



TUS

Ollscoil Teicneolaíochta na Sionainne:
Lár Tíre, An tIarthar Láir
Technological University of the Shannon:
Midlands Midwest

TUS Guide to Writing and Using Learning Outcomes 2025 - 2030



Document Control Record

Academic Quality Assurance and Enhancement Handbook	
Volume 6: No 9	
Document Title	TUS Guide to Writing and Using Learning Outcomes 2025 - 2030
Document Entrust	Academic Council Subcommittee: Programme Provision and Reviews
Document Status	Approved by Academic Council
Revision No	1.0
Pages	Page 2 of 28
Approval Body	Academic Council
Date of Approval	17/10/2025
Next Revision	2031

Revision History	
Revision No	Comments/Summary of Changes
1.0	Approved by Academic Council (17/10/2025)

Contents

1.0	Introduction.....	4
2.0	Scope of the Guide	4
3.0	The Different Roles of Learning Outcomes.....	5
4.0	Key Elements of the National Framework of Qualifications (NFQ)	6
4.1	Interrelationship between Learning Outcomes and the TUS Award Standards	8
5.0	Considerations for Writing Learning Outcomes.....	9
5.1	Specific Considerations for Writing Programme Learning Outcomes	13
5.2	Specific Considerations for Writing Module Learning Outcomes	14
5.3	Other considerations in Writing Learning Outcomes	15
6.0	References	17
	Appendices:	19
	Appendix 1: National Framework of Qualifications	19
	Appendix 2: NFQ Grid of Learning Outcomes by Award Level (Level 6 – Level 10).....	19
	Appendix 3. Summary of TUS Award Classes and Award Types	19
	Appendix 4. TUS Award Standards Adopted from QQI	20
	Appendix 5. Blooms Taxonomy of the Cognitive Domain.....	21
	Appendix 6. Simpson’s Taxonomy of the Psychomotor Domain	23
	Appendix 7. Harrow’s Taxonomy of the Psychomotor Domain.....	24
	Appendix 8. Biggs Solo Taxonomy.....	25

1.0 Introduction

This Guide to Writing and Using Learning Outcomes is intended as a resource to support TUS Academic Staff when writing and using programme and module learning outcomes. Learning Outcomes are defined in the ECTS Users' Guide, 2005^[1] as follows:

“Learning outcomes are statements of what a student is expected to know, understand and/or be able to demonstrate after completion of a process of learning.”

Therefore, learning outcomes are outcome-based, and define what the student will achieve rather than what has been taught. They are measurable statements delineating the knowledge, skills, and competencies that learners are expected to demonstrate upon completion of a learning unit (programme or module). They emphasise demonstrable achievement rather than instructional content, and ensure alignment between curriculum design, pedagogy, and assessment practices.

Learning outcomes can be written at:

- the programme level, where they articulate in broad terms the capabilities of the student on successful completion of a programme;
- the module level, where they describe more specifically what the student should know and be able to do upon completion of a particular module.

In higher education in Ireland, the learning outcomes-based approach to new programme development and the assessment of learners has a statutory basis. They are explicitly embedded within Quality and Qualifications Ireland (QQI)'s Core Statutory Quality Assurance Guidelines.^[2]

2.0 Scope of the Guide

This guideline document is compiled for operational use during the development, delivery and review of academic programmes in TUS. It shall serve as a reference point and a general guide for the definition of learning outcomes in broad fields of learning in the cognitive, affective and psycho-motor domains, or mixtures thereof.

The Guide identifies:

- a) the contextual relationship of learning outcomes to award standards;
- b) how learning outcomes should be defined for multi-variate types of learning;
- c) various taxonomies that guide the use and writing of learning outcomes, including and the use of measurable active verbs;

- d) an indicative number of learning outcomes for programmes/modules;
- e) reference resources that may be used in addition to the guideline document.

This Guide supports the *TUS Policy for Programme Validation and Modification*.^[3] The Guide is not designed to prescribe the programme specification of learning outcomes which is undertaken by the programme development team as part of programme development and validation.

3.0 The Different Roles of Learning Outcomes

Learning outcomes influence several dimensions of the academic planning and programme lifecycle: strategically, tactically and operationally. Strategically, learning outcomes are a core consideration in the analysis, design, and development of academic programmes. Tactically, academic programmes, through their quality assurance processes, are reviewed to ensure the delivery and achievement of learning outcomes. Operationally, learning outcomes direct the teaching and learning strategies adopted by academic programmes.

In addition, learning outcomes serve different roles for the various stakeholders, as follows:

- a) for students, learning outcomes
 - identify what learning is expected of them at each stage of their study for the programme that they have enrolled on;
 - determine the usage of relevant learning strategies to enable the achievement of the learning outcomes and learn effectively
 - determine and help validate the learning achieved.
- b) for academics and the university, learning outcomes:
 - identify what learning students are to attain on their programme and modules;
 - allow for the definition and selection of the most relevant assessment instrument(s) that will enable the achievement of the learning outcome(s)
 - allow for the selection and usage of relevant teaching strategies that will enable the achievement of the learning outcome(s).
 - demonstrate the alignment of academic programmes, and their associated qualification level, to recognised national and international standards in terms of teaching, assessment, quality, and recognition;
 - provide national and international educational transparency.

4.0 Key Elements of the National Framework of Qualifications (NFQ)

The Irish National Framework of Qualifications (NFQ)^[4] was established in 2003 as a framework for the development, recognition, and award of qualifications in the State. The NFQ is a system of levels and types of awards based on standards of knowledge, skill or competence to be acquired and to entitle a learner to an award at a particular level, and of the type concerned, within the framework. The NFQ has **10 Levels** designed to promote and allow progression of learners through the ladder of levels in the framework (diagrammatically represented in [Appendix 1](#)). The main building blocks of the framework are the 10 (learning-outcomes-based levels), the level indicators, the award classes and their associated award-types and the award descriptors

Levels are not in themselves standards but indicators of a range of standards and can be described in an ordered sequence. The core components of learning outcomes at each NFQ level are:

- **Knowledge:** What the learner knows and understands.
- **Skill:** What the learner can do, including practical application and communication.
- **Competence:** The ability to use their knowledge and skill in various situations, taking responsibility for their own learning.

Each NFQ level has a specified **Level Indicator** and these are a key structural element of the Framework. The level indicators describe nationally agreed standards of learning in terms of three strands of expected learning outcomes, namely Knowledge, Skills and Competences and are defined following a constructivist approach. These three strands are further differentiated into eight sub-strands:

- knowledge (breadth and kind);
- skills (know-how and skills range and selectivity); and,
- competence (context, role, learning to learn and insight).

