NCCA
An Chomhairle Náisiúnta Curaclaim agus Measúnachta
National Council for Curriculum and Assessment

Report on the consultation on the background papers and briefs for the review of Tranche 3 subjects

May 2025

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Introduction

The Senior Cycle Review: Advisory Report (NCCA 2022) was published in March 2022 following the response from the then Minister for Education, Norma Foley, TD. Actions outlined in the Advisory Report include a review of existing curriculum components - subjects, modules, and programmes. In March 2022, the Minister for Education requested that NCCA undertake a series of actions to support the realisation of her vision for a redeveloped senior cycle as set out in Equity and Excellence for All (Department of Education, 2022.) One key action set out in this plan was that a schedule of senior cycle subjects and modules for redevelopment be prepared for approval by the Minister.

NCCA subsequently prepared a schedule of subjects for review, which was organised into a number of tranches. The redevelopment of the tranche 3 subjects will be completed in 2026 for introduction to schools in September 2027. To inform a review of the tranche 3 subjects, a Background Paper and Brief for each subject was developed[1].

The Background Papers provide an overview of the current context in which the review and redevelopment of the tranche 3 subjects are taking place. The papers were informed by the views of teachers, school leaders and students gathered through a series of school visits conducted in a representative sample of schools. Each paper included a consideration of relevant policy developments and looked at how each subject is currently provided for within the Irish curriculum. The papers include an overview of similar education opportunities internationally, by presenting how the curriculum areas are offered in different jurisdictions before concluding with issues which were identified for consideration in the development of a new or revised specification and setting out a proposed brief to guide the work of the development group.

These Background Papers and Briefs were approved for consultation by Council on December 11, 2024, and the public consultation ran from January 6 to February 28, 2025. The aim of the consultation on the Background Papers and Briefs was to seek the views of interested parties in relation to the ideas and issues set out to inform the work of the development groups.

[1] There was no Background Paper and Brief developed for the tranche 3 subject of Computer Science as an early enactment review of this specification was conducted in 2022. The report on that review is supporting the Computer Science Development Group with their work.

The following sections of this report will elaborate on aspects of the consultation feedback. Section One provides an overview of the consultation process. Section Two provides insights into the feedback from the consultation while Section Three presents a conclusion and identifies the next steps.

Section 1: Consultation Process

Consultation is a key aspect of NCCA's work, where advice is shaped by feedback from the public, schools, settings, education interests and others. The following section presents an overview of the approach employed during this consultation which is underpinned by the principles set out in NCCA's Research Strategy (2023) and provides a summary of engagement during the consultation.

Consultation responses

The consultation was based on an online survey with four questions that focused on the opportunities and challenges for the redevelopment of the subject and supports needed for the successful redevelopment and enactment of the subject.

The table below details the level of engagement with the consultation.

Subject	Number of responses
Agricultural Science	30
Design and Communication Graphics	69
History	129
Home Economics	218
Mathematics	281
Music	122
Physics and Chemistry	12

Table 1: Number of responses to online survey

In the case of History, Mathematics and Physics and Chemistry written submissions were also received. 4 were received for History, 4 for Mathematics and 1 for Physics and Chemistry.

Section 2: Feedback from the consultation

This section presents a subject-by-subject overview of the feedback received during the consultation for each of the tranche 3 subjects.

Agricultural Science

There were 30 responses to the online survey for the consultation on the Background Paper and Brief for the review of Leaving Certificate Agricultural Science (NCCA, 2024a). Valuable insights into the opportunities and challenges associated with the subject redevelopment were expressed, as were views on assessment arrangements and the necessary supports required for successful enactment of the redeveloped curriculum specification, all of which are summarised below.

Opportunities and Challenges

The biggest challenge identified by teachers is ensuring clarity in the learning outcomes of the redeveloped specification. There is a perception that the learning outcomes of the current specification lack clarity which negatively impacts teachers' ability to feel confident they have adequately prepared their students to perform to their highest potential in the Leaving Certificate examination. Some respondents suggested that the redevelopment should balance clarity and flexibility in the specification, ensuring the subject stays relevant to students. Others saw it as a chance to specify content related to exam questions.

It was noted that Agricultural Science should enjoy greater parity of esteem as a science subject, and it was suggested that this could be achieved through adopting common design features with the recently developed Leaving Certificate Biology, Chemistry and Physics specifications, such as a 'Nature of Science' unifying strand and the crosscutting themes of *Sustainability*, *Health*, and *Technology*. There was also a welcome for a similar degree of clarity in the 'students learn about' column for the redeveloped Agricultural Science specification. Some respondents noted the absence of any mention of agriculture in junior cycle and suggested placing a greater emphasis on agriculture across junior cycle subjects, including Junior Cycle Science to support alignment, and to enable greater continuity and progression to senior cycle.

It was suggested to reduce the level of detail in which some areas of the current specification are explored, including:

- extensive exploration of cation exchange capacity in relation to Soils
- certain specified practical activities (SPAs).

