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Authors	Hyland, Áine
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University College Cork, Ireland
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Response by Áine Hyland to Humphrey Jones's article:

Ploughing a Muddy Field – Reflections on the Implementation of the New Agricultural Science Specification

21st Sep. 2021

This an impressive and timely article, in which Humphrey Jones, a teacher of Agricultural Science, discusses and analyses the new syllabus/specification for Leaving Certificate which was examined by the State Examinations Commission (SEC) for the first time in June 2021.

Agricultural Science has been a Leaving Certificate subject for many years and there was general agreement that the old syllabus, dating from the 1960s, was outdated and needed to be revised and brought into the 21st century. The old syllabus pre-dated the setting up of the National Council for Curriculum and Assessment (NCCA) in 1988. It pre-dated the Curriculum and Examinations Board which had existed from 1984 to 1988. It had been written in the 1960s when the inspectorate in the Department of Education had responsibility for setting, marking and providing certification for the Leaving Certificate. As the old Agricultural Science syllabus was so sparse, textbooks (informed by examination papers) were effectively regarded by students and teachers as "the syllabus". As Jones so rightly states in his article "assessment was the tail that wagged the curriculum dog".

Since the setting up of the NCCA, the practice had been to provide greater clarity in curriculum and syllabus documentation. In the most recent revision of Leaving Certificate Physics, Chemistry and Biology between 2002 and 2004, the syllabi were laid out under four headings:- Content; Depth of Treatment; Activities and Social and Applied Aspects. These syllabi were relatively detailed (between 45 and 75 pages each) and were accompanied by Guidelines for Teachers – one for each subject (c. 100 pages each). The syllabi were developed following widespread consultation – with teachers, higher education institutions, scientists and employers. Those syllabi were widely welcomed throughout the country and resulted in an increased take-up of science subjects at Leaving Cert. level.

Shortly after the new science syllabi were introduced, the NCCA came up with radical plans to reform senior cycle and to provide a new curriculum framework for teaching and learning for students in their final two or three years of second level education. These plans did not find favour with the then Minister for Education, Mary Hanafin T.D. who described them as a "Rolls Royce model" of curriculum. In 2009, following further extensive consultation with stakeholders, the NCCA issued a document entitled *Towards Learning: An Overview of Senior Cycle Education*[1] – a document which was to inform all subsequent syllabus design. This document set out a curriculum framework which emphasised the following five key skills: Information Processing: Being Personally Effective; Communicating; Critical and Creative Thinking and Working with Others. The framework also stated that to ensure

[1] NCCA, *Towards Learning: An Overview of Senior Cycle Education,* 2009.

coherence and consistency across all subjects, the syllabus for each subject would follow the same structure.

It might be useful at this stage to explain the roles of the various national bodies in curriculum and syllabus reform. The NCCA, which was set up in 1988, became a statutory body under Section 38 of the Education Act in 2001. Its role is "to advise the Minister (for Education) on matters relating to (a) the curriculum for early childhood education, primary and post-primary schools and (b) the assessment procedures employed in schools and examinations on subjects which are part of the curriculum". For a number of years after the setting up of the NCCA, the inspectorate of the Department of Education continued to set and administer the public examinations and it was not until March 2003 that the SEC was established by statutory order. The SEC assumed responsibility for the operation of the state certificate examinations from 2003 onwards. The SEC is described on its website as "a non-departmental public body under the aegis of the Department of Education and Skills. It is responsible for the development, assessment, accreditation and certification of the second-level examinations of the Irish State – the Junior Certificate and the Leaving Certificate". In relation to second level education, Ireland now has two separate bodies with different but perhaps slightly overlapping roles relating to assessment and examinations – the NCCA and the SEC. The NCCA advises on assessment and examinations and the role of the SEC has been limited to administering, marking and certifying the national examinations i.e the Junior and Leaving Cert. Both bodies report to the Minister for Education who under the terms of the 1998 Education Act has ultimate responsibility for curriculum and assessment.