The nationally agreed standards of learning for the three strands and their associated sub-strands are available at the: [NFQ Grid Level of Indicators](#). The standards for Level 6 to Level 10 awards are reproduced in [Appendix 2](#).

There are four categories of **Awards Classes** that exist in the NFQ, based on their breadth and purpose. The award classes are Major, Minor, Special Purpose, and Supplemental Awards, often categorised as Major and Non-major awards.

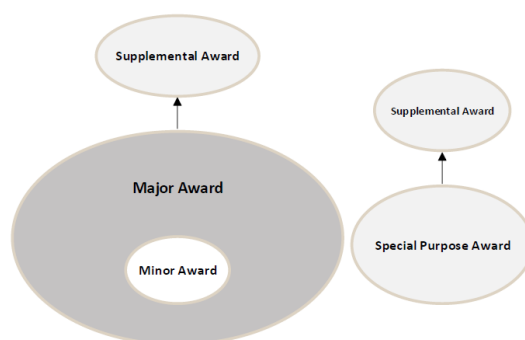


Figure 1. Inter-relationship at Award Level between Major, Minor, Supplemental and Special Purpose Awards (Note: while the ECTS credits for a Special Purpose Award may, in some instances, derive from a Major Award, the Special Purpose Award is a distinct entity. For further detail see TUS Policy on Programme Validation and Modification.^[3]

Award-type refers to the specific named types of awards defined within an award class and aligned to NFQ levels. An award type is a *named qualification type* within an award class, with defined descriptors and standards (see Award-type column in [Appendix 3, Summary of TUS Award Classes and Award Types including NFQ Level and ECTS Range](#). Each award type has an **award-type descriptor**, outlining its typical purpose, level, learning outcomes, credit volume, and progression opportunities.

- Award type descriptors for major award-types can be found in Addendum 4 of the [Determinations for the Outline National Framework of Qualifications](#)^[5].
- Generic award-type descriptors for non-major awards including for Minor, Special Purpose, Supplemental Award-Type are available at: [Descriptors for Non-major Awards](#)^[6].
- Descriptors for professional award-types at NFQ Levels 5 – 9 are available at: [Professional Award-type Descriptors](#)^[7].

Award Standards specify more specific expectations or criteria that programmes must satisfy to legitimately confer a named award under the NFQ. Awards Standards refer to the knowledge, skill, or competence to be acquired, and where appropriate, demonstrated by a learner before a specified qualification may be awarded. They serve to ensure that a given award meets the learning outcomes and level indicators defined by the NFQ and the descriptor for that award-type. QQI has specified different categories of award standard including:

- Generic award standards (applying across disciplines).
- Specific standards (for named fields or professional requirements):
- Non-major award standards (minor, special purpose, and supplemental

awards).

Like the Level Indicators, Award Standards are outcome-based, describing what learners are expected to know, understand, and be able to do, rather than prescribing content or teaching methods. They are expressed in terms of knowledge (breadth and kind), skill (range and selectivity), and competence (context, role, learning to learn, and insight), aligning directly with the NFQ's level indicators.

Award Standards ensure comparability and consistency across providers while allowing flexibility in curriculum design. QQI has set award standards for QQI awards and for Providers with delegated awarding powers. As a Designated Awarding body (DAB), TUS is responsible for its own Award Standards and ensuring that they are consistent with relevant NFQ Award Descriptors and Grid Level indicators. TUS determines an Award Standard for each of its NFQ qualifications. On designation, TUS Academic Council formally adopted the QQI Award Standards and incorporated these into its curriculum management system for programme building. Links to these Award Standards are provided in [Appendix 4](#). TUS Academic Council has also approved an additional Award Standard in Fine Art, in addition to the Art award standard.

4.1 Interrelationship between Learning Outcomes and the TUS Award Standards

The cascading inter-relationship between learning outcomes defined for TUS Programmes and Modules indicate their initial and primary alignment with the QQI Grid Level indicators and Award-type Descriptors and the TUS Award Standard for the given level and award type for a specified programme. As noted, the Award Standard is a statement of the knowledge, skill, and competence to be acquired by a student before a given award is made.

The Award Standard for a particular named award is then elaborated in the statement of minimum intended programme learning outcomes, agreed as part of the programme validation and approval process.

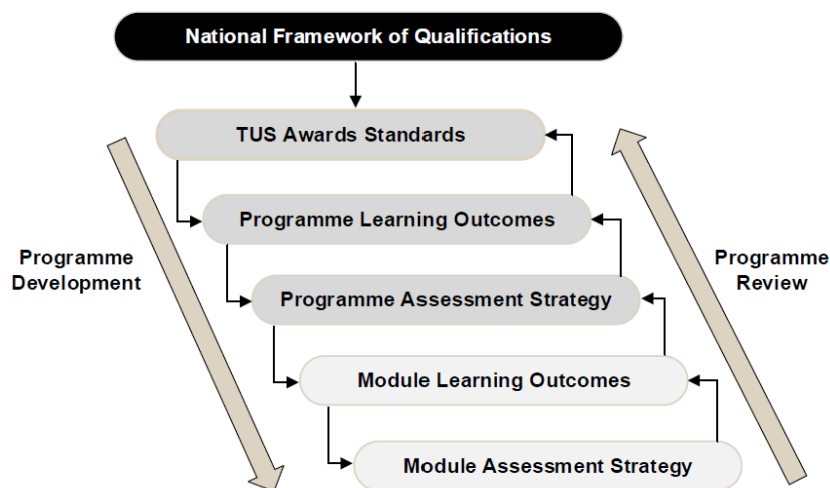


Figure 2. The cascading interrelationship of learning outcomes and assessment to Award Standards.

The programme learning outcomes cascade downward to shape the module learning outcomes, thereby ensuring coherence and alignment between the overarching award requirements and the specific units of study. Teaching, learning, and assessment strategies are, in turn, explicitly designed to support the achievement of the module learning outcomes, creating a clear alignment from the NFQ level indicators to classroom practice. In TUS, Programme Learning Outcomes are systematically mapped to module learning outcomes which in turn are mapped to the specified assessments. Thus, assessment plays a critical role in confirming whether the intended outcomes have been achieved. An award can only be conferred when evidence from assessments demonstrates that the programme learning outcomes have been achieved. This emphasis reflects principles of the constructivist approach, which views learning as the active construction of knowledge; assessment, therefore, must provide authentic opportunities for learners to demonstrate the achievement of the learning outcomes.