It was suggested that SPAs related to genetics and plant hybridisation, in particular, might be reconsidered or removed. They are seen as currently not working successfully and, in certain instances, while the theory is taught, students do not have the opportunity to complete the practical activities. Some respondents noted a perceived imbalance of access and challenge in relation to the SPAs, some are seen as being too easy, whilst others deemed too long and cumbersome to complete in a one-hour class. Respondents suggested there should be an increased focus on sustainability and biodiversity as well as a focus on produce from Irish agriculture. A concern was expressed that the presentation of the current specification supports teaching in a topic-specific manner, and that a redevelopment could consider a presentation that

highlights certain themes or concepts (e.g. sustainability) that would support teaching and learning that connects and integrates learning related to soils, crops, and animals, for example.

The Additional Assessment Component (AAC) came in for much discussion. Some respondents considered the increased weighting of the AAC to 40% as an opportunity, whilst others saw it as a challenge and would prefer the weighting to stay at 25%. Reasons cited for the concern include the increased emphasis on AACs across senior cycle and the demands this places on students, as well as the resource implications for schools, including the need for guidance on the use of AI. A range of ideas for a reimagined AAC were suggested, including students incorporating learning from an agricultural setting they visited. The benefit of the coursework on the pre-2019 syllabus, which enabled students to gain real-life experience of a farm, was noted. Another suggestion was that students would be required to complete a smaller number of projects, which would be combined to form an AAC. This, it was felt might have the potential to reduce stresses on teachers in arranging access to lab facilities.

Some see the fact that the Agricultural Science specification is being redeveloped after only six years as an opportunity to hear diverse voices and to recalibrate the emphasis on learning about critical issues such as environmental sustainability. Others perceive the redevelopment as a challenge and are concerned that some teachers may be just getting to grips with the current specification. The importance of teacher voice, at every stage in the redevelopment work was noted, including on development groups, as part of consultation events, and in wide ranging and representative school visits.

Supports for redevelopment and enactment

Feedback indicated concerns over a perceived decline in the number of students choosing Agricultural Science in recent years. Opportunities for specifying real and relevant learning that responds to the diverse interests of students could be a means by which to address this decline. Some suggestions in this regard related to a broader, systemic perspective on redevelopment and enactment. These included a specification with a greater relevance for students progressing to further studies in agriculture, whilst also making the subject attainable for all students, including those studying at ordinary level. Respondents advocated for a specification that respected diversity in the curriculum and associated learning experiences. In this regard, greater representation of women in agriculture and input from other voices, such as diverse communities in other countries and the Traveller community in Ireland in meaningful, non-tokenistic ways was encouraged.

It was noted that as society increasingly urbanises, connection with agriculture is changing rapidly. Thus, there is a need to maintain students' affinity with practical elements of agriculture through their learning in this subject. A focus on natural heritage and biodiversity was suggested. Cultural and built heritage, including traditional farm buildings, machinery, and traditional farming practices and skills, could help students experience the subject in practical and relevant ways. A strong case was made by some respondents to incorporate practical and field visits, and that a visit to a farm and/or alternative agricultural educational settings should be compulsory.

Some respondents pointed to wider tensions in discourse around agricultural practices. It was suggested that the enactment of a redeveloped specification should endeavour to strike a balance between engaging with the issues that influence the agricultural sector (e.g. climate change and biodiversity) and the lived experiences of students whose families and/or communities may be

already involved in enacting policies within the sector. For this to occur, it was suggested that teachers would need time and space within the curriculum to enable them to make the learning relevant for their students. Opportunities for learning related to local and regional agricultural issues was suggested as a positive approach in this regard.

Respondents suggested a range of supports which they considered necessary for successful enactment. These included laboratory space, laboratory technicians, and appropriate digital infrastructure. It was suggested that teacher professional learning might focus on building students' digital capacity, so they are free to engage with the agricultural science aspects of their AAC; this approach, it was felt, might support teachers who fear their students may not have the digital skills perceived necessary to complete their AAC. Respondents made various suggestions for resources they felt would improve their confidence in curriculum sense making, including timely release of sample exam papers, a sample brief, sample AACs, schemes of work, and supports for teachers who may not be from an agricultural background, such as information on relevant agricultural policies and schemes.

Design and Communication Graphics

There were 69 responses to the online survey for the consultation on the Background Paper and Brief for Leaving Certificate Design and Communication Graphics (DCG) (NCCA, 2024b). Respondents broadly welcomed the redevelopment of Leaving Certificate DCG. The engagement in the consultation offers valuable insights into the opportunities, challenges, and necessary supports for redeveloping and enacting Leaving Certificate DCG, which are outlined below.

