

Quality Assurance Review for Higher Education

Using Curriculum Mapping to Ensure Programme Coherence in Internal Quality Assurance

Cathal de Paor

Quality Assurance Review for Higher Education, Vol. 7, No. 1, 2017, pp. 56 – 68

Publicat de: Agenția Română de Asigurare a Calității în Învățământul Superior - ARACIS

Locul publicării: București, România

Tipul publicației: tipărit, online

ISSN: 2066 - 9119, 2069 - 2188 (online)

Adresa: Bd. Mărăști, nr. 59, Sector 1, București, cod poștal 011464

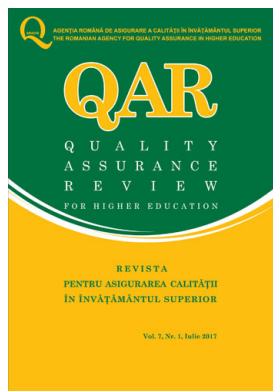
Telefon: +40 21 206 76 00; Fax: +40 21 312 71 35

E-mail: qar@aracis.ro

Pagină electronică: <http://www.aracis.ro/en/publicatii/qar-magazine/numarul-curent/>

Revista *Quality Assurance Review for Higher Education* este editată din fondurile proprii ale ARACIS și, în această etapă, contribuie și la sustenabilitatea proiectului „Dezvoltarea și consolidarea culturii calității la nivelul sistemului de învățământ superior românesc - QUALITAS”, Contract POSDRU/155/1.2/S/141894.

Toate drepturile rezervate. Pentru a reproduce un text din Revistă este necesar acordul scris al colegiului de redacție al Revistei pentru Asigurarea Calității în Învățământul Superior. Solicitarea poate fi trimisă Editorului, la adresa de poștă electronică: office@aracis.ro
Răspunderea pentru conținutul textelor publicate aparține autorilor.
Conținutul acestui material nu reprezintă în mod obligatoriu poziția oficială a ARACIS.



Quality Assurance Review for Higher Education

Using Curriculum Mapping to Ensure Programme Coherence in Internal Quality Assurance

Cathal de Paor

Quality Assurance Review for Higher Education, Vol. 7, No. 1, 2017, pp. 56 – 68

Published by: The Romanian Agency for Quality Assurance in Higher Education - ARACIS

Place of publication: Bucharest, Romania

Publication type: printed, online

ISSN: 2066 - 9119, 2069 - 2188 (online)

Address: Bd. Mărăști, no. 59, sector 1, Bucharest, Romania, postal code 011464

Phone: +40 21 206 76 00; Fax: +40 21 312 71 35

E-mail: qar@aracis.ro

Web page: <http://www.aracis.ro/en/publications/qar-magazine/current-issue/>

Quality Assurance Review for Higher Education is edited from ARACIS own funds and, at this stage, also contributes to the sustainability of the project “The development and the consolidation of quality culture at Romanian higher education system – QUALITAS”, POSDRU Agreement 155/1.2/S/141894.

All rights reserved. No part of this Review may be reproduced in any form without written permission from the Editor. The request may be sent to the Editor by e-mail, at: office@aracis.ro

The responsibility for the content of their contributions belongs to the authors.

The content of this material does not necessarily represent the official position of ARACIS.

Using Curriculum Mapping to Ensure Programme Coherence in Internal Quality Assurance

Cathal de Paor *Senior Lecturer*
Faculty of Education,
Mary Immaculate College, Ireland
cathal.depaor@mic.ul.ie
+353 61 204950

Abstract: *A key priority throughout all of the European Standards and Guidelines for Quality Assurance in Higher Education (ESG 2015) is ensuring programme coherence. Achieving programme coherence requires appropriate alignment between intended learning outcomes, teaching and learning activities, and assessment. This article focuses on curriculum mapping as a means of ensuring programme coherence. Such mapping exercises may require programme teams to map their programmes using qualifications framework, and draw on curriculum models or taxonomies. Dialogue and collaboration is also a key part of the mapping process. The examples illustrate how internal quality assurance can be enhanced by a greater focus on programme coherence.*

Key words: *internal quality assurance, constructive alignment, curriculum mapping*

Introduction

Coherence can be defined as systematic connection or consistency. Applied to higher education, it requires all the diverse elements, relationships, or values involved to work together in a logical and reasonable way. Pursuing such coherence is a key issue in the ESG and all of the standards in the Internal QA section are concerned with it one way or the other. It provides the rationale for the very first standard in the Internal QA section, ‘policy for quality assurance’ (Standard 1.1) (ESG 2015), with the accompanying guidelines for this particular standard noting that, “policies and processes are the main pillars of a coherent institutional quality assurance system”.

