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# Assessment challenges in integrated professional development

By Dr Stan Lester

Conceptual paper series - No. 3



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APPRENTICESHIPS

## Who we are

# Celebrating UVAC at 25

**U**VAC is one of the most authoritative voices in the sector on education and training in higher education (HE) and the leading expert on all aspects of the policy and operational requirements of higher and degree apprenticeships. UVAC currently has members of all types and sizes and from all university mission groups and a growing number of valued corporate supporters. UVAC is celebrating its 25th anniversary in 2024; two and half decades of championing higher technical and professional learning and actively supporting progression routes into HE through our advocacy, representation and research work.

And what a remarkable 25 years we have experienced in apprenticeships. In fact, I would say we have seen a seismic shift in the development and policy design of apprenticeships in England. Where once we had apprenticeships that were just the domain of traditional industries with little engagement with or appeal to HE providers, we now have apprenticeship opportunities in England that stretch from the crafts and trades through to technical, associate professional, managerial and professional job roles and we have the foremost universities in the world involved in their delivery alongside colleges, training providers and employers. Degree Apprenticeships have become a significant entry-route to professions from architecture and engineering to nursing and social work, providing a means for young people and mid and late careerists to enter traditionally graduate occupations in the private sector and contributing to modernising and diversifying our public services.

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## About the author

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**D**r Stan Lester is an associate with UVAC. He has worked since 1993 as a consultant, researcher and systems developer in professional and work-related education and development. His work spans four principal areas: professionalisation and self-regulation, professional competence, work-based higher education, and more recently digital learning. He has been described as a leading expert on professional competence as well as one of the world's most important thought-leaders and most cited authors on university-level work-based learning.

Stan is the author or co-author of several reports relating to degree apprenticeship and similar provision. These include the 2020 Edge Foundation-commissioned study by Middlesex University on the sustainability of degree apprenticeships, a 2016 report for QAA on work-integrated degrees, internal reports on tripartite reviews and mobile learning in apprenticeships, and a study of digital learning in work-based programmes in response to the coronavirus pandemic.

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# Summary

**A**s discussed in the first paper in this series (Lester, 2024a), integrated professional development involves bringing together academic and practice learning in a common programme or pathway, normally leading to professionally qualified status as well as an academic qualification. Integrated programmes need to reflect good assessment practice as it applies both to academic learning and to professional proficiency, while having some additional requirements of their own. Key points include:

**The principle that theory and practice must be assessed holistically, both to reflect genuine professional capability and to avoid undermining integrated learning.**

**As a basis for assessment, the need for clarity about what the practice of the profession involves, as well as the level – in terms of complexity of contexts, criticality of actions and level of proficiency – expected of a newly-qualified practitioner.**

**Following basic principles of good assessment as they apply to complex assessment contexts – validity, robustness, consistency, fairness and accessibility, and ensuring the authenticity of (or authorship) what is being assessed.**

**Going beyond these essential principles to consider how assessment:**

- supports learning both immediately and after the programme has finished
- is authentic in relation to the work of the profession and respects the situated nature of practice
- can be designed to be as accessible as possible without undermining validity and robustness.

