predefined categories, making ethical and human-centred AI more visible as constructs. Within this structured context, teachers rated these dimensions as important, indicating that when prompted, they recognise the relevance of ethical considerations, application contexts, and evaluation of AI systems. This aligns with a broader shift away from technical implementation (as present in the draft LCCS specification) towards interpretive, applied, and socially situated understandings of AI, an orientation consistent with HCAI frameworks.

This interpretation is further nuanced when RQ3 is considered, as it provides insight into the specific types of learning supports and resources teachers perceive as valuable. The most frequently identified needs were generic AI use, introductory machine learning approaches, and explicit linking to the LCCS curriculum (each $n = 6$). These reinforce the centrality of accessibility and contextual relevance in professional learning design. Teachers are not merely seeking abstract knowledge but are prioritising entry points that translate AI concepts into classroom practice.

Notably, ethical AI appears only marginally in these responses, further supporting the pattern observed in RQ1: ethics is not foregrounded as an immediate support need. However, its presence, albeit limited, suggests that when situated within concrete teaching contexts, it gains relevance. Collectively, RQ3 indicates that teachers' priorities centre on usable, curriculum-aligned, and scaffolded resources.

Taken together, the combined findings across RQ1–RQ3 suggest not a contradiction, but a misalignment between teachers' immediate perceived needs and their broader professional priorities. Teachers appear to prioritise technical and introductory access points, alongside practical teaching supports, while simultaneously recognising (when prompted) the importance of ethical and human-centred AI. For LCCS and teacher professional learning in Ireland, this underscores the importance of designing CPL that is explicitly structured, pedagogically grounded, and integrative. Ethical AI should not be treated as an abstract add-on, but embedded within applications, examples, and curriculum-linked activities.

With all of the above in mind, we intend to refine how we engage with teachers about AI and ML, based on their requested resources and learning supports. We hope to restructure the pre-existing NVIDIA workshop to fit more closely with the preferred format and needs of teachers, particularly through greater

integration of the new LCCS AI content. Finally, it is our intention to delve deeper into further iterations of this research, with a larger cohort of educators and perhaps second-level students. This approach may prove especially insightful in correlation with the incoming AI strand of the LCCS curriculum.

7. Appendix

7.1. Survey Questions

1. *What was your primary reason for registering/attending this workshop? Please provide as many details as possible, even if you did not attend the workshop. (For example, did you want NVIDIA certification or to learn more about AI etc?)*
2. *In my opinion, the most important concepts of AI which students should learn about are: (Please rank in order of preference)*
 - *The mathematics behind AI*
 - *Building AI from scratch in Python*
 - *Using tools to build AI in a more scaffolded way (like PyTorch at the NVIDIA workshop)*
 - *Understanding and evaluating AI models*
 - *Using AI tools in a CS classroom, in order to support programming or other CS activities*
 - *A broader understanding of where AI can be applied across the world*
 - *The human-centred nature of AI i.e. ethics and bias*
 - *The general use of AI in education (i.e. ChatGPT in the classroom, in any subject)*
3. *What would you like to learn more about, in order to support your teaching of AI in the classroom? Are there specific resources or learning events which you feel would be of benefit?*

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