While this first standard refers to coherence at the institutional level, it is the coherence at the programme level that is addressed directly in the next two standards, and that will be the focus of this article. Standard 1.2, “design and approval of programmes” focuses on coherence between intended outcomes and programme activities requiring that, “programmes should be designed so that they meet the objectives set for them, including the intended learning outcomes”. Coherence

between learning activities and assessment is the focus of the third standard, “Student-centred learning, teaching and assessment”, requiring programmes to be delivered in a way that “encourages students to take an active role in creating the learning process, and that the assessment of students reflects this approach” (1.3).

The remaining standards are also geared towards ensuring that programmes are offered and experienced as intended- in other words, in a systematic, and coherent way. They refer to appropriate provision for staff competence (1.5), learning resources and student support (1.6), information management (1.7), ongoing monitoring and review (1.9), and cyclical external quality assurance (1.10). The standard on public information (1.8) can also be considered relevant for programme coherence in that it requires programme information to be “clear, accurate, objective, up-to date and readily accessible”.

Programme Coherence and Quality Assurance

While the ESG is a European-wide initiative, associated with European umbrella organisations such as ENQA, an analysis of the criteria used by its member agencies also shows how programme coherence is a major focus at the national level in individual countries. In Lithuania for example, the six criteria used by the national QA agency are: (1) programme aims and learning outcomes; (2) curriculum design; (3) teaching staff; (4) facilities and learning resources; (5) study process and students’ performance assessment; (6) programme management (SKVC 2010). It is readily obvious how coherence would relate directly to criteria 1, 2 and 4, while the remaining criteria are also relevant for ensuring that the programme coherence that is intended can be realised.

Elsewhere, in the French-speaking Community in Belgium, the five criteria used by AEQES for quality assurance of programmes are: (1) policy on quality; (2) programme relevance; (3) internal programme coherence; (4) programme effectiveness, efficiency and equity; (5) ongoing improvement (AEQES 2015). As the title suggests, the third criterion targets internal programme coherence explicitly. However, the usefulness of all the others is also obvious. For example, the second focuses on the relevance of the programme for the needs of stakeholders, especially students and employers, and thereby examines coherence between programme goals and these needs. The fourth criterion is also relevant given that programmes cannot be effective if they are not coherent.

Programme coherence is therefore a key priority in the evaluation methodologies used by external QA agencies, which in turn heightens awareness among the HEIs on programme coherence in their own internal QA activities. This article focuses on curriculum mapping as one means for achieving programme coherence, suggesting various frameworks and taxonomies that can be used to enhance such mapping exercise, thereby enabling HEI staff to think critically about programme coherence. These include European and national qualifications frameworks, the use of taxonomies such as the revised taxonomy for educational objectives (Anderson

et al. 2005), and curriculum design frameworks such as Understanding by Design (Wiggins and McTighe 2004). It also draws on an example from the field of teacher education, showing how a curriculum mapping exercise can be used in professional higher education to examine the extent to which the programme is aligned to the required professional standards (i.e., not just aligned to its own internal programme outcomes). The article also addresses some key objections to the learning outcomes paradigm which provides the basis for exercises such as curriculum mapping, and argues that the benefits for quality assurance outweigh any weaknesses that can be identified.

Curriculum Mapping

Curriculum mapping is becoming an increasingly important activity for programme level review and development (Uchiyama & Radin 2009). Dialogue and collaboration is a key part of the mapping process undertaken by programme teams resulting in curriculum maps for the programme in question (Hale and Dunlap 2010, 18), thereby constituting an important opportunity for the professional development of programme teams. Curriculum mapping can be undertaken as part of the initial curriculum design process, or as an activity within a later review.