Opportunities and Challenges

Many respondents view the redevelopment of DCG as an opportunity to reduce the current subject content. They emphasised the need to strengthen students' understanding of geometry, particularly its real-world applications in structural forms. Others highlighted the importance of providing opportunities in the redeveloped curriculum for students to develop skills in computer-aided design (CAD), freehand sketching, and design problem-solving through their study of geometry. Some respondents questioned the relevance of some optional areas of study in the current syllabus and suggested updating them to reduce workload, better reflect modern applications, and appeal to a wider range of students.

Some respondents identified time constraints as a challenge in the current learning experience for students. Other respondents suggested that the extensive content to be covered can sometimes lead to rote learning where students focus on completing questions rather than developing a deep understanding of key concepts. Some respondents emphasised the need for creating more opportunities for students to engage in an iterative process of design while studying geometry. Similarly, some noted the challenge of finding time for students to practise sketching skills, while others advocated for more classroom time for CAD to enhance student learning. The redevelopment of DCG presents an opportunity to review pedagogical approaches that foster deeper engagement and ensure a more effective use of time for student learning.

The treatment of design in DCG was another point of discussion among respondents. While many highlighted the importance of geometry, others suggested that a redeveloped curriculum with a greater emphasis on design could make the subject more appealing and relevant to contemporary career pathways. Additionally, some respondents identified universal design as a valuable area of learning that could be incorporated into the study of DCG. The subject's name was also a topic of debate, with some respondents highlighting that the current name is misleading, particularly regarding the role of design, and suggested establishing a clearer, more accurate title. Given the varying perspectives on the role of design in the subject, the redevelopment of DCG offers an opportunity to clarify and strengthen the subject's identity.

Many respondents suggested that incorporating technologies such as virtual reality (VR), augmented reality (AR), 3D printing, and prototyping/card modelling could make the subject more engaging, modern, and aligned with career paths post senior cycle. The student assignment was an important point of discussion. Many respondents identified opportunities to redevelop the student assignment, with an emphasis on reducing the number of outputs to alleviate the demands on students and teachers. Some respondents suggested that the focus on this assignment from September to January in sixth year restricts time for board drawing practice and exam preparation. As a result, they suggested restructuring the Additional Assessment Component (AAC) to be completed before Christmas of sixth year, which would create more

opportunities for students to engage with board drawing, an important aspect of their learning experience. While some respondents acknowledged the potential opportunities that Artificial Intelligence (AI) presents in education, other respondents highlighted concerns about the increasing use of AI in student project work and the impact on the authenticity of submissions. They suggested that the curriculum will need to be carefully adapted to address these technological advancements.

The use of CAD software in DCG was another point of feedback. Many respondents supported the continued use of SolidWorks as the primary software package, while others highlighted Onshape's cloud-based accessibility. Some respondents raised concerns about the integrity of assessments if a transition to a cloud-based CAD package were to occur. Regarding the final examination, the need for choice and flexibility was emphasised, and a careful consideration of the examination format to ensure accessibility for students.

Some respondents noted that students who did not study Junior Cycle Graphics may lack the foundational knowledge required for Leaving Certificate DCG, which may impede their progress in the subject. Respondents highlighted that the redevelopment of the curriculum should support students for the transition from Junior Cycle to Senior Cycle.

Supports for redevelopment and enactment

Respondents emphasised the need for a curriculum specification that offered clarity of the learning for teachers and students. Ensuring inclusivity and accessibility for all students was also highlighted as a priority to broaden engagement and enhance learning opportunities. Many respondents emphasised the need for dedicated IT funding to upgrade computers, ensuring that all schools have the necessary equipment to run CAD software. Current inequalities in access to essential resources, such as high-performance computers, 3D printers, and CAD software, were also highlighted by some respondents and seen as something that needs consideration.

Additionally, a well-funded, structured, and in-person Teacher Professional Learning (TPL) programme was strongly advocated, building on the success of T4 training during the initial DCG rollout. Key areas for TPL should include sketching, drawing, retraining in CAD software such as SolidWorks and Onshape, and staying updated on emerging technologies such as VR, AR, and AI. It was suggested that the development of a design toolkit could support students studying Leaving Certificate DCG.

Some respondents suggested collaboration with various stakeholders, including those in Higher and Further Education, statutory and public bodies, design agencies, and industry, which could help shape the curriculum to better align with future career prospects. Respondents also called for the early release of sample assessment materials, including sample papers and exemplars, along with clear guidelines, and advocated for ongoing engagement with teachers and students to help ensure the curriculum remains effective, relevant, and adaptable to evolving needs.

History

There were 129 responses to the online survey for the consultation on the Background Paper and Brief for the review of Leaving Certificate History (NCCA 2024c) and four organisational submissions. These varied and valuable responses were largely supportive of the need for redevelopment and offered rich insights into the opportunities and challenges, as well as necessary supports for redeveloping and enacting the new specification for Leaving Certificate History, all of which are outlined below.