5.0 Considerations for Writing Learning Outcomes

When writing learning outcomes, it is important to distinguish between their scope and to consider the award level and award type as defined by the NFQ. Learning outcomes are specified at two distinct levels, programme learning outcomes and module learning outcomes.

- **Programme Learning Outcomes** specify what graduates of a programme are expected to know, understand, and be able to do on successful completion of the entire programme. They are directly informed by the award standard for the relevant award type (e.g., Higher Certificate, Bachelor/Honours Bachelor Degree, Master's Degree) and must align with the NFQ level indicators. Thus, Programme

Learning Outcomes embody both the breadth and depth of learning appropriate to the award level and award type.

- **Module Learning Outcomes**, by contrast, are narrower in scope. They define what students must achieve in terms of knowledge, skills, and competences within a specific module. In essence, they describe the measurable achievements through which students evidence their learning within a module. Module Learning Outcomes are derived from, and contribute to, the achievement of the programme learning outcomes. They must therefore be designed to reflect the appropriate cognitive demand and complexity expected at the award's NFQ level, while remaining achievable and assessable within the ECTS credit and timeframe of the module.

Depending on the relevant skills in a programme/module the learning objectives will relate to different types of educational activity or learning. This distinction is often expressed through the **domains of learning**, a framework originally articulated by Bloom et. al. (1956)^[8] and subsequently refined (Anderson, L.W. and Krathwohl, D.R. 2001).^[9]

There are three domains recognised, namely

- **Cognitive Skills**: Thinking problem solving (Knowledge)
- **Psychomotor Skills**: Physical activities (Skills)
- **Affective Skills**: Emotional growth, interpersonal development (Attitudes)

Cognitive Skills (Knowledge) involves the processes of thinking, analysis, problem-solving, reasoning and critical evaluation. At higher NFQ levels cognitive outcomes demand increasingly complex, abstract, and critical engagement, while at lower levels, the focus is often on foundational understanding and application. Disciplinary context shapes how knowledge is expressed, for example, theoretical reasoning in philosophy differs from applied problem-solving in engineering.

Psychomotor Skills (Skills) involves to the execution of physical tasks, actions and technical proficiencies. At lower NFQ levels, psychomotor outcomes focus on the acquisition of routine technical and practical skills, while at higher levels they may emphasise the refined, autonomous, and often innovative application of technical skills, such as mastering complex procedures, integrating advanced techniques, or demonstrating professional-level performance in specialised contexts. The award type and discipline heavily influence the emphasis. For example: laboratory competencies in science, applied manual and technical skills within craft or practice-

focused disciplines, clinical skills in nursing, or the development of instrumental and performance techniques in music.

Affective Skills (Attitudes/Values) encompass emotional growth, ethical awareness, appreciation, motivation and interpersonal development. At lower NFQ levels, affective outcomes focus on the development of appropriate attitudes, motivation, and basic interpersonal skills. At higher NFQ levels, affective outcomes may emphasise ethical reasoning, autonomy, leadership, and reflective judgment, such as taking responsibility in complex contexts, exercising professional integrity, and demonstrating creativity and initiative within disciplinary practice.

The nature and disciplinary orientation of a programme, together with its associated modules, determines the extent to which learning outcomes are drawn from the cognitive, psychomotor, and affective domains. Each domain encompasses a hierarchical continuum, progressing from lower-order to higher-order competencies, reflecting increasing complexity, abstraction, and autonomy in learning.

In the context of TUS awards, the NFQ award level of the programme or module must be a central consideration in the formulation of learning outcomes. Outcomes should be calibrated not only to the disciplinary demands of the field but also to the level-appropriate standards of knowledge, skill, and competence. This ensures that students are supported in achieving learning that is educationally coherent and constructively aligned with the award type and level.

There are several taxonomies that support the systematic writing of learning outcomes, providing hierarchical structures and language that help educators articulate intended outcomes across the cognitive, affective, and psychomotor domains.

The use of such frameworks assists in ensuring that outcomes are measurable, aligned to NFQ levels and award types, and coherent with disciplinary expectations. Importantly, they also underpin the constructive alignment of teaching, learning, and assessment strategies with programme and module learning outcomes. Constructive alignment is an educational design approach where learning outcomes, teaching methods, and assessment tasks are deliberately aligned to ensure students engage in activities that directly lead to achieving the intended learning outcomes. Bloom's Taxonomy is a commonly used resource as it provides a ready-made structure for the cognitive and affective domains, and lists verbs suitable for use in the description of learning outcomes in these domains ([Appendix 5](#)). The significance of the Blooms

taxonomy is that all verbs are active as learning outcomes should be concerned with what the student can do at the end of the learning activity. Simpson's Taxonomy is widely used for learning in the psychomotor domain ([Appendix 6](#)).^[10] Its' focus is primarily on learning toward the progression of mastery from observation to invention. Other taxonomies in the psychomotor domain include Harrow's Taxonomy, whose focus is toward physical ability ([Appendix 7](#)).^[11]

Further, John Biggs (2001) identifies that there are different levels of understanding that can be achieved by learners. Biggs SOLO Taxonomy, which stands for the 'Structure of the Observed Learning Outcome', is a means of classifying the levels of understanding that can be achieved as learning progresses and it becomes more complex ([Appendix 8](#)).^[12, 13]

A brief summary of the utility of the taxonomies each is provided in Table 1, while further detail is available in Appendices 5 to 8.

Table 1. Utility of the Guide/Taxonomy Indicated.

Taxonomy/Guide	Summary of Utility	Appendix
Bloom's Taxonomy of the Cognitive Domain	Foundational classification of educational objectives across cognitive, affective domains; provides hierarchical levels and action verbs for writing outcomes	Appendix 5
Simpson's Taxonomy of the Psychomotor Domain	Provides a structured hierarchy for psychomotor skills; widely applied in vocational, technical, and performance context and disciplines.	Appendix 6
Harrow Taxonomy of the Psychomotor Domain	Organises psychomotor skills from basic reflexes to skilled and creative performances. It guides educators in designing outcomes and assessments for progressive skill development in practice-based disciplines.	Appendix 7
Biggs SOLO Taxonomy (Biggs & Collis, 1982)	Structure of Observed Learning Outcomes helps classify students' understanding by increasing complexity, from surface learning to deep, relational and abstract thinking; useful for designing learning outcomes that reflect progression.	Appendix 8

A range of additional reference sources is provided that further elaborate on these and related taxonomies^[14, 15, 16 17, 18]

5.1 Specific Considerations for Writing Programme Learning Outcomes

A programme learning outcome is what a typical student is expected to achieve through engagement in and completion of the programme. The programme learning outcomes are the knowledge, skills and competencies students will have attained on successful completion of a programme. They are required to objectively, independently, and clearly identify the ability that the graduate of the programme will have by their participation in and completion of the learning activities embedded throughout their programme of study. The key characteristics of programme learning outcomes are that they are:

- high-level outcomes that are greater in scope and complexity than module outcomes,
- guided by professional, disciplinary, inter-disciplinary and institutional graduate attributes;
- informed by international, national and institutional level guidelines.
- student centred and orientated towards learner achievement;

Programme learning outcomes must be traceable through programme delivery and assessment. All programme outcomes should be achievable in terms of the learner effort required and must be measurable, through their inter-relationship with module learning outcomes. Accordingly, the sum of all the module assessment components, which are related to achieving the module learning outcomes, should contribute to achieving the entire programme learning outcomes.