The purpose of curriculum mapping is to ensure that the teaching and learning activities, assessments, and/or content of a programme align with the programme outcomes. This is to enable programme teams to promote: transparency for students and staff; coherence of programme content, teaching and assessment approaches; efficiency in teaching, learning and assessment approaches; the key institutional attributes to be reflected in the programme (Arafeh, 2015). Some key questions to be considered are:

- Is there an optimum congruence between overall programme goals or outcomes and those used at the level of individual modules or courses within the programme?
- Is there an optimum match or alignment between programme content, teaching, learning and assessment approaches?
- Are the important graduate knowledge, skills, and competences targeted sufficiently and consistently across the programme? Are students enabled to develop these throughout in a cumulative or cyclical way?
- Does the programme outcomes address the needs of the students and are they sufficiently ambitious?
- Are there high-impact educational practices used sufficiently across the program?
- Is there a range of assessment methods used to properly assess students' mastery of the knowledge, skills and competences?

- Is there consistency in approach between modules and courses within the programme? Are they in an appropriate sequence? Does overlap occur and is it necessary?

An important step in curriculum mapping is devising questions such as these so that the benefits from the curriculum mapping exercise can be fully exploited. Mapping tools are also available for this purpose.¹

Qualifications Frameworks

Various sources exist at a European and national level to guide the formulation and review of learning outcomes, corresponding to the different knowledge, skills and competences which higher education programmes are required to support. The European Qualifications Framework (European Parliament and Council 2008) provides a set of eight descriptors indicating the learning outcomes relevant to qualifications at all levels in any system of qualifications. An important exercise therefore in internal quality assurance is making sure that the programme supports the kind of knowledge, skills and competences associated with a particular qualification level, and making sure that this happens in a coherent way, i.e. with regard to the programme learning outcomes, the teaching learning activities and the assessment.

Qualifications frameworks are also available at a national level which offer additional guidance. In Ireland, for example, the main strands of learning outcome are (1) knowledge, (2) know-how and skill, and (3) competence, with these being then sub-divided into sub-strands:

- (1) knowledge; breadth; kind;
- (2) know-how and skill: - range, selectivity;
- (3) competence: context, role, learning to learn, insight.

For example, the first of the strands, “Knowledge”, can be described by its ‘breadth’, i.e. the diversity, complexity and variety (as distinct from volume). The greater the breadth of knowledge, the higher the level of outcome. On the other hand, the second sub-strand, “kind” refers to the extent to which the knowledge is abstracted from concrete phenomena into theory.

In incorporating these kinds of outcomes, the framework shows how knowledge, skills and competences vary in challenge and complexity, depending on the level on the framework. For example, in the case of the second sub-strand from the Knowledge strand, the distinction between bachelor and master level learning is based on where the intended learning is positioned within the established discipline knowledge, i.e. whether at the boundary, or at the forefront.

¹ For example, various tools are proposed here by the University of Adelaide, <https://www.adelaide.edu.au/professions/pedagogical-possibilities/change/curriculum/mapping/>

Table 1: Example showing how the sub-strand Knowledge-kind is differentiated between Bachelor and Master level in the Irish NFQ

Bachelor level	Detailed knowledge and understanding in one or more specialised areas some of it at the current boundaries of the field(s)
Master level	A critical awareness of current problems and/or new insights generally informed by the forefront of a field of learning

From Irish NFQ (NQAI, 2003)

It is obvious that achievement in some sub-strands is easier to assess than others. Thus the competence of “learning to learn” makes explicit in the outcomes, certain kinds of learning that would previously have been considered as part of the learning process, rather than as outcomes to be explicitly certified in awards (NQAI 2003, 24).

Frameworks such as these, whether European or national, are a reminder of the need to consider the kind of knowledge, skill and competence that is being developed in a given programme. As a mechanism for quality assurance, it requires programme actors to consider not just the coverage of learning outcomes, but rather the depth and complexity.

Mapping in Professional Higher Education

Such frameworks can also be used by professional bodies in informing the development of their own professional standards which they expect higher education programmes to meet. For example, in Ireland, the professional body for teachers, the Teaching Council has used the categorisation of knowledge, skill and competence in the national framework of qualifications (NFQ) (NQAI 2003) to delineate its own professional standards for primary and post-primary teaching, i.e. what it expects entrants to the teaching profession to have achieved upon completion of a programme of initial teacher education (Teaching Council 2011). Professional accreditation process therefore works as a kind of external QA, for example, as illustrated in an example taken from pharmacy education (de Paor, 2016).