In other countries which have two such bodies, and which have a nationally assessed examination or examinations, the curriculum body (in Scotland, it's *Education Scotland)* sets out the overall philosophy underpinning the curriculum and provides a broad curriculum framework which can be interpreted and implemented in various ways by local education authorities and / or schools. Where external assessment and certification of students exists, there is usually a second body (in Scotland it's the *Scottish Qualifications Authority*) which sets out the details of the individual syllabi for assessment purposes. These syllabi (or specification as they are sometimes referred to) are always quite detailed and follow good practice in syllabus design. They start with Learning Outcomes which are then expanded to include depth of treatment (i.e the level or extent to which a topic should be taught), examples of content and pedagogy and assessment guidelines. Such a design ensures that the syllabus is coherent, that it is interpreted in the same way by all who prepare their students for the examination and that the content, pedagogy and assessment are constructively aligned with the learning outcomes.

When the NCCA began to review Leaving Certificate syllabi towards the end of the first decade of the 21st century they were influenced by curriculum developments in other parts of the English-speaking world. Among the countries and jurisdictions which were referenced by the NCCA (2014) as countries which were exemplary as far as curriculum design was concerned were Scotland, Victoria (Australia) and Ontario (Canada). The International Baccalaureate was also referenced. The OECD had a noticeable influence on educational

policy in the jurisdictions mentioned in NCCA reports. The OECD Programme for International Student Assessment (PISA)[2] had provided comparative information over the previous two decades about overall performance of students in different education systems. PISA studies are designed to evaluate systems – not to assess individual students - and can be a useful tool for policy-makers when analysing the effectiveness of their education systems.

In all of the jurisdictions referenced by the NCCA, a starting point for designing the curriculum and syllabi is a statement of the Learning Outcomes which students are expected to achieve by the completion of the programme or course. A Learning Outcomes approach to curriculum design became popular across the English-speaking world in the 1990s. Prior to that it was more common for curriculum design to start by stating the aims and objectives of the curriculum. Learning Outcomes are articulated in terms of what a student is expected to know and be able to do whereas Aims and Objectives were focused on what the teacher was expected to teach. The new emphasis was student-centred rather than teacher or subject-centred. It was a welcome development and has proved to be successful in emphasising student needs and placing the learner at the centre of the teaching and learning process. However, while clearly-articulated learning outcomes are a very valuable tool, it is not appropriate to use learning outcomes **alone** to define a syllabus and its assessment. Learning outcomes are statements of essential learning, and as such they are written at minimum / threshold i.e. pass/fail standard[3]. It is recognised in the literature that it would be very difficult (if not impossible) to write learning outcomes in such a way as to enable student achievements to be graded.

Unlike other jurisdictions, the NCCA decided around 2010 that its curriculum **and syllabus design** template for both junior and senior cycle syllabi would consist ONLY of Learning Outcomes. The Subject Development Groups were informed that the design template which had been used since the 1990s would no longer be used. The new template would refer only to Learning Outcomes and would provide no other details. There would be no explanation of depth of treatment nor would teacher guidelines be provided nor any detail in relation to how the syllabi would be assessed. Concerns were expressed by teachers, academics, scientists and some employer organisations about such an approach - a concern that was recognised by the NCCA in a *Report on the Consultation*[4] issued in 2012. A report written by this author at that time highlighted the shortcomings of such an approach[5].

Later that year, in a report entitled *The Development of new Leaving Certificate science courses: background and process*[6], the NCCA's Board of Studies for Science agreed to make changes to the proposed syllabus/specification design to include, *inter alia*, guidelines for

[2] PISA measures 16-year old students' ability to use their reading, mathematics and science knowledge and skills to meet real-life challenges.
[3] Jenny Moon, *Linking Levels, Learning Outcomes and Assessment Criteria.*
[4] NCCA, *Report on the Consultation on Leaving Certificate Science,* 2012.
[5] Áine Hyland, *The design of Leaving Certificate science syllabi in Ireland: an international comparison.* Irish Science Teacher' Association, April 2014.
[6] NCCA *The Development of new Leaving Certificate science courses: background and process,* (unpublished paper) May 2014.

teachers in the form of samples of teaching and learning material and sample assessment material that would clearly illustrate how differentiation happens at the point of assessment. An appendix to that report gave detailed examples of the type of material that would be available for teachers to explicate the new syllabi – material that mirrored that of other high-quality syllabi internationally. However, these recommendations were apparently not accepted by the NCCA Council and when the new Agricultural Science syllabus was released in January 2019, it consisted only of Learning Outcomes. To quote Jones: "There was no depth of treatment, teacher guidelines or clarity on what detail the teacher needed to go into" nor at that stage was any information provided on how the syllabus would be assessed. The frustration of teachers with this vague and unclear syllabus is documented and discussed very clearly in Jones's article.