Consideration should be given to the following key factors in formulating Programme Learning Outcomes.

- a) Programme learning outcomes should be written to articulate a high-level ability that the student will have developed on successful completion of the programme.
- b) The typical number of programme learning outcomes for a Major Award is between 9 and 12, while for Non-major Awards it is between 6 and 9. However, the exact number will vary depending on factors such as the NFQ level, Award-type, breadth and complexity of the programme, disciplinary requirements, and where relevant, the expectations of professional or statutory bodies. Some programmes may exceed these ranges to meet such requirements.
- c) Programme learning outcomes must be mapped to the relevant award standard and to sub-strands of knowledge, skill and competency. For TUS awards, this mapping is facilitated by the Academic Module Manager software. For a Major Award, the Programme Learning Outcomes must map to all eight sub-strands while for a Non-major Award mapping to all eight sub-strands may not be feasible

in the context of the overall ECTS volume of a given award.

- d) Consider the balance between cognitive, affective, and psychomotor outcomes, ensuring that all outcomes are appropriate to the NFQ level, award type, and disciplinary context. Cognitive outcomes should capture the required depth of knowledge; affective outcomes should articulate attitudinal, ethical, and interpersonal dimensions; psychomotor outcomes should be included where technical proficiency or performance skills are integral to the discipline.
- e) Aligning the Programme Learning Outcomes with the TUS Graduate Attributes Framework^[19] by ensuring that in addition to reflecting NFQ award standards, they also embed the graduate capabilities that TUS identifies in this Framework. This framework identifies seven graduate attributes and these have been embedded in the Academic Module Manager system allowing ready alignment during curriculum design.
- f) Consider if key transferable skills are embedded with related disciplinary knowledge outcomes and/or write specific outcomes for transferable skills.
- g) Writing the outcomes in clear English so that it is evident to multiple audiences what students are expected to achieve through the programme.
- h) Using action verbs when writing the outcomes to show what students will be able to know and do.
- i) Consider the order of the outcomes in relation to sub-strands of knowledge, skill and competence and to their importance to the programme, discipline or profession.

5.2 Specific Considerations for Writing Module Learning Outcomes

Module learning outcomes are expected to operate collectively as the building blocks through which programme learning outcomes are achieved. Within each programme, the learning outcomes of individual modules must therefore be explicitly aligned with the overarching programme outcomes to ensure coherence and progression across the curriculum. At the same time, module learning outcomes should articulate the essential learning to be attained within that module, expressed in terms of knowledge, skills, and competences appropriate to its NFQ level. As such, they represent the minimum threshold standard that learners are required to achieve to successfully complete the module, while also contributing incrementally to the broader graduate profile captured in the programme learning outcomes.

The following guidance is recommended for writing module learning outcomes:

- a) Use active, discipline-appropriate verbs drawn from established taxonomies (e.g., Bloom's, SOLO) to reflect the required NFQ level.
- b) Ensure outcomes are observable, measurable, and assessable, directly informing teaching, learning activities, and assessment design. Avoid vague or unmeasurable terms (e.g., know, understand, be familiar with, be exposed to), as these cannot be reliably assessed.
- c) Limit each outcome to one verb to maintain clarity and measurability.
- d) Write concise, single-sentence outcomes to ensure transparency for learners and assessors.
- e) Include only essential outcomes, representing the threshold standard required to pass the module.
- f) Relate the number of outcomes to module credit weighting: typically,
 - a 5 ECTS credit module shall have 3 – 5 learning outcomes;
 - a 10 or 15 ECTS credit module shall have 5 – 8 learning outcomes
 - a 30 ECTS credit module shall have 8 – 12 learning outcomes.

Note, these are typical or indicative figures as a general guide, with the actual number determined by the module proposer/programme team and agreed at validation;

- g) Incorporate overarching outcomes that align module learning to programme outcomes (e.g. analysing data, designing solutions, critiquing arguments).
- h) Address both discipline-specific and transferable skills (such as communication (oral and written), teamwork, problem-solving, synthesis of information, and lifelong learning capacity).

5.3 Other considerations in Writing Learning Outcomes

While learning outcomes are central to curriculum design and assessment, their effectiveness can be undermined by some common pitfalls. Careful attention to clarity, measurability, alignment, and cognitive level is essential to ensure outcomes genuinely reflect the standards expected at the relevant NFQ level and award type.

The following should be considered:

- Use of vague verbs (e.g., “understand”): Learning outcomes must employ observable, measurable verbs that indicate demonstrable achievement.
- Misalignment with assessment: Learning outcomes should correspond directly to assessments, e.g., if group work is assessed it must be articulated in the learning outcomes.
- Over-reliance on lower-order verbs: Excessive use of verbs such as “identify,” “describe,” or “explain” limits progression. Higher education award outcomes

should include a balance of Bloom's cognitive levels, appropriate to the NFQ level.

- Overly complex or ambiguous phrasing: Learning outcomes should remain concise, precise, and unambiguous to ensure clarity for both learners and assessors.
- Give consideration to the operational issues that may arise in ensuring the achievement of programme/module learning outcomes and that these are explicitly captured by the respective assessments set for modules and programmes.

It is recommended that draft learning outcomes are peer reviewed, including with peers and key stakeholders, as appropriate.