The professional outcomes are categorised according to the three strands used in the national framework, which are also linked to professional attributes relating to the work of teachers. For example, the learning outcomes presented within the NFQ sub-strand, Competence-Learning to Learn, all relate to how the programme develops The Teacher as Lifelong Learner. On the other hand, the sub-strand Competence-Insight is equated with Professional and Ethical Teaching.

As part of the professional accreditation process, HEIs are required then to map

their own programmes against these professional standards. The HEI would of course factor the needs of teachers when designing the programme initially, but mapping it against professional standards provides another exercise in the test for programme coherence. Such an exercise can be used to highlight what needs to be done so that professional outcomes are addressed adequately within particular modules, or indeed, where necessary, across all of the modules.

While such mapping against professional learning outcomes offers insight into coverage, i.e., the extent to which professional outcomes are addressed, further work is needed in order to judge the depth to which a programme addresses the outcomes. This requires additional documentation, which the Teaching Council also requests, such as grading rubrics, course outlines, and samples of student work graded using grading rubrics. For HEIs, the act of collating this additional documentation may provide another opportunity to reflect on the extent to which programme coherence is being achieved as part of internal quality assurance. It also helps to identify possibilities for integrated assessment, where one assessment product could be used to assess a number of outcomes that are common to more than one module.

Constructive Alignment

Programme teams may also draw on the substantial body of literature and guidelines on “constructive alignment” in pursuing programme coherence. As currently articulated, the constructive alignment model is attributed to Biggs (1999) but the essentials can be traced back to Tyler (1949), and developed later by Shuell (1986).

Creating an optimum correspondence between outcomes, teaching and learning activities, and assessment through a learner-centred approach provides the rationale for “constructive alignment”. It is based on the twin principles of constructivism in learning and alignment in the design of teaching and assessment. Learning is constructivist, where it involves students constructing meaning through relevant learning activities, as opposed to having it imparted or transmitted. As part of its internal QA, programme teams are therefore prompted to consider the extent to which students are actively involved in the learning process.

The second element, “alignment” refers to the correspondence or match between the intended learning outcomes, the teaching and learning activities, and the assessment tasks used to verify that the intended outcomes have been achieved. The alignment is achieved by ensuring that the verb in the learning outcome statement is present in the teaching/learning activity and in the assessment task. In other words, the verb in the intended learning outcome determines what the teaching/learning activities might be and what the student needs to perform in the assessment task. In setting up an aligned system therefore, there are thus four major steps:

1. Define the intended learning outcomes;
2. Choose teaching/learning activities likely to lead to the learning outcomes;

3. Assess students' actual learning outcomes to see how well they match what was intended;
4. Arrive at a final assessment.

But an important point to remember is the fact that this alignment is pursued in a context where the student has an active role in the learning experience. As indicated earlier, Standard 1.3 from the ESG relates to both of these elements (constructivism and alignment) as it specifically refers to the role of students in being “active” in the process.

Of course learning outcomes can be achieved to a greater or lesser extent. A key issue for programme providers therefore is knowing what level of performance is required to demonstrate the achievement of the learning outcomes. This requires descriptions of performance, usually at varying levels of accomplishment. This level of detail cannot be captured in the verb used in the learning outcomes but requires elaboration separately in grading rubrics and grade descriptors, thereby helping teachers and students know exactly what is expected in terms of demonstrating the learning.

The use of grading rubrics is therefore an important step in the pursuit of programme coherence and their preparation can prompt teachers to further think about achieving optimum alignment between the three programme components (learning outcomes, teaching and learning, and assessment). It is a way therefore of making manifest the third standard from the ESG, “student-centred learning, teaching, and assessment”, (1.3), while linking to most if not all of the remaining standards. This is therefore a further illustration of how programme coherence is so all-encompassing.

But of course, communicating the expected learning outcomes is not without its challenges. Programme staff may invest much energy in the production of rubrics, but these may not be fully understood by student, and may say little to students about what exactly is required to perform at an excellent level.