Opportunities and Challenges

The current history syllabus is acknowledged by most respondents to the consultation as being robust, fair and appropriate. However, they see opportunities for improvements on many levels in a redeveloped specification. For example, respondents commented on the importance of refocusing the curriculum specification to incorporate the development of critical thinking skills and research practices which would allow students to engage more actively in evidence analysis, interpretation and comparison. They also believed that the volume of content needed to be addressed, and in general it was agreed that a specification with a focused approach to historical analysis would be more accessible for students and would also allow for a deeper engagement with the material. However, this had to be balanced with a wide variety of topic options and more flexibility in choosing these options. For example, respondents commented on the absence of African, Middle Eastern and Asian histories as well as the predominant western-centric approach to the existing subject material. Respondents also believed that the voices of marginalised communities, women's history, working class histories and local history had to be included within the new specification.

In redeveloping Leaving Certificate History, respondents commented that there was an opportunity to review the existing assessment arrangements. Many respondents believed that a reduced emphasis on the final written examination was important for students and that an increased weighting on the Additional Assessment Component (AAC) was a way of achieving this reduced emphasis. A number of respondents also commented that the redevelopment presented an opportunity to design examination questions that prioritised analytical thinking over speed writing.

Most respondents wished to retain the Research Study Report (RSR) in some format and believed that this RSR was a useful vehicle for the development of research and critical thinking skills. Respondents also believed that the integration of a digital approach in developing research and critical thinking skills was important especially in the context of recognising both mis/disinformation and the appropriate use of Artificial Intelligence (AI).

In terms of challenges, respondents were concerned that any redevelopment must be informed by teachers who have a practical knowledge of engaging with the subject matter in the classroom environment. As previously stated, the current syllabus is well liked, and respondents were concerned that many of the topics could be lost to this redevelopment. They acknowledged that some refocusing and reformatting may need to take place but that the core of the syllabus needs to be retained.

Whilst many respondents welcomed the increase in value of the AAC to 40%, some had concerns over the use of AI, especially (but not exclusively) in the context of completing the RSR. Furthermore, although they acknowledged the importance of the use of digital technology to find,

investigate and analyse sources, they were concerned that AI could be used inappropriately in this space. They commented that ethical approaches to the use of AI had to be built into the specification to avoid such issues. Another challenge to the redevelopment process was schools with limited access to technology. Respondents believed that many students would struggle to gain access to technology which could adversely affect their research studies and perpetuate a cycle of disadvantage. A managed roll out of technology, with sufficient funding, to all schools was, according to many respondents, critical to the successful implementation of the new specification.

Respondents were concerned about the already high workload of teachers and with the upskilling required before teaching the new specification, even more would be required of history teachers. With this in mind, many respondents commented on the importance of appropriate and timely professional training, a clear route to the roll out of the specification and early access to sample papers and assessment guidelines. The planning of deadlines for the AAC was also an area of concern for many respondents who commented that students had at least 7 subjects where AACs were required and indeed many teachers taught 2 or 3 subjects that included these new AACs. They requested that timelines be carefully planned to avoid unnecessary student stress at critical points in their final year.

Supports for redevelopment and enactment

Respondents indicated that a focused and appropriate teacher professional learning (TPL) programme is also crucial for successful enactment. This programme must take cognisance of not only historical content but teaching strategies and methodologies that target the development of critical thinking and research skills in students.

Respondents believed that a balance of historical knowledge and analytical skills was critical to the new specification, and with this in mind commented that there needed to be a reduction in rote learning and a more diverse approach to assessment methodologies. These assessment methodologies had to take account of the rise of AI. There was a strong consensus across responses that significant guidance and supports will be needed to enable teachers to deal with the use of AI in the context of assessment. Clear rubrics, exemplars and marking schemes would also add to the clarity needed when engaging with the new specification. Some respondents also believed that a glossary of defining terms could be a useful tool for exploring historical content as these could support teachers and students when engaging with complex topics and assist in developing an in-depth understanding of the use of language in different historical contexts. In addition, student access to a digital repository of resources could potentially support a wide variety of learning both within the classroom environment and when engaging with project work.

Respondents noted that a careful restructuring of the specification would have long term benefits for students in terms of their understanding of historical events and their skills to understand, analyse and interpret the consequences of such events.

Home Economics

There were 218 responses to the consultation on the Background Paper and Brief for the review of Leaving Certificate Home Economics Scientific and Social (NCCA, 2025d). The report presents the key opportunities, challenges, and necessary supports identified by respondents for successful redevelopment and enactment, all of which are outlined below.

Opportunities and Challenges

Respondents were broadly positive about Leaving Certificate Home Economics, recognising the value of the subject in contributing towards healthy and sustainable living, while identifying elements that need to be modernised. The key themes of food and nutrition, sustainability, resource management and social studies were well-supported, with respondents calling for these areas to be updated to reflect contemporary issues and approaches. Respondents welcomed the opportunity with the new specification to move away from rote learning of factual information, such as consumer laws or the workings of appliances, and move the focus to applying knowledge in practical contexts.