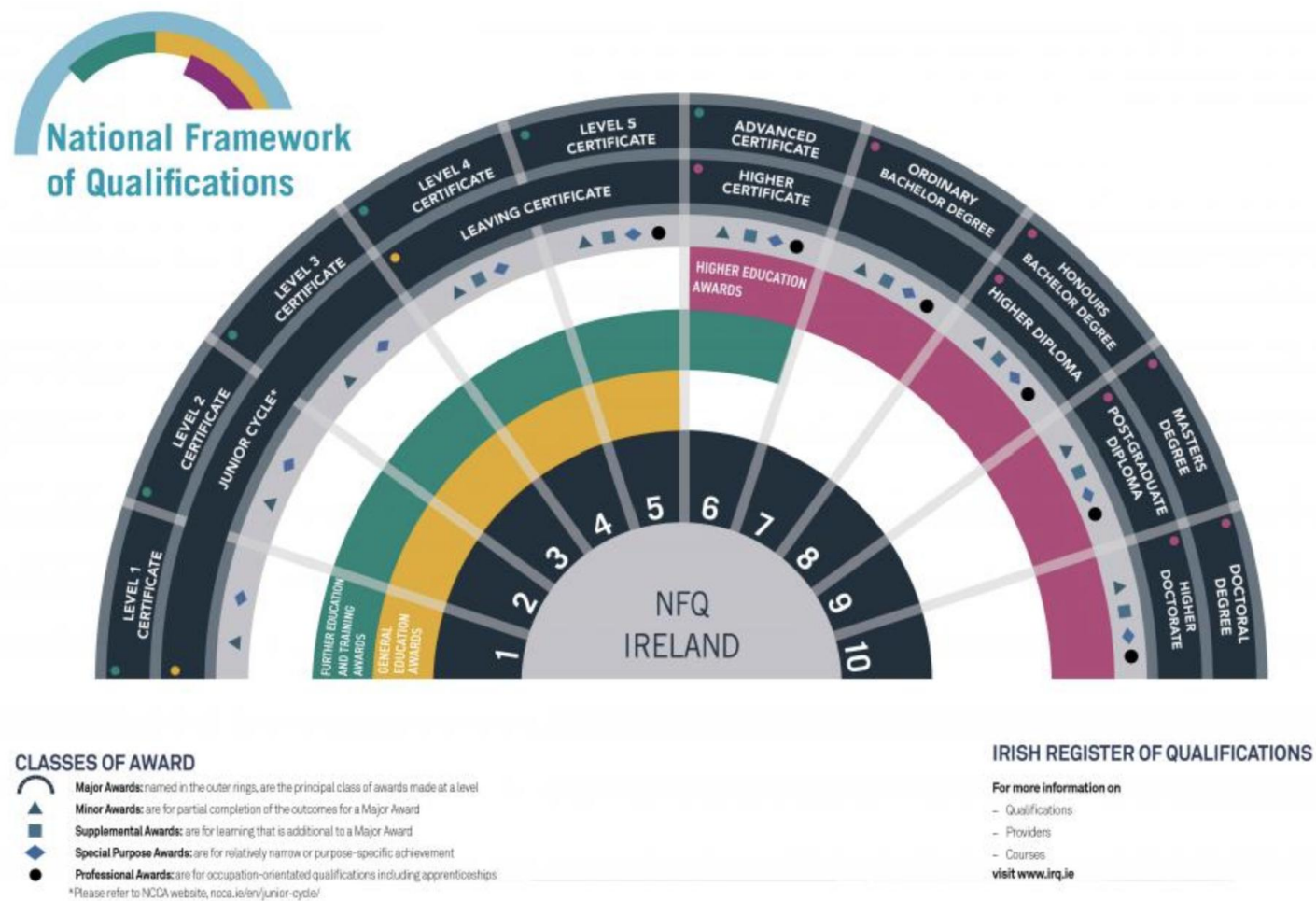
6.0 References

- 1) [ECTS Users' Guide 2015](#)
- 2) [Core Statutory Quality Assurance Guidelines](#)
- 3) TUS Policy on Programme Validation and Modification
- 4) [National Framework of Qualifications \(NFQ\)](#)
- 5) [Determinations for the Outline National Framework of Qualifications](#)
- 6) [Descriptors for Non-major Awards](#)
- 7) [Professional Award-type Descriptors](#)
- 8) Bloom, B.S., Engelhart, M.D., Furst, E.J., Hill, W.H. and Krathwohl, D.R., 1956. Taxonomy of educational objectives: The classification of educational goals. Handbook I: Cognitive domain. New York: David McKay Company.
- 9) Anderson, L.W. and Krathwohl, D.R. (eds.), 2001. A taxonomy for learning, teaching, and assessing: A revision of Bloom's taxonomy of educational objectives. New York: Longman.
- 10) Simpson, E.J., 1972. The classification of educational objectives in the psychomotor domain. Washington, DC: Gryphon House.
- 11) Harrow, A.J., 1972. A taxonomy of the psychomotor domain: A guide for developing behavioral objectives. New York: David McKay Company.
- 12) Biggs, J.B. and Collis, K.F., 1982. Evaluating the quality of learning: The SOLO taxonomy (Structure of the Observed Learning Outcome). New York: Academic Press.
- 13) Biggs, J., 2001. The reflective institution: Assuring and enhancing the quality of teaching and learning. *Higher Education*, 41(3), pp.221–238.
- 14) AIAfnan, M. A. (2024) 'Taxonomy of Educational Objectives: Teaching, Learning, and Assessing in the Information and Artificial Intelligence Era', *Journal of Curriculum and Teaching*, 13(4), pp. 173-188. Available at: [Taxonomy of Educational Objectives: Teaching, Learning, and Assessing in the Information and Artificial Intelligence Era | AIAfnan | Journal of Curriculum and Teaching](#)
- 15) Moreno, K., Tucker, C. et al. (2024) 'A Scoping Review of Learning Outcomes Frameworks: Towards Evidence of Learning and Impact Framework', *Intersection: A Journal at the Intersection of Assessment and Learning*, 5(4). Available at: [Branches From the Same Tree: A Scoping Review of Learning Outcomes Frameworks | Published in Intersection: A Journal at the Intersection of Assessment and Learning](#)

- 16)Chatterjee, D. and Kam, B. (2017) 'How to Write Well-Defined Learning Objectives', Medical Science Educator, 27(2), pp. 189-193. Available at: [How to Write Well-Defined Learning Objectives - PMC](#)
- 17)Thomas, K. (2004) [Learning taxonomies in the cognitive, affective and psychomotor domains. White Paper.](#)
- 18)Kennedy, D. (2006) [Writing and using learning outcomes: a practical guide, Cork: University College Cork.](#)
- 19)[TUS Graduate Attributes Framework](#)

Appendices:

Appendix 1: National Framework of Qualifications



See <https://www.qqi.ie/what-we-do/the-qualifications-system/national-framework-of-qualifications>

Appendix 2: NFQ Grid of Learning Outcomes by Award Level (Level 6 – Level 10).