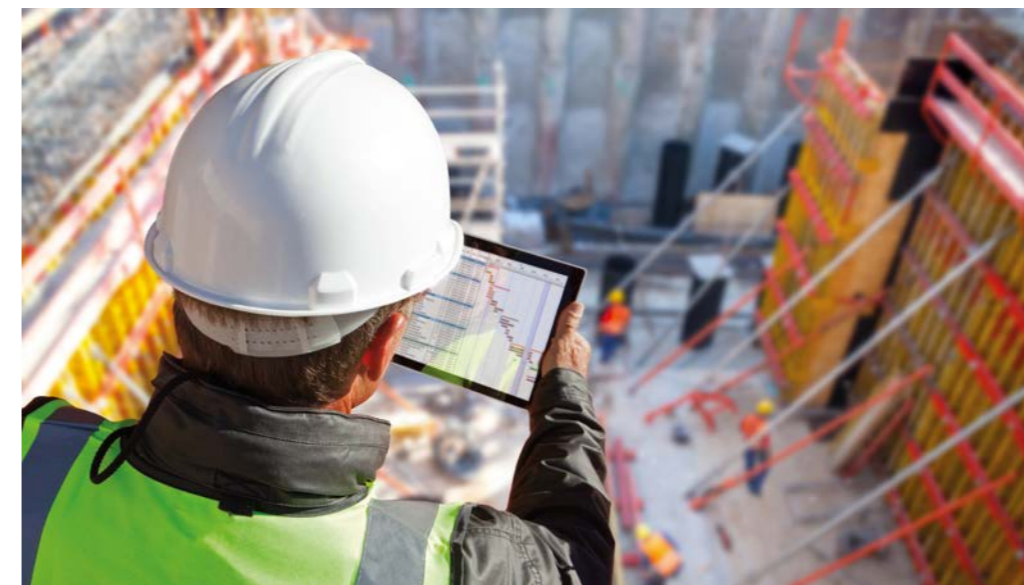
**Making use of digital technology where it provides benefits, while being mindful of its limitations and dangers.**

These implications can pose challenges for assessment design and can require traditional modes of professional and higher education assessment to be rethought. A major principle is to consider what assessment needs to do in order to warrant a person as a proficient practitioner and reflect the same principles throughout the programme so that assessment consistently involves constructive activities that have meaning to the learner and direct relevance to their future practice, as opposed to being based on separate components that will be brought together at a later date.

# Introduction



Integrated professional development (IPD) can be defined as the use of a co-ordinated academic and work-based development programme or pathway that brings together the theory and practice of an occupation or profession, generally leading to an academic award as well as recognition as a proficient and qualified practitioner (Bravenboer and Lester 2016, Lester 2024a, b). It overlaps with, but has a different starting-point from, work-based learning (WBL) in higher education where learners are engaged in a programme that supports and builds on their work, and work-integrated learning (WIL) where work forms part of a co-ordinated curriculum. Integrated programmes and pathways can be contrasted both with the currently dominant sequential pathway, which in its simplest form consists of a full-time degree followed by work-based training, and with the parallel or dual model where a part-time course runs alongside a training post (e.g. Lester 2009, Hordern 2015). Nevertheless, there is overlap between these route-types and a continuum particularly between parallel programmes and those that are more fully integrated. IPD pathways at present consist of two main types. One is organised around 'full-time' higher education (HE) courses that have a substantial amount of time – up to half the programme – spent in the workplace, as in teacher training, most health and social care programmes and German dual degrees; these can be considered a form of WIL if a 'tightly-coupled' one (Ajjawi *et al* 2020). In the other the learner is primarily located in the workplace, as with degree and professional apprenticeships. Rather than WIL these might be termed 'learning-integrated work' (Lester 2024b). The actual level of integration between theory and practice that is present in these programmes is highly variable (O'Driscoll *et al* 2010, Lester and Bravenboer 2020, Lester 2024a), and there is also variability in the extent to which IPD programmes lead to a fully qualified level.



Continues overleaf ➤



From an assessment perspective IPD brings challenges that are present in contemporary HE and professional training generally, as well as additional ones of its own. The focus of IPD on integrating theory and practice implies that, if the programme is not to be undermined by inappropriate assessment, assessment objectives and methods also need to be integrated. While assessment strategies do not in themselves lead to the integration of learning (cf. Mordhorst and Jenert 2023), they are able to sabotage it particularly if they assess theory and practice separately (Ajjawi *et al* 2020, Boud *et al* 2023). This also needs to be considered in the context of multiple organisational interests, generally those of HE, the profession (however defined and organised), and the work organisation. In British apprenticeships there is a further complication created by national apprenticeship regulations and the need to sign off the apprenticeship itself, normally through an 'end-point assessment' that can be integrated with the degree or carried out separately (Baker and Robertshaw 2022). IPD programmes are therefore subject to normally two, and sometimes three, assessment and quality assurance regimes that need to be brought together at the point of application.