The consultation revealed strong support for rebalancing Home Economics from the current theoretical focus towards more practical, applied learning. Respondents advocated for integrating practical skills throughout the specification, with particular emphasis on practical food skills, but also including consumer education, practical textile skills and resource management applied to real-life situations. This, they indicated, would ensure the subject remains relevant and meaningful for students with real-world applications in daily life, future careers and independent living beyond school.

Redeveloping the approaches to assessment emerged as a particular opportunity. Respondents viewed the introduction of a practical food skills examination, where students are required to demonstrate the application of their understanding of nutrition alongside practical food skills in real-time, as a significant opportunity for students to demonstrate their learning rather than simply recalling theory. There was widespread dissatisfaction with the current Food Studies Journal assessment, described as overly time-consuming, theory-heavy, and ineffective at assessing practical learning.

The gender imbalance in the uptake of Home Economics was identified as both a challenge and an opportunity for change. The Background Paper clearly showed that male participation in Home Economics drops considerably from junior to senior cycle. Respondents strongly advocated for updating the curriculum and repositioning the subject's image to make it more inclusive. Increasing emphasis on practical food skills, nutrition, and universally relevant life skills was consistently highlighted as essential for widening the appeal of the subject. While a minority of respondents suggested renaming the subject to increase appeal, most respondents favoured maintaining "Home Economics" while rebranding its image. The feedback consistently pointed to the need for challenging stereotypes as relevant to all students, regardless of gender, highlighting the discipline's international standing and academic credibility.

The role of textiles in a redeveloped Home Economics curriculum sparked diverse viewpoints. Some respondents advocated for incorporating textiles into the specification through contemporary applications such as sustainable fashion and interior design, noting that textiles education addresses global challenges of overconsumption while teaching about ethical

consumption. Others argued that the limitations of a 180-hour specification and the need to rebalance theoretical and practical elements necessitates focusing on core food, nutrition, and resource management topics, potentially removing textiles entirely. This divergence of opinion indicates the need for careful consideration of textiles within the redeveloped specification, with the potential for a modern textiles' element presenting a compelling direction for curriculum development.

Respondents emphasised that students need to develop digital literacy skills in Home Economics. These skills are increasingly important as technology in the home becomes more advanced, with students needing to critically evaluate online food information, analyse digital food labels, use recipe platforms, and utilise software for tasks like meal planning and budgeting. However, the consultation revealed concerns about digital inequality, with schools having varying levels of access to technology, potentially disadvantaging students in schools with limited ICT resources.

The challenges associated with the move to one-hour class periods was consistently highlighted by respondents during the consultation.

Supports for redevelopment and enactment

Comprehensive teacher professional development was identified as essential. Respondents stressed the need for in-person teacher professional learning to upskill in practical areas, such as practical food skills, food science, textiles and fashion, digital literacy, and contemporary pedagogical methods for applied learning. This support should ideally be provided well in advance of enactment, with respondents requesting that samples of the AAC and sample examination papers be made available during this lead-in period.

Respondents stated that the practical nature of Home Economics requires substantial resources, with many schools currently struggling to maintain or upgrade facilities. For schools to effectively enact a specification with potentially a greater focus on hands-on, practical applications, respondents emphasised the need for fully equipped, practical classrooms. Some respondents also advocated for classroom technicians or teaching assistants to support practical Home Economics classes with preparation, setup, and cleanup, allowing teachers to focus more on teaching and less on logistics of practical lessons.

Improved access to digital technology infrastructure was highlighted as essential for teaching, learning and assessment in Home Economics, particularly given the State Examinations Commission's move towards digital submission formats for written components. Respondents called for equitable funding to ensure all schools can provide adequate digital resources. Respondents emphasised the need for teacher professional learning focused on integrating digital literacy skills, providing guidance on effective and ethical technology use, including appropriate approaches to AI tools. Clear guidelines on AI use were deemed necessary to ensure students develop key competencies rather than relying on AI-generated content.

In a response to increasing the uptake of the subject, respondents called for greater efforts to communicate more clearly what the subject entails to shift student perceptions and showcase its relevance to understanding and addressing contemporary issues, indicate potential career pathways, and helping to overcome stereotypes and misconceptions.

Mathematics

281 online survey responses and 4 submissions were received in the consultation on the Background Paper and Brief for the Leaving Certificate Mathematics (NCCA, 2024e). In general, contributors to the consultation supported the redevelopment of LC Mathematics. Challenges and opportunities associated with the redevelopment process were expressed, as were views on assessment arrangements and the necessary supports required for successful enactment, all of which are summarised below.

Opportunities and Challenges

Respondents agreed with the sentiments expressed in the Background Paper that the current course is too long and welcomed the opportunity to redress this through the redevelopment. It was suggested that a reduction in the breadth of the current syllabus at all levels has the potential to foster a richer and more engaging learning experience for students that would allow for a deeper exploration of mathematics and problem solving deemed necessary for achieving mathematical proficiency.