A second problem relates to the kind of knowledge that HEI programmes may tend to favour. For example, Biggs and Tang (2007) note that the knowledge that is privileged is declarative rather than functioning: “Curricula in many universities are overwhelmingly declarative with teaching methods correspondingly expository” (Biggs and Tang 2007, 72). If the forms of understanding encouraged by teaching and assessment are not those that are educationally relevant (and professionally in the case of PHE) as expressed in the intended learning outcomes, then programme coherence is jeopardised. Students may focus on surface learning strategies that will guarantee examination success, but not enable them to solve complex problems once they graduate: “To use our learning in order to negotiate with the world and to see it differently involves understanding of a high order” (Biggs and Tang 2007, 75). The challenge therefore is to conceive intended learning outcomes in terms of these performances of understanding, rather than in verbal declarations of understanding.

Taxonomies and Frameworks

One way to safeguard against a restricted use of knowledge and surface learning is the use of taxonomies. However, before developing this argument, it is worth referring to the criticism that is often made with regard to learning outcomes and the taxonomies upon which learning outcomes draw.

This criticism is based on the view that such an approach is associated with what Ball (1998, 74) calls “the commodification of education” and a managerialist ideology (Clarke and Newman 1997). Knowledge becomes commodified and discussed in terms of efficiency and exchange value. They also question the functional analysis used to devise programmes based on a learning-needs analysis of the graduates. The learning outcome paradigm is viewed as leading to “significant gaps in knowledge domain, learning and teaching quality” and to “significant epistemological and pedagogical insights that remain hidden and inarticulate” (O’Brien and Brancalone 2011, 5).

Much of the criticism has been directed at the influence of the taxonomy of educational objectives for the cognitive domain developed in the 1950s (Bloom et al., 1956). Such a model is seen as promoting a linear, hierarchical and restricted view of learning, with the result that “if presented in a sufficiently inflexible, positivist manner, learning outcomes can limit serious question or challenge” (O’Brien and Brancalone 2011, 10).

It is certainly the case that the ECTS users guide produced in support of the creation of the European Higher Education Area (EHEA) derives from the original work for the cognitive domain (Bloom et al. 1956). But there is also ongoing work on taxonomies that can be used to improve programme design, and therefore support programme coherence and alignment.

One more recent example is the SOLO taxonomy - structure of the observed learning outcome - (Biggs and Collis 1982) reflecting how the outcomes of student learning display similar stages of increasing structural complexity, regardless of the academic discipline, so that the new knowledge becomes gradually integrated into a structural pattern. SOLO provides a systematic way of describing how a learner’s performance grows in complexity and can be used to describe where students should be operating, and where they are actually are operating.

However, a more recent taxonomy, which addresses more directly concerns such as those outlined above is the revision of the taxonomy developed by Bloom and his collaborators back in 1956 (Anderson et al., 2005). The revised taxonomy features a two-dimensional table, with the horizontal dimension being a modification of the original, where verbs replace the noun forms in the category labels: remember, understand, apply, analyze, evaluate, and create. The vertical dimension consists of four types of knowledge: factual knowledge, conceptual knowledge, procedural knowledge, and metacognitive knowledge. It therefore examines objectives or outcomes in terms of both knowledge and cognitive processes, thereby providing

a more accurate estimate of alignment between what is planned, what is taught and what is assessed.

Table 2: Revised taxonomy for the cognitive domain

	Remember	Understand	Apply	Analyse	Evaluate	Create
Factual						
Conceptual						
Procedural						
Metacognitive						

It is also noteworthy that the revised taxonomy replaces ‘synthesis’ from the 1956 taxonomy with “create”, reflecting the constructivist theory underpinning “constructive alignment”, that synthesising and integrating knowledge amounts to the creation of new knowledge (de Paor, 2009). While the revised taxonomy is no longer hierarchical in nature, it is also noteworthy that “create” is placed at the very top position, with “evaluate” below it.

Backward Mapping and Facets of Understanding -UbD

The inclusion of the cognitive process dimension also serves to address misgivings many commentators, including Biggs and Tang (2007), have about the inadequacy of “understand” as an outcome for learning – because it is not explicit enough. However, it is also worth considering that other curriculum designers have a more positive assessment of the usefulness of “understanding” in planning for the optimum match between teaching, learning and assessment.

The framework for curriculum planning known as Understanding by Design (UbD) (Wiggins and McTighe 2004) includes a particular focus on planning for understanding in curriculum and assessment and in distinguishing between different types of understanding. Although designed with compulsory schooling in mind, it can provide curriculum mappers with a useful instrument for checking the extent to which a programme design enables students to develop the kinds of understanding expected of graduates in higher education today.