This paper draws together some of the principles and issues affecting assessment design and practice that are relevant to IPD, following on from the earlier UVAC paper (Lester 2024a). It is not designed either as a comprehensive academic review or as a prescription for best practice. Instead, it aims to bring out salient points for policymakers, programme designers and assessors to consider in creating and enacting effective assessment for IPD pathways and programmes, recognising that some of these will represent a challenge for current practices.

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## 01. The aims of assessment

**T**he traditional aims of final assessment in professional fields can be summarised simplistically as finding out how well students understand the field and whether they are able to practise to the required standard. Both aims are the concern of the profession, but the first is more the province of the academic institution or course provider, while the second is principally that of whoever has the responsibility of signing the new practitioner off as fully qualified. Typically, there is at least a tacit tension between educational and professional assessment; even if it acts as a 'warrant' in the sense used by Holmes (2015) of confirming a particular identity, an educational qualification is traditionally a marker of achievement and indication of readiness to progress to the next stage. On the other hand, professional accreditation attests to proficiency and acts more like a warranty that the person is able to act to an acceptable standard. As Winch (2023) points out, like a product guarantee this cannot be a complete assurance, but it does provide a measure of confidence as well as, for many professions, a means of recourse via their associations or regulators if things should go wrong. Professions carry a responsibility for ensuring that their accreditations are robust and that 'false positives' – qualified but not acceptably competent practitioners – are minimised. Professional bodies typically have ongoing means of maintaining their warranty, but the most critical aspect is the process of assessment on which initial award of qualified status is based.

While any profession will want to ensure that its assessments are robust and internally consistent, there are variations between professions in what is being represented at the point of qualifying. There are three principal aspects to this:

1. **Complexity**
2. **Level of proficiency, and**
3. **Criticality**

**Complexity** is concerned with the inherent complexity of problems that the practitioner is likely to need to resolve, the complexity of the skills needed to deal with them, and the depth and breadth of understanding called on in the practice situation. As an example, a nursing associate is unlikely to need to be able to resolve as complex an issue as a medical doctor or a clinical psychologist, nor bring to bear a similar depth of knowledge. Complexity in this sense is generally reflected in the academic or qualification levels applied to practice-based certification; hence the nursing associate is deemed to qualify at level 5<sup>1</sup> and a clinical psychologist at level 8. The qualifying level of many familiar professions is deemed to be at level 6 (e.g. nurse, surveyor) or 7 (solicitor, architect, chartered engineer), suggesting a broad but not absolute similarity in the level of complexity being expected.

**Level of proficiency** is concerned with the degree to which the qualified person is ready to practise independently of supervision and take responsibility for his or her work and its consequences, at the level of complexity appropriate for the profession. It can be regarded as analogous to setting the pass level within an already-defined qualification. A widely used proxy for level of proficiency is the Dreyfus skills acquisition model (Dreyfus and Dreyfus 1986), which views practitioners as developing through the stages of novice, advanced beginner, competent, proficient and expert. The novice and expert stages can normally be ignored for the purposes of qualifying. Where newly qualified entrants start in a formally supervised or probationary role it may be acceptable to pitch qualification at the boundary between the advanced beginner and competent levels, representing readiness to practise; this is arguably the case with nursing and teaching (Lester 2024b). The majority of self-regulating professions expect newly qualified practitioners to be on the threshold of independent practice, reflected by the competent stage, while a few (such as heritage conservation) position their qualified status at the level of practising fully independently, i.e. the proficient stage.

**Criticality** is concerned with the consequences of getting things wrong and requires the profession to give particular attention to managing the risk involved in granting a warranty. Although part of this risk management process may incidentally involve requiring a higher level of qualification and a need for achievement closer to the proficient level, criticality is independent of either complexity or level of proficiency; for instance, making a mistake in a simple but critical procedure can result in more damage than incompetence in a complex decision-making process. The main implication of a high level of criticality is that assessment needs to be particularly robust to keep false positives to a minimum.

<sup>01</sup>. The levels system for England, Wales and Northern Ireland is used here.