There was a consensus that the redevelopment should provide mathematical opportunities that better match students' needs. There were suggestions that this might be achieved through the specification of everyday mathematics that students will need for life beyond school at Foundation Level; core mathematics considered a foundation for study beyond school at Ordinary Level; and rigorous mathematics for those wishing to progress to specialised mathematical study at Higher Level. Others referred to the modularisation that occurs in other international jurisdictions as a more inclusive way of ensuring relevant and appropriate school mathematical experiences for all.

Respondents reported that this redevelopment brings an opportunity to specify mathematics in a way that encourages learning with understanding**.** It was widely acknowledged that there is a need for increasing procedural fluency and quick recall of knowledge for efficiency, but that this must not be conflated with learning rules without reasons.

There were many suggestions received as to what content should be included or removed in the redevelopment, however, it was acknowledged that such decisions would require considered deliberation. The scope for developing meaningful mathematical thinking capacities and strong problem-solving skills with a renewed approach to geometry, algebra, calculus and the development of financial literacy were mentioned in this regard.

Respondents agreed with the sentiments expressed in the Background Paper in relation to the use of technology in mathematics education and there is support for the inclusion of technology such as dynamic geometry software and graphic calculators.

There was consensus in relation to the unintended consequences experienced as a result of the introduction of bonus CAO points cited in the Background Paper and respondents were unanimous in their perception of the opportunity that may arise following the redevelopment of the curriculum to redress this issue. The need to allow time for teachers to teach the course to the required depth and for students to have meaningful learning experiences without compromising important mathematical topics was identified as a significant challenge. The provision of appropriate course options, mentioned above, that better suit the needs of students and a rethink of the awarding of bonus points were seen as a way to ameliorate this.

The greatest challenge cited by respondents was in relation to the AAC. There is a perception amongst many respondents that the fairest and most valid way to assess mathematical competence is through a terminal written examination so, for these respondents the move to a single written examination paper supplemented by an AAC is seen as an insurmountable challenge. For others, the reduced reliance on written examinations is welcome. They perceive the AAC as an opportunity, allowing for a more flexible, student-centred approach, offering relevant experiences and applications of mathematics, and an opportunity to explore areas of personal interest where students can achieve in a non-pressurised environment.

Respondents unanimously disagreed with the 40% weighting of the AAC due to a perception that it will be such that students will find it easy to achieve success in this component thus placing extra pressure on the final written examination. There was no consensus, however, on the nature of the AAC with views polarised in this regard. There was a presumption that the AAC would involve completing a project for submission to the SEC, and whilst some felt this would be appropriate since it encourages the development of competencies such as independent and peer-to-peer learning, problem-solving, improved critical thinking skills and creativity, others disagreed. Interestingly, in relation to a project-based AAC, one area of concern relates to a perception that a project has the potential to disadvantage high achieving students the most. Other suggestions received included an open-book examination, a controlled examination involving statistical analysis of data and a series of short submissions completed at different times throughout the course. Plagiarism, the use of AI and the lack of appropriate resources were noted as concerns by many.

Supports for redevelopment and enactment

The provision of technology supported by appropriate updating and teacher professional learning were noted as essential for successful enactment of a redeveloped specification. In addition, respondents noted the need for support in how to mitigate the negative consequences of the emergence of AI in the educational landscape. Textbooks and time allocation for teaching mathematics came in for mention; it was noted that textbooks can often promote inappropriate approaches to teaching and learning; as such, a set of textbooks developed by a team of specialists, including but not limited to teachers, ought to be commissioned and paid for by the DE. In relation to time allocation for teaching mathematics and, in the interest of ensuring equity, respondents would like a mandate from the DE in relation to maximum class size and allocation of teaching hours. The need for targeted supports for inexperienced teachers and students who struggle with mathematics was noted.

Music

There were 122 responses to the online survey for the consultation on the Background Paper and Brief for Leaving Certificate Music (NCCA, 2024f). Respondents, in general, supported the redevelopment of Leaving Certificate Music and the timely nature of same. The engagement in the consultation offers valuable insights into the opportunities, challenges and necessary supports for redeveloping and enacting Leaving Certificate Music, which are outlined below.

Opportunities and Challenges

Respondents acknowledged that there was much to be lauded in the current syllabus and its assessment while identifying opportunities offered by the redevelopment of the curriculum. There was broad welcome for the subject remaining ab initio at Higher and Ordinary levels and for the opportunity to provide continuity between junior and senior cycle.

It was clear from respondents that there is a desire for a more integrated approach to composing, listening and performing in a redeveloped specification. Achieving this was viewed as requiring changes in pedagogical approaches and in how the specification might be structured and the learning assessed.