	LEVEL 6	LEVEL 7	LEVEL 8	LEVEL 9	LEVEL 10	
KNOWLEDGE BREADTH	Specialised knowledge of a broad area	Specialised knowledge across a variety of areas	An understanding of the theory, concepts and methods pertaining to a field (or fields) of learning	A systematic understanding of knowledge, at, or informed by, the forefront of a field of learning	A systematic acquisition and understanding of a substantial body of knowledge which is at the forefront of a field of learning	KNOWLEDGE BREADTH
KNOWLEDGE KIND	Some theoretical concepts and abstract thinking, with significant underpinning theory	Recognition of limitations of current knowledge and familiarity with sources of new knowledge; integration of concepts across a variety of areas	Detailed knowledge and understanding in one or more specialised areas, some of it at the current boundaries of the field(s)	A critical awareness of current problems and/or new insights, generally informed by the forefront of a field of learning	The creation and interpretation of new knowledge, through original research, or other advanced scholarship, of a quality to satisfy review by peers	KNOWLEDGE KIND
KNOW-HOW & SKILL RANGE	Demonstrate comprehensive range of specialised skills and tools	Demonstrate specialised technical, creative or conceptual skills and tools across an area of study	Demonstrate mastery of a complex and specialised area of skills and tools; use and modify advanced skills and tools to conduct closely guided research, professional or advanced technical activity	Demonstrate a range of standard and specialised research or equivalent tools and techniques of enquiry	Demonstrate a significant range of the principal skills, techniques, tools, practices and/or materials which are associated with a field of learning; develop new skills, techniques, tools, practices and/or materials	KNOW-HOW & SKILL RANGE
KNOW-HOW & SKILL SELECTIVITY	Formulate responses to well-defined abstract problems	Exercise appropriate judgement in planning, design, technical and/or supervisory functions related to products, services, operations or processes	Exercise appropriate judgement in a number of complex planning, design, technical and/or management functions related to products, services, operations or processes, including resourcing	Select from complex and advanced skills across a field of learning; develop new skills to a high level, including novel and emerging techniques	Respond to abstract problems that expand and redefine existing procedural knowledge	KNOW-HOW & SKILL SELECTIVITY
COMPETENCE CONTEXT	Act in a range of varied and specific contexts involving creative and non-routine activities; transfer and apply theoretical concepts and/or technical or creative skills to a range of contexts	Utilise diagnostic and creative skills in a range of functions in a wide variety of contexts	Use advanced skills to conduct research, or advanced technical or professional activity, accepting accountability for all related decision making; transfer and apply diagnostic and creative skills in a range of contexts	Act in a wide and often unpredictable variety of professional levels and ill defined contexts	Exercise personal responsibility and largely autonomous initiative in complex and unpredictable situations, in professional or equivalent contexts	COMPETENCE CONTEXT
COMPETENCE ROLE	Exercise substantial personal autonomy and often take responsibility for the work of others and/or for the allocation of resources; form, and function within, multiple, complex and heterogeneous groups	Accept accountability for determining and achieving personal and/or group outcomes; take significant or supervisory responsibility for the work of others in defined areas of work	Act effectively under guidance in a peer relationship with qualified practitioners; lead multiple, complex and heterogeneous groups	Take significant responsibility for the work of individuals and groups; lead and initiate activity	Communicate results of research and innovation to peers; engage in critical dialogue; lead and originate complex social processes	COMPETENCE ROLE
COMPETENCE LEARNING TO LEARN	Learn to evaluate own learning and identify needs within a structured learning environment; assist others in identifying learning needs	Take initiative to identify and address learning needs and interact effectively in a learning group	Learn to act in variable and unfamiliar learning contexts; learn to manage learning tasks independently, professionally and ethically	Learn to self-evaluate and take responsibility for continuing academic/professional development	Learn to critique the broader implications of applying knowledge to particular contexts	COMPETENCE LEARNING TO LEARN
COMPETENCE INSIGHT	Express an internalised, personal world view, reflecting engagement with others	Express an internalised, personal world view, manifesting solidarity with others	Express a comprehensive, internalised, personal world view manifesting solidarity with others	Scrutinise and reflect on social norms and relationships and act to change them	Scrutinise and reflect on social norms and relationships and lead action to change them	COMPETENCE INSIGHT

See also:

<https://www.qqi.ie/grid-level-indicators>

[NFQ Grid Level of Indicators](#)

Appendix 3. Summary of TUS Award Classes and Award Types

Category	NFQ Award Class	NFQ Level	Award Type	ECTS Credit Volume
Major Award of the NFQ	Undergraduate Major Awards	6 - 8	Higher Certificate	120
			Ordinary Bachelor Degree (Ab-initio)	180
			Ordinary Bachelor Degree (Add-on)	60
			Honours Bachelor Degree (Ab-initio)	180-240
			Honours Bachelor Degree (Add-on)	60
			Higher Diploma	60
	Postgraduate Major Awards (Taught)	9	Postgraduate Diploma	60
		9	Masters Degree (Taught)	60 - 120
Non-major Award of the NFQ	- Minor Awards <i>(always linked to a major award)</i> - Special Purpose Awards <i>(specific areas of learning that have a narrow scope)</i> - Supplemental Awards <i>(learning which is additional to a previous award)</i>	6	Certificate	≥ 10
		7, 8	Certificate	≥ 10 and < 60
		7, 8	Diploma	≥ 60
		9	Certificate	≥ 10 and < 30
		9	Postgraduate Certificate	≥ 30
TUS Certificate	Not an award of the NFQ	-	TUS Certificate of Completion or Single Subject Certificates	1 – 9
TUS Digital Badge	Not an award of the NFQ <i>(See TUS Digital Badge Policy^[19])</i>	-	TUS Digital Badge	Non-credit Bearing

Note: In TUS, NFQ Non-major awards from 1 – 30 ECTS Credits and Certificates of Completion for 1 – 9 ECTS are also referred to as Microcredentials.