## 02. The focus of assessment

It can now be taken as given that in granting qualified status, a profession needs to do more than test the knowledge of candidates and record hours of workplace learning or tick off a list of tasks that have been completed (Lester 2009, 2014). However, there is no general agreement about what specifically should be assessed. What might be termed the pedagogies of assessment used by professions, as well as those incorporated into apprenticeship regulations, are variable and sometimes muddled.

The two main paradigms that inform the focus of assessment can be termed 'internal' and 'external', following the way in which they conceptualise professional competence or proficiency (Mansfield 1989, Eraut 1998). The internal paradigm considers the attributes of the person that enable proficient action. A common way of expressing this is as knowledge, skills and attitudes or dispositions, broadly drawing on Bloom's taxonomy. The knowledge, skills and behaviours used in British apprenticeship standards is a variant of this approach, although it combines attributes (knowledge and skills) with activity (behaviours, variably interpreted as general conduct or specific practices). An alternative is the behavioural attributes model that has been used more widely in North America, typified by the work of the McBer organisation and authors such as Spencer and Spencer (1993) and McClelland (1998). The basic tenet of the internal paradigm in relation to practice-oriented assessments is that while it may not be possible to fully know the range of situations that the practitioner might be called on to address, even less to actually observe or otherwise evidence competent action across them, ensuring that the person is equipped with the relevant attributes provides a good enough indication that they will be able to act effectively across the demands of practice. It has tended to find favour in vocational education because of the ease of translating internal specifications into learning outcomes that make sense from an educational perspective and do not require access to workplace practice (e.g. Vitello *et al* 2021).

From a practice viewpoint internal perspectives have three main disadvantages. One is being able to put together a specification that relates accurately to what is needed in the field of practice being covered, which can be more difficult than is often assumed and can suffer from reflecting the content of existing curricula, expert inputs that lag behind current practice, and (particularly in the McBer version) making assumptions based on the characteristics of current practitioners. Even when these issues are overcome, internal perspectives assume easy translation from having a set of attributes and competencies to being able to act effectively in complex practice situations. As Eraut and colleagues among others have indicated (Eraut *et al* 2005), the gap between the two can be considerable. This becomes a major issue when either the level of proficiency required or the criticality of practice is reasonably high. Finally, internal specifications can favour a piecemeal approach to assessment where different components are assessed separately, or at least the assessment uses criteria relating to individual components rather than looking for holistic performance.



The external, social-expectation or activity-based paradigm is not directly concerned with skills, knowledge or other attributes, but focusses on what it is that the competent practitioner needs to be able to do. Historically this meant defining and assessing the performance of specific tasks (cf. Taylor 1911), but even for relatively straightforward work it was realised that task-based approaches to describing work competence were too prescriptive and missed out important aspects of the job (Mansfield and Mitchell 1996). An alternative approach based on work roles and functions became widely used in British vocational qualifications including to an extent at 'professional' levels (*ibid.*). Versions of this approach were also adopted directly by some professional bodies, both to link their standards to those for corresponding occupational qualifications, and as part of a trend away from relying on specified education and training pathways to more rigorous assessment of ability to practise at the point of sign-off (Lester 2009, 2014). There have however been widespread concerns that the functional model lacks adequacy for complex professional work and misses the richness, complexity and situated nature of practice, while downplaying both its interpersonal and intellectual aspects (Sandberg 2009, Lester 2017). Functional specifications can also result in more emphasis being placed on 'competences' than on holistic performance. As a result, some professions have developed broader activity-based standards that apply across the profession rather than to specific work roles, require deep understanding of the practice situation as a basis for action, and require interpretation according to context (*ibid*). In standards of this type there tends to be a strong emphasis on making contextually appropriate judgements based on relevant underlying principles, as well as on reading situations from an ethical perspective and acting accordingly.