In relation to composition, it was suggested that in a redeveloped specification, creative opportunities would be greatly enhanced if students could hear their music and if they could compose with the aid of an instrument or technology. This development was viewed as having the ability to promote self-expression and provide a greater degree of student choice, in their creative processes, and in their compositions. Using an instrument or technology was also viewed to be more reflective of how music is created currently in the real world.

A Composition Portfolio, currently utilised at junior cycle, was referenced as an opportunity to be progressed at senior cycle. It was suggested that the reflection opportunities offered through the use of a portfolio could contribute to enhanced musical experiences for students across the three components of composing, listening and performing. Challenges raised included how to have a portfolio recognised and rewarded in an assessment.

Some respondents advocated for a greater degree of student autonomy in the notation formats of their compositions. While Western notation was viewed as fundamental to student learning, feedback indicated that there should be greater freedom and flexibility in the use of other notation formats for students. However, it was acknowledged that this may be a challenge as there are varying levels of teacher experience in forms of notation other than Western notation.

Expanding the range of music that students are exposed to as part of a redeveloped specification was referenced frequently as an opportunity to broaden and deepen the scope of the subject. There was welcome for opportunities to: provide greater gender balance in terms of the music which students listen to; modernise the repertoire; engage with a greater array of styles; focus on developing aural awareness, understanding and the interrelationship between different styles; and select a repertoire which enhances pedagogical opportunities for the integration of composing, listening and performing in the classroom. Many respondents expressed a preference for prescribed works or a suggested list of works or styles from which to select, over complete freedom of choice, as this approach would provide a standardised listening framework for all students.

In general, respondents favoured the inclusion of Irish Traditional Music in a redeveloped specification. Heritage and cultural reasons were cited for its inclusion and many respondents viewed the redevelopment as an opportunity to focus learning in this area through aural experiences.

The performance component received much feedback throughout the consultation. In general, respondents viewed performance as the most appropriate form of AAC for the subject. There was a strong preference in the feedback for 50% of the marks to be awarded to a performance-based assessment. Reasons cited included the practical nature of music, high levels of student enjoyment and the potential of the performing to encourage subject uptake. In other feedback relating to performing there were suggestions to: broaden the performance parameters for students (similar to junior cycle which were viewed as inclusive); include the creation of a programme note to accompany the students' performance; facilitate students to perform their own composition(s) as part of the performance; and focus performances on a particular theme. Some respondents suggested reducing performance assessment requirements citing challenges in the areas of equity and accessibility for some students.

Respondents saw the redevelopment as an opportunity to consider wider issues including the lifelong value of learning music, skills which are applicable to careers in music, functional music and the music industry.

There was broad agreement that redevelopment offered opportunities to modernise the inclusion of digital technology. There was feedback which suggested that digital technology offered many opportunities including: to support students in creative composition, arranging music, as well as facilitating students to compose collaboratively; and to reflect contemporary industry practices and student interests. Processing effects, production, copyright, publishing, marketing and social media were among the suggestions for consideration in a redeveloped specification. Equity and access to digital technology were seen as challenges for many schools.

Supports for redevelopment and enactment

Respondents referenced some concerns around the time available to manage the enactment of a redeveloped music specification within the context of the overall redevelopment of senior cycle. Timely, ongoing and in-person professional development for teachers in advance of the introduction of the specification was viewed as essential in supporting successful enactment. Key areas identified for targeted teacher professional learning included digital technology, creative composition and planning supports which outline effective pedagogical approaches.

Resources including investment in digital technology devices, access to professional digital music software programmes, basic music hardware such as a microphone and amplification and an updating of the schools' musical instruments, were referenced as critical to the redevelopment of the subject.

The need for clarity in relation to learning outcomes and assessment targets was widely expressed. Respondents stated that sample assessment materials, including the provision of sample examination papers and marking schemes, should be made available at the earliest opportunity to support the enactment of the specification.

Physics and Chemistry

12 online survey responses and 1 submission were received for the consultation on the Background Paper and Brief for the Leaving Certificate Physics and Chemistry (NCCA, 2024g). Contributors to the consultation in general supported the redevelopment of LC Physics and Chemistry (Phys-Chem) and the timely nature of same. They shared their views on how the subject could be reimagined, modernised and made more appealing to a greater number of schools and students, through the redevelopment process. Challenges and opportunities associated with the redevelopment process were expressed, as were views on assessment arrangements and the necessary supports required for successful enactment, all of which are summarised below.

Opportunities and Challenges

Respondents welcomed the opportunity to redevelop the curriculum, often citing that the subject was dated and the supporting syllabus was vague. They noted, in particular, the potential for renaming the subject to reflect a modern and reimagined specification with clear aims, objectives and supporting learning outcomes that would enjoy parity of esteem with other LC science subjects. Many respondents identified the importance of investigative work and saw the redevelopment as an opportunity to include learning outcomes with a practical focus.