Appendix 4. TUS Award Standards Adopted from QQI

TUS has adopted the following award standards from QQI:

Generic

- [Generic Major Award Standards \(NFQ Levels 6-10\)](#)
- [Generic Standards for Minor, Special Purpose, Supplemental Award-Types](#)

Professional

- [Professional Awards at NFQ Levels](#)

Disciplinary Award Standards

- [QQI Award Standards - Accountancy \(July 2014\)](#)
- [QQI Award Standards – Architecture \(July 2014\)](#)
- [QQI Award Standards - Architectural Technology 2016](#)
- [QQI Award Standards - Art & Design \(July 2014\)](#)
- [QQI Award Standards – Business \(July 2014\)](#)
- [QQI Integrated Award Standards for Business \(June 2024\)](#)
- [QQI Award Standards - Computing \(July 2014\)](#)
- [QQI Award Standards – Counselling and Physiotherapy \(May 2014\)](#)
- [QQI Award Standards - Engineering \(July 2014\)](#)
- [QQI Award Standards – English Language \(November 2018\)](#)
- [QQI Award Standards – For Pre-higher Education Foundation Awards for International Students \(December 2015\)](#)
- [QQI Award Standards – Award Standards - Nursing and Midwifery \(July 2014\)](#)
- [QQI Award Standards – Professional Master of Education \(PME\) Award \(May 2014\)](#)
- [QQI Award Standards - for Honours Bachelor of Laws and Master of Laws \(July 2014\)](#)
- [QQI Award Standards - Science \(July 2014\)](#)
- [QQI Award Standards - Social Care Work \(July 2014\)](#)

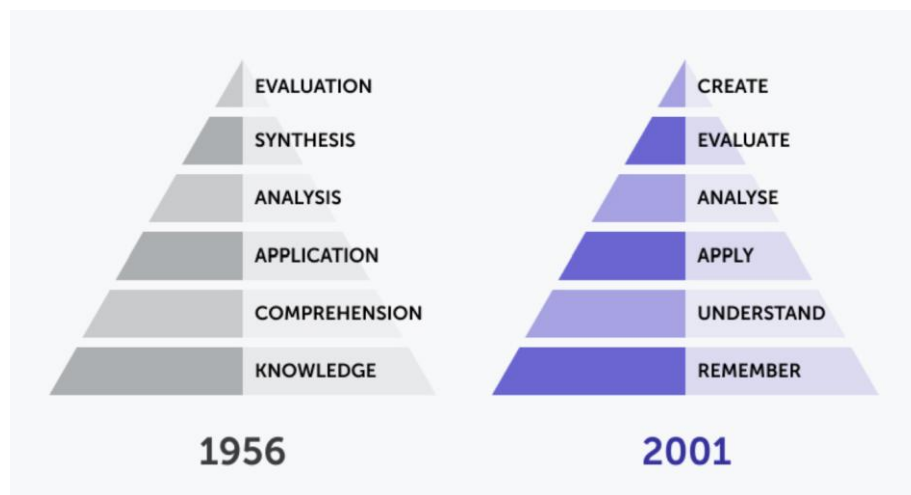
Additional Award Standard Approved by Academic Council

- [TUS Fine Art Award Standard](#)

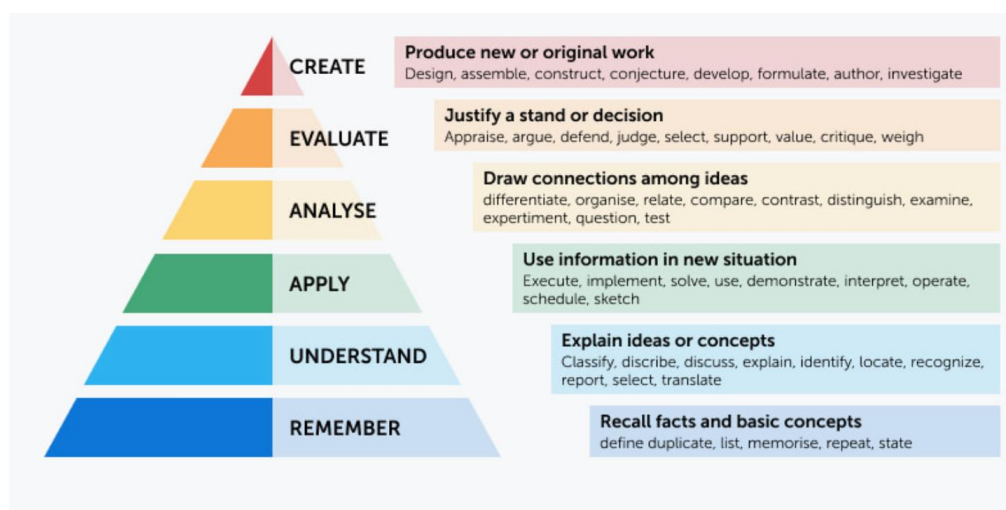
Appendix 5. Blooms Taxonomy Of the Cognitive Domain

Blooms taxonomy relates to "levels" of learning. Level one (knowledge) is the lowest level, and level six (evaluation) is the highest. Bloom proposed that our thinking can be divided into six increasingly complex levels from the simple recall of facts at the lowest level to evaluation at the highest level. Learning at the lower levels must be achieved in order to master the higher levels. The original taxonomy was first described in 1956 in the book *Taxonomy of Educational Objectives* by American educational psychologist Benjamin Bloom and his coauthors Max Englehart, Edward Furst, Walter Hill, and David Krathwohl.

To provide learners with clearer instructional goals, a group of researchers led by Bloom's colleague David Krathwohl revised the taxonomy in 2001. The revised learning stages are Remember, Understand, Apply, Analyze, Evaluate and Create.



Comparison of Original and revised Bloom's Taxonomies



Revised Blooms Taxonomy with emphasis on verbs (2001)

Action Verbs (Blooms Taxonomy Revised 2001)