In practice a difficulty arises in attempting to apply the external paradigm too rigidly in assessment contexts. While it is reasonable to expect 'ability to do' to be confirmed through evidence of practice, it is rarely feasible to assess more than a small proportion of potential practice situations directly. In a lengthy qualifying sequence, it may be possible to require evidence of key classes of activity, such as performing different kinds of surgery or designing different types of building, but it is never possible to cover every context in which these activities can take place or every kind of contingency that may be encountered. A more effective approach looks for examples of effective practice as prima facie evidence of proficiency, but also involves assessor and candidate in a dialogue that brings out the depth of understanding and breadth of awareness underpinning the ability to work across different contexts, handle contingencies and unpredictability, and insofar as is possible work effectively in the future (cf. Eraut 2004, Winch 2016, 2023). In IPD contexts this can also provide clearer evidence for meeting the academic requirements of the programme. In principle this is an approach that many professions have sought to adopt, although it is sometimes accompanied by overspecification, particularly of propositional knowledge, along with muddling between internal and external criteria.

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## 03. Assessment principles: the basics

Over the course of the last half-century an evolution has taken place in how basic assessment principles are framed, reflecting three different assumptions or perspectives each of which takes a more expansive view than the last. The first is that assessment is based on testing and can be regarded as making measurements that can be subjected to statistical analysis. The second is that assessment involves responses to specified tasks, and while some of these may be capable of objective analysis others require interpretation and judgement. The third is that it involves judging evidence according to criteria of some form; evidence can be produced as a response to specific tasks or prompts, but it could also emerge naturally out of work or similar activity which will vary between contexts and candidates. The growth of 'outcome-based' and 'competence-based' education and training prompted questioning of the first and (particularly in vocational contexts) the second of these assumptions. The basic premise, initially put forward most strongly in the context of National Vocational Qualifications (e.g. Jessup 1991), was that if a qualification is based on being able to do 'X', then the most valid form of assessment involves allowing candidates to demonstrate that they can do 'X' by whatever means are appropriate rather than requiring them to complete specific tests or tasks. While at first this perspective most strongly influenced vocational education and training, in modified form it also had a certain amount of resonance in parts of higher education (e.g. Atkins *et al* 1993, Gray 2001, Costley and Armsby 2007) and among some professions (e.g. Lester 2001).

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A result of this evolution in perspective has been a revisiting of the key principles underpinning good assessment practice such as validity, reliability, fairness and authenticity, particularly to broaden them out so that they have fitness for contexts that do not involve testing or preset assessment tasks. Various sets of principles have been put forward by different authors and agencies; the headings below follow those developed for a European project (Lester 2011), which set out to move away from normative assumptions about assessment while retaining credibility within multiple qualifications systems. These are not beyond critique, and they need to be considered in relation to developments discussed in the next section, but they are presented as points of reference. Table 1 provides examples of the principles in application.



### Validity

The idea of validity has evolved from a psychometrically oriented and in some respects esoteric concern with the appropriateness of educational test items (cf. Moss 1992), to a wider consideration of whether assessment processes, methods and criteria are appropriate for what is being assessed. Following Lester (2011), validity can be considered at a surface or fitness-for-purpose level (are the methods appropriate to the assessment criteria?), as well as at a deep or fitness-of-purpose level (are both methods and criteria appropriate to what the qualification or accreditation is aiming to warrant?). Validity can be regarded as the most fundamental principle of assessment, as invalid assessment is essentially meaningless and even if it is carried out consistently it will lack robustness and fairness. Achieving validity is partly a function of appropriate assessment design, but it can also be highly dependent on individual assessors' actions particularly where there is significant on-the-spot discretion, for instance when deciding which points to probe further in discussion. The idea of authentic assessment, discussed in section 4, builds further on the principle of validity.