The opportunities that engagement with real world applications of both physics and chemistry could provide was noted as a significant opportunity by many. Including a focus on industry and careers has the potential to encourage a relevant and motivating learning experience for students and a shift away from the current emphasis on rote learning. A curricular emphasis on the application of knowledge and understanding to new and novel situations was noted as desirable and reflective of what is expected in the workplace.

The unique opportunity currently provided by the subject, that is to study both physics and chemistry, as a single subject in order to develop a solid foundation in the physical sciences was remarked as being noteworthy and one that should be retained in the redevelopment. The redeveloped subject should continue to support students to engage with a range of diverse futures, including STEM pathways. Concern was raised by some that the redeveloped specification might become too content heavy, particularly given the interdisciplinary nature of the subject, which might have the undesirable effect of narrowing its appeal. Striking a balance within the specification between the development of core knowledge and adaptable investigative skills with a focus on deep, rather than surface learning was suggested as a means of ameliorating this concern.

Many suggestions were put forward on the learning that might be included in a redeveloped specification likely to modernise LC Physics and Chemistry (Phys-Chem). Green chemistry and physics, environmental science, green metrics and the carbon economy, atmospheric physics and chemistry, climate change, air quality, carbon capture technologies, energy efficient reactions, modern scientific advances, nanotechnology and novel materials, spectroscopy and photonics, computational chemistry, pharmaceuticals, energy storage including batteries, chemical engineering and process control, quantum chemistry and molecular modelling, AI/machine learning and conservation and archaeology were specifically mentioned as worthy of inclusion. Developing partnership with industry was also suggested as a way to ensure alignment between

the redeveloped specification and modern industrial practices and careers. The opportunity to create links to broader global and social challenges such as sustainability, was also noted. Further opportunities highlighted referred to the use of digital technologies such as virtual and augmented reality and their potential to enhance experimental investigations and to support, through modelling and simulations, meaningful engagement with abstract concepts such as molecular interactions and reaction mechanisms. Some respondents noted the opportunities associated with a more learner centred specification, that promotes inquiry and active teaching and learning methodologies.

There was some commentary on the status of the subject. Currently students who study LC Physics and/or LC Chemistry are prevented from taking LC Physics and Chemistry (Phys-Chem). Some respondents noted opportunities associated with removing this restriction, while others saw opportunities with its retention. There was no consensus on the issue, with some calling for LC Physics and Chemistry (Phys-Chem) to be a supplementary course for students taking LC Physics and/or Chemistry, and others seeing the value in restricting access to students who may not wish to commit or be enticed to engage with either LC Physics and/or LC Chemistry.

Addressing the perception among some students and teachers, that LC Physics and Chemistry is not accepted as a science subject for entry to all courses within the CAO and UCAS system referred to in the Background Paper, was noted by some as an important issue requiring clarification.

Challenges associated with the AAC were raised by some respondents who noted wider systemic concerns such as assessment overload, potential assessment log jams in the system, the use of AI, student and teacher stress and the potential barrier AACs might pose for students engaging in multiple science subjects in senior cycle. In addition, some concerns were raised in relation to the AAC in schools where the subject is taught by two different teachers. Others noted the opportunities that the broader approach to assessment through the inclusion of an AAC might provide, such as a shift in focus from an assessment culture focusing primarily on written examinations. It was noted, however, that becoming comfortable with such a readjustment might take some time.

A range of suggestions were made as to the potential nature of an AAC, including real world case studies, practical applications, research studies, practical investigative work, data manipulation and analysis involving drawing conclusions and making decisions.

Supports for redevelopment and enactment

Respondents identified a number of supports considered necessary for the successful enactment of a redeveloped LC Physics and Chemistry specification. These included professional learning opportunities, digital infrastructure, provision of lab technicians and funding for laboratory equipment and consumables. Equitable access to supports across all schools was noted as a necessity including schools currently offering the subject. Some respondents suggested that supporting assessment documentation be provided on publication of the specification.

Respondents noted many opportunities for an approach to professional development, including offering tailored teacher professional learning through communities of practices involving industry, universities and research centres, to all teachers—new, established and out of field.

Offering conversion courses to support teachers to qualify to teach both subjects (Physics and Chemistry) was suggested as a way to ameliorate some of the concerns expressed around teacher supply.

Section 3: Conclusion and next steps

The consultation on the Background Papers and Briefs for the redevelopment of the tranche 3 subjects generated rich feedback from a variety of perspectives. The engagement of those who participated in the consultation is acknowledged and NCCA is grateful for the open, committed, experience-based and expert feedback received.

This report has presented an overview of the range of views and perspectives that emerged from the consultation feedback. The feedback presented in this report will provide direction and guidance for the development groups to undertake the task of developing curriculum specifications for tranche 3 subjects. The work of the development groups will continue, informed by the feedback outlined in this report, and it is anticipated that a draft curriculum specification for each subject will be available for public consultation in Q1, 2026.

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