The UbD framework includes six different “facets of understanding” based on the view that students truly understand when they can: (1) explain; (2) interpret; (3) apply; (4) have perspective; (5) empathize; (6) show self-knowledge. This could be used therefore in a curriculum mapping exercise to gauge the extent to which a programme develops each of the facets coherently, not just included in the learning outcomes but in teaching activities and assessment. This also provides the basis for a much richer educational experience, and address the criticism levelled at

rational approaches to curriculum planning which are seen as being too much about prescription in advance, and therefore curtailing the spontaneity, dynamism and richness of truly educational encounters (Knight 2001).

The UbD framework is based on another kind of mapping, referred to as “backward mapping”, which, just like much of the theory of curriculum mapping, can also be traced back to Tyler’s seminal work *Basic Principles of Curriculum and Instruction* (1949). Its use in curriculum practice today is attributed to the work of Wiggins and McTighe who are widely considered to have popularized it for the modern era.

The backward design process begins with the end in mind, i.e. the desired results (goals or standards)- and then derives the curriculum from the evidence of learning (performances) called for by the standard and the teaching needed to equip students to perform (Wiggins and McTighe, 2004). Achieving coherence between assessment and the other component parts is a key issue, with the acronym GRASPS focusing attention on constructing authentic scenarios for performance tasks, starting with the intended learning:

- Goal: intended learning outcome
- Role: role the student plays in the learning scenario or activity
- Audience: audience/client that the student must be concerned with in doing the task
- Situation: particular setting and its constraints and opportunities
- Performance: specific performance or product expected
- Standards and criteria: clear picture of successful performance

Assessment tasks should therefore provide an opportunity for the students to demonstrate the learning that is intended, rather than carry out assessment tasks that are disconnected from either the intended learning or the teaching and learning activities. This priority could go some way towards ensuring that assessment is meaningful and coheres sufficiently with the other elements in the programme. This is very often a criticism of the rational model of curriculum planning (Knight 2001). Ironically, therefore the UbD framework, which could be considered a rational and systematic approach to curriculum design, actually emphasises the need for assessment tasks that are coherent.

One other benefit from such a model of curriculum planning is the manner in which it is not confined to the cognitive domain, but rather represents a certain integration with the affective domain also. Over the years, the affective domain has been the focus of separate treatment to the cognitive domain, resulting in a separate taxonomy soon after the cognitive (Krathwohl et al. 1964). However, separate treatment is recognised as being no longer in keeping with what is expected of graduates who need to draw on a wide range of skills, competences and learning dispositions in today’s world- for example, teamwork, intercultural competence, initiative, enthusiasm, risk-taking, consensus building. These all require a focus on attitudinal development.

Conclusion

These examples illustrate therefore how internal quality assurance can be enhanced by a greater focus on programme coherence. The main way to pursue this coherence is through a curriculum mapping process focused on arriving at a greater alignment between intended learning, teaching and learning activities, and assessment. It could involve, for example, HEIs being asked to map their programme outcomes, activities and assessment against the categories of knowledge, skills and competences in the European Qualification Framework, or against national frameworks or drawing on curriculum models or taxonomies such as those presented.

As noted earlier, dialogue and collaboration is a key part of the mapping process undertaken by programme teams (Hale and Dunlap 2010, 18). This can in turn constitute a line of enquiry in external QA, i.e. requiring HEIs to indicate not only how it ensures that programme coherence is achieved, but also how it involves the various stakeholders, including students in establishing and maintaining this coherence. And in the interests of closing the feedback loop, HEIs could document how producing curriculum maps, as part of ongoing review, were used in follow-up actions- for example, in module revision, or in extending membership of course boards to a student representative. The effective use of such practices can provide a robust measure of the extent to which HEI programmes meet the very first standard in external QA, i.e. “the effectiveness of the internal quality assurance processes described in Part 1 of the ESG” (2.1).