### From reliability to robustness and consistency

Traditionally the concept of reliability has been used in two interconnected ways in relation to assessment: one in a statistical sense that is concerned with how close an assessment result is to a candidate's 'true score', i.e. what they should have got if the assessment was totally accurate (Wiliam 2001), and the other concerning the extent that the assessment result reflects what the candidate is actually able to do in practice. Yorke (2011b), following Guba and Lincoln (1989), suggests that the idea of dependability is more appropriate to the latter as it does not have connotations of testing or statistical analysis. Dependability is the extent to which an assessment result or claim reflects what the candidate can do consistently in the real world: essentially, if an assessment decision claims that the candidate is proficient, that should be borne out in practice. Lester (2001, 2011) uses the concept of robustness in a similar way with the additional connotation of rigour: i.e. that the assessment cannot easily be deceived, for instance through learning facts and procedures by rote. In practice robustness requires thoughtful assessment design and execution: for instance examining evidence from different contexts and sources rather than repeatedly using the same methods or revisiting the same type of instance; recognising that while some candidates will quickly demonstrate mastery, others will need more instances and deeper probing to allow the same level of confidence in their ability; and being thorough in following up areas of doubt while not being side-tracked by micro-criteria and trivia.

The other aspect inherent in the idea of reliability is that of consistency: ensuring that equivalent standards are applied to all candidates, both between different assessors and institutions, and over time. Its aim is to minimise both false positives to support robustness and confidence, as well as false negatives where candidates are failed or awarded a lower grade despite actually being proficient. It is becoming accepted that absolute consistency is impossible in complex assessments (e.g. Bloxham *et al* 2016), and aiming for too high a level of consistency can restrict the choice of assessment methods and undermine validity, robustness and accessibility. On the other hand, in professional assessments at least, means are needed to ensure an acceptable level of consistency nationally.

TABLE 1. Examples, applying the basic principles of assessment.

Principle	Good practice examples	Poor practice examples
<b>Validity</b>	<ul style="list-style-type: none"> <li>Using varied evidence from episodes of real-life practice, accompanied by dialogue, to assess practical understanding and proficiency</li> <li>Developing a realistic simulation to assess contexts where real practice is inaccessible or dangerous</li> </ul>	<ul style="list-style-type: none"> <li>Using observation as the sole method to assess practice</li> <li>Using a written examination to assess contextual understanding</li> </ul>
<b>Robustness</b>	<ul style="list-style-type: none"> <li>Using triangulation to increase confidence in the standard achieved</li> <li>Exploring areas of doubt through dialogue or further evidence</li> </ul>	<ul style="list-style-type: none"> <li>Concentrating exhaustively on a single type of evidence</li> <li>Making assumptions based on the learner's confidence or ability to talk convincingly</li> <li>Over specifying criteria or focusing on trivia at the expense of the overall picture</li> </ul>
<b>Consistency</b>	<ul style="list-style-type: none"> <li>Training and exchange of experience between assessors to gain a common understanding of criteria and how they might be interpreted</li> <li>Oversight and sharing of assessment decisions across institutions/ locations and over time</li> </ul>	<ul style="list-style-type: none"> <li>No assessment oversight or second opinion</li> <li>Lack of standard-setting processes between assessors</li> <li>Allowing concerns with consistency to drive the choice of assessment methods</li> </ul>
<b>Authenticity (authorship)</b>	<ul style="list-style-type: none"> <li>Probing depth of understanding in relation to the practice instances or materials that are being assessed</li> <li>Avoiding being influenced by contextual factors that are outside candidates' control, such as organisational culture or working methods</li> </ul>	<ul style="list-style-type: none"> <li>Penalising (or rewarding) candidates for matters that they are not able to influence</li> <li>Taking materials presented by the candidate at face value</li> <li>Ruling out candidates' use of technologies that they would normally have access to (such as generative AI) on the grounds of authenticity</li> </ul>
<b>Fairness and accessibility</b>	<ul style="list-style-type: none"> <li>Designing assessments so that they minimise assumptions about candidates and where possible provide alternative ways of demonstrating the required abilities</li> <li>Making reasonable adjustments that do not undermine the robustness and validity of the assessment</li> </ul>	<ul style="list-style-type: none"> <li>Not checking that candidates have access to up-to-date digital devices or a fast internet connection</li> <li>Assuming candidate abilities that are not required by the purpose of the assessment</li> <li>Assuming that communications have been understood and are meaningful to the candidate</li> </ul>



## Authenticity

The idea of authenticity (or authorship) in this context (e.g. Gray 2001, Lester 2011) refers to ensuring what is assessed reflects the work and genuine abilities of the candidate. In examinations or set-piece assessments, and in assignment-type work, this has typically focussed on avoiding plagiarism and other forms of cheating. However, in practice-oriented assessment two other matters need to be addressed:

1. Distinguishing material that the candidate uses, has assembled, or has legitimately got colleagues to produce, from material produced personally. This is increasing in importance as digital technologies such as generative AI become more sophisticated.
2. Avoiding projecting on to the candidate matters that are beyond their control, so that for instance the organisation, presentation and culture of the work environment or the actions of colleagues do not influence assessment judgements.