The article refers to the challenges which faced teachers when confronted with the skeletal Leaving Cert. Agricultural Science syllabus which was introduced in 2019 and was examined for the first time in June 2021. The learning outcomes of the syllabu/specification were (in Jones's words) "poorly written, vague, overly long, lacking clarity, far too broad and (crucially) confusing". They provided little clarity for the teacher on how much detail was required. Each individual teacher was required to ascertain for themselves the depth of treatment for each learning outcome and they could just hope that the SEC would interpret them in a similar way. The results of a survey (which had 280 responses) carried out by the Irish Agricultural Science Teachers Association (IASTA) in January 2021 indicated that the training which was provided by the Professional Development Service for Teachers (PDST) provided little clarity of the learning outcomes and how they were to be interpreted. When asked to rate the clarity of the learning outcomes in the syllabus on a scale of 1 (Very clear) to 5 (Not very clear) the vast majority were of the view that they were not very clear. (The average response was 4.23 with only one person choosing 1 on the scale). The survey showed that the lack of clarity had a direct effect on the teachers' confidence in judging the depth of treatment for each learning outcome. More than 70% of teachers replied that they were not very confident about what depth of treatment was required while fewer than 1% were very confident.

The article goes on to compare the Leaving Certificate 2021 examination paper to the syllabus. Predictably, given the vagueness of the syllabus, there were multiple examples of how this vagueness affected the examination questions. According to Jones, there were several questions on topics not mentioned in the syllabus / specification or were outside the realm of the learning outcomes. Some examples of the mismatch between the syllabus and the examination questions are given with distressing consequences for students and teachers. A major question facing teachers of Agricultural Science in the coming years is whether they will base their teaching on the syllabus/specification or on the examination! Will it be a case (yet again) of *assessment wagging the tail of the curriculum dog??*

This author agrees unreservedly with the conclusions in Jones's article. The learning outcomes for Agricultural Science in their present form – and indeed any externally examined Leaving Certificate syllabus / specification that is defined SOLELY in terms of learning outcomes – are not fit for purpose. The NCCA should adopt international best

practice and develop syllabi / specifications based on clearly stated learning outcomes with information about depth of treatment, guidelines for teachers about content, pedagogy, and application as well as assessment guidelines. This full information must be made available to teachers well in advance of the introduction of the new syllabi to enable them to familiarise themselves and if necessary update their own knowledge and skills prior to the introduction of the new syllabi. The NCCA should reconsider the format which they have adopted in recent years to define Leaving Cert subject syllabi. To date, the only subjects which have been introduced using the new template are Computer Science; Politics and Society; Physical Education and Agricultural Science – all of which are (in relative terms) subjects taken at Leaving Cert level by a minority of students. In 2021 for example, out of a possible 65,000+ Leaving Cert candidates, only 640 sat Computer Science; 1,992 sat Politics and Society; 1,501 sat Physical Education and 7,553 sat Agricultural Science. In terms of numbers, one cannot draw any valid conclusions from such a small sample in terms of student satisfaction or confidence. In relation to other subjects where the numbers of students taking the subject will be considerably greater, we can anticipate a national outcry in the future if there is such uncertainty about how subjects will be assessed and in particular if there is a lack of congruence between the syllabus/specification and the assessment/examination. Already teachers of other subjects, in particular Physics, Chemistry and Biology as well as Gaeilge have registered their dismay at the proposed draft syllabi/specifications that are beginning to come to public notice. The NCCA and the Minister for Education are committed to consulting widely before they finalise and introduce the new syllabi/specification. Let's hope that the voices of the teachers are listened to and that and their views and concerns will be treated with the respect and dignity which they deserve. Ireland is fortunate in the very high calibre and professionality of its teachers. This article by Humphrey Jones is testament to that high standard.