References

- AEQES. 2015. *Référentiel d'évaluation AEQES*. Bruxelles: L'Agence pour l'évaluation de la qualité de l'enseignement supérieur <http://www.aeqes.be/documents/20150624referentielAEQES2.0.pdf>
- Arafeh, Sousan. 2016. “Curriculum mapping in higher education: a case study and proposed content scope and sequence mapping tool.” *Journal of Further and Higher Education* 40 (5): 585-611.
- Biggs, John, and Catherine Tang. 2007. *Teaching for Quality Learning at University*. Maidenhead: Open University Press.
- Biggs, John. 1999. *Teaching for Quality Learning at University – What the Student Does*. Buckingham: SRHE / Open University Press.
- Biggs, John, and Kevin Collis. 1982. *Evaluating the Quality of Learning: The SOLO Taxonomy*. New York: Academic Press.
- Hale Janet A., and Richard F. Dunlap. 2010. *An educational leader's guide to curriculum mapping: creating and sustaining collaborative culture*. London: Sage Ltd.
- Bloom, Benjamin, Max Englehart, Edward Furst, Walter Hill, and David Kratwohl. 1956. *Taxonomy of Educational Objectives. Cognitive Domain*. London: Longman.

de Paor, C. 2009. "Scríobh, Machnamh agus Forbairt Mhúinteora: léargas ó shaothar liteartha." [Writing, reflection and teacher development; insights from a literary work], *Oideas* 54: 104-116.

de Paor, C. (2016) "Lessons for quality assurance: an analysis of professional accreditation reports." *Quality in Higher Education*, 22 (3): 228-241, <http://dx.doi.org/10.1080/13538322.2016.1263925>

European Parliament and Council. 2008. *Recommendation of the European Parliament and of the Council on the Establishment of the European Qualifications Framework for Lifelong Learning*. [http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32008H0506\(01\)&from=EN](http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32008H0506(01)&from=EN)

Hadjianastasis, M. published online 15 February 2016. "Learning outcomes in higher education: assumptions, positions and the views of early-career staff in the UK system." *Studies in higher education*. <http://dx.doi.org/10.1080/03075079.2016.1141402>

Knight, Philip. 2001. "Complexity and curriculum: a process approach to curriculum-making." *Teaching in Higher Education* 6 (3): 369-381.

Krathwohl, David, Benjamin Bloom, and Bertram Masia. 1964. *Taxonomy of educational objectives: Handbook II: Affective domain*. New York: David McKay Co.

NQAI. 2003. *Policies and criteria for the establishment of the National Framework of Qualifications*. Dublin: National Qualification Authority of Ireland

<https://www.qqi.ie/Publications/Publications/Policies%20and%20Criteria%20for%20the%20Establishment%20of%20the%20NFQ.pdf>

O'Brien, Stephen, and David Brancalone. 2011. "Evaluating Learning Outcomes: In Search of Lost Knowledge", *Irish Educational Studies*, 30 (1):5-21

Shuell, Thomas. 1986. "Cognitive conceptions of learning." *Review of Educational Research* 56: 411-436. <http://dx.doi.org/10.3102/00346543056004411>

SKVC. 2010. *Methodology for evaluation of higher education study programmes*, Centre for Quality Assessment in Higher Education, Lithuania, <http://www.skvc.lt/uploads/documents/files/EN%20versija/Teises%20aktai%20SP%20ir%20IV/Methodology%20for%20evaluation%20of%20study%20programmes.pdf>

ESG. 2015. *Standards and Guidelines for Quality Assurance in the European Higher Education Area*. Brussels: European Association of Institutions in Higher Education (EURASHE).

Teaching Council. 2011. Initial Teacher Education: Criteria and Guidelines for Programme Providers, Maynooth: Teaching Council,
<http://www.teachingcouncil.ie/en/Publications/Teacher-Education/Initial-Teacher-Education-Criteria-and-Guidelines-for-Programme-Providers.pdf>

Tyler, Ralph W. 1949. *Basic Principles of Curriculum and Instruction*. Chicago: University of Chicago.

Uchiyama, Kay P. and Jean L. Radin. 2009. Curriculum mapping in higher education: A vehicle for collaboration. *Innovative Higher Education* 33: 271-280.

Udelhofen, Susan. 2005. *Keys to Curriculum mapping –strategies and tools to make it work*. California: Corwin Press.

Wiggins, Grant, and Kay McTighe. 2005. *Understanding by Design* (2nd edition). Alexandria: Association for Supervision and Curriculum Development.