Level	Basic Description	Foundational Verbs
Remember (Level 1)	Recognizing or recalling knowledge from memory. Remembering is when memory is used to produce or retrieve definitions, facts, or lists, or to recite previously learned information.	Arrange, choose, count, define, describe, duplicate, enumerate, find, identify, label, list, locate, match, memorise, name, order, outline, point, quote, recall, recite, recognise, record, relate, repeat, reproduce, retrieve, select, state, tabulate, underline.
Understand (Level 2)	Constructing meaning from different types of functions be they written or graphic messages or activities like interpreting, exemplifying, classifying, summarizing, inferring, comparing, or explaining.	Associate, annotate, classify, compare, convert, defend, describe, discuss, distinguish, estimate, explain, express, extend, generalise, give examples, identify, illustrate, infer, interpret, locate, outline, paraphrase, predict, recognise, report, restate, review, rewrite, select, summarise, translate
Apply (Level 3)	Carrying out or using a procedure through executing, or implementing. Applying relates to or refers to situations where learned material is used through products like models, presentations, interviews or simulations.	Apply, articulate, calculate, carry out, change, choose, complete, compute, demonstrate, develop, dramatise, employ, execute, implement, manipulate, modify, operate, prepare, practice, predict, schedule, sketch, solve, transfer, use, write
Analyse (Level 4)	Breaking materials or concepts into parts, determining how the parts relate to one another or how they interrelate, or how the parts relate to an overall structure or purpose. Mental actions included in this function are differentiating, organizing, and attributing, as well as being able to distinguish between the components or parts. When one is analyzing, he/she can illustrate this mental function by creating spreadsheets, surveys, charts, or diagrams, or graphic representations.	Analyse, appraise, arrange, break down, calculate, categorise, classify, compare, contrast, criticise, deconstruct, differentiate, discriminate, distinguish, examine, experiment, inspect, investigate, organise, outline, question, relate, separate, structure, test
Evaluate (Level 5)	Making judgments based on criteria and standards through checking and critiquing. Critiques, recommendations, and reports are some of the products that can be created to demonstrate the processes of evaluation. In the newer taxonomy, evaluating comes before creating as it is often a necessary part of the precursory behavior before one creates something.	Appraise, argue, assess, check, choose, compare, conclude, critique, defend, evaluate, grade, interpret, judge, justify, measure, prioritise, prove, rank, rate, recommend, reflect, score, select, support, validate, value, verify
Create (Level 6)	Putting elements together to form a coherent or functional whole; reorganizing elements into a new pattern or structure through generating, planning, or producing. Creating requires users to put parts together in a new way, or synthesize parts into something new and different creating a new form or product. This process is the most difficult mental function in the new taxonomy.	Arrange, assemble, build, collect, combine, compose, construct, create, design, devise, develop, formulate, generate, hypothesise, imagine, invent, manage, modify, organise, plan, prepare, produce, propose, rearrange, reconstruct, set up, synthesise, write

Collated from: Wilson, L.O., 2016. Anderson and Krathwohl – Bloom's Taxonomy Revised: Understanding the New Version of Bloom's Taxonomy. [online] The Second Principle. Available at: <https://thesecondprinciple.com/essential-teaching-skills/blooms-taxonomy-revised/>

Appendix 6. Simpson's Taxonomy of the Psychomotor Domain

Elizabeth Simpson's (1966) taxonomy is focused on the progression of a skill from guided response (i.e., doing what you are told to do) to reflex or habitual response (i.e., not having to think about what you're doing), then includes origination as the highest level (i.e., invention of a new way to perform a task).

Level	Description	Foundational Verbs
Perception (Level 1)	The process of becoming aware of objects, qualities, etc. by way of senses. Basic in situation-interpretation-action chain leading to motor activity. May include sensory stimulation, cue selection, translation.	Associate, Compare, Feel, Hear, Identify, Inspect, Listen, Notice, Recognize, Scan, Select, Smell, Taste
Set (Level 2)	Readiness for a particular kind of action or experience. This readiness or preparatory adjustment may be mental, physical or emotional.	Adjust, Arrange, Comprehend, Identify, Locate, Organize, Recognize, Respond, Select
Guided Response (Level 3)	Overt behavioral act of an individual under guidance of an instructor, or following model or set criteria. May include imitation of another person, or trial and error until appropriate response obtained.	Adapt, Correct, Imitate, Match, Practice, Repeat, Reproduce, Simulate
Mechanism (Level 4)	Occurs when a learned response has become habitual. At this level the learner has achieved certain confidence and proficiency or performance. The act becomes part of his/her repertoire of possible responses to stimulus and demands of situations.	Assemble, Fasten, Manipulate, Mix, Mold, Set-up, Shape
Complex (Level 5)	Overt Response Performance of a motor act that is considered complex because of movement pattern required. May include resolution of uncertainty, i.e., done without hesitation; and automatic performance, finely coordinated with great ease and muscle control.	Adjust, Combine, Coordinate, Integrate, Manipulate, Regulate
Adaptation (Level 6)	Altering motor activities to meet demands of problematic situations.	Adapt, Adjust, Alter, Convert, Correct, Integrate, Order, Standardize
Origination (Level 7)	Creating new motor acts or ways of manipulating materials out of skills, abilities and understandings developed in the psychomotor area.	Construct, Create, Design, Develop, Formulate, Invent

Collated from: [Thomas, K. \(2004\) Learning taxonomies in the cognitive, affective and psychomotor domains. White Paper.](#)

Appendix 7. Harrow's Taxonomy of the Psychomotor Domain

Anita Harrow (1972) developed a taxonomy for children with special physical needs. This taxonomy is better suited to assessing ability to perform a task or activity or to sports and recreation activities than to the typical physical activities performed in the workplace

Level	Description	Foundational Verbs
Reflex Movements (Level 1)	Actions elicited without learning in response to some stimuli.	Extension, Flexion, Postural adjustments, Stretch
Basic Fundamental Movements (Level 2)	Inherent movement patterns which are formed by combining reflex movements (serve as the basis for complex skilled movements).	Grasp, Grip, Manipulate, Push, Run, Twist, Walk
Perceptual (Level 3)	Interpretation of various stimuli that enable one to make adjustments to the environment. Visual, auditory, kinesthetic, or tactile discrimination. Suggests cognitive as well as psychomotor behavior.	Catching, Coordinated movements (e.g., jumping rope), Punting
Physical Activities (Level 4)	Endurance, strength, vigor, and agility which produce a sound, efficiently functioning body.	All activities which require (a) strenuous effort for long periods of time; (b) muscular exertion; (c) a quick, wide range of motion at the hip joints; (d) quick, precise movements
Skilled Movements (Level 5)	The result of acquisition of a degree of efficiency when performing a complex task.	All skilled activities obvious in sports, recreation, and dance
Non-Discursive Communication (Level 6)	Communication through bodily movements ranging from facial expressions through sophisticated choreography.	Body postures, gestures, and facial expressions efficiently executed in skilled dance movement and choreography

Collated from: [Thomas, K. \(2004\) Learning taxonomies in the cognitive, affective and psychomotor domains. White Paper.](#)

Appendix 8. Biggs Solo Taxonomy

John Biggs identified that there are different levels of understanding that can be achieved by students. SOLO, which stands for the **Structure of the Observed Learning Outcome**, is a means of classifying the levels of understanding that can be achieved as learning progresses and it becomes more complex. At first, the student picks up only one or few aspects of the task (uni-structural), then several aspects but they are unrelated (multi-structural), then they learn how to integrate them into a whole (relational), and finally, they are able to generalised that whole to as yet untaught applications (extended abstract).

The diagram lists verbs typical of each understanding level.