Traditionally measures to ensure authenticity have been concerned with preventing cheating and detecting plagiarism, but in complex assessments it can be more important to explore depth of understanding relating to the materials or practice instances that are being assessed; in some instances, it may also be appropriate to use forms of triangulation such as secondary evidence provided by supervisors or work colleagues.

## Fairness and accessibility

While these two concepts are theoretically distinct, in practice they are often interdependent. Fairness can be conceptualised in a way that is linked to consistency, particularly in ensuring that all candidates are assessed to the same standard and 'false negatives' are minimised. However, assessment cannot be considered fair if there are barriers to assessment that disadvantage particular individuals or groups. Barriers are things that do not relate directly to the factors that are being assessed, but that make it difficult or impossible to take part in assessment, or more difficult to meet the criteria. These are potentially wide-ranging and can include individual and cultural factors as well as pragmatic ones such as where assessments are carried out and any requirements for digital equipment and access; these are discussed further under universal design in the next section. Care is needed to distinguish between actions that improve accessibility and those that can undermine the validity and robustness of the assessment.



## 04. Assessment principles: beyond the basics

**B**eyond basic principles of good assessment, various assessment theories, principles and practices have emerged that have relevance for IPD contexts. Some of these, such as assessment for learning and universal design for assessment, are general principles that have application in IPD, while others such as contextual assessment are more specific to work-based and work-integrated learning. Four areas are explored here: assessment for learning, contextual assessment, authentic assessment, and universal design for assessment.

### Assessment for learning

Assessment for learning has been defined as assessment that is designed to provide feedback in a way that allows learners and teachers to adapt what they are doing to improve the quality of learning (William 2011). It has been equated to formative assessment, although this can lead to an inference that summative assessment – whether interpreted as any assessment that contributes to a qualification, or only assessment at the end of a programme – cannot influence further learning. Basic conceptions of assessment for learning centre around the idea of a feedback loop that allows corrective action towards improved performance and may not do more than view learners as passive recipients of information. Boud (2007) comments that effective assessment for learning in HE needs to go further than this in doing two things. First it needs to foster learners' reflexivity and self-regulation, developing the capability and propensity for seeking feedback, engaging in reflection and arriving at an independent judgement about their learning. Secondly it needs to support learning beyond the end of the programme, so that the habit of reflexivity and self-regulation becomes built in as part of the person's identity as a practitioner and participant in society. This suggests strongly that learning remains an important function of assessment even at the terminal point of the programme or development pathway.

### Contextual assessment

The growth of individually negotiated work-based learning in universities in the 1990s and 2000s brought with it a need for assessment that was correspondingly individual, negotiated and contextual. Not dissimilarly to Boud (*op cit*), Lester and Costley (2010) comment that there is a need to assess learners' progress as 'map-makers' or self-managing practitioners who take responsibility for the outcomes and standards of their work, rather than purely their ability as 'map-readers' to conform to standards set by others. This implies that in this context tightly defined learning outcomes or competence standards are inappropriate, and assessment criteria need to be negotiated and constructed *in situ* while reflecting appropriate generic standards such as relevant academic level statements.

Yorke (2011a, b), building on Yorke and Knight (2006), develops this discussion further through contrasting a 'realist' or positivistically informed approach to assessment with a 'relativist' or interpretive one. Realist assessment is based on predefined criteria or rubrics; it is assumed to be objective, value-free and independent of context; and assessment outcomes are treated as accurate and reliable measurements of achievement. The archetypal realist assessment is the remotely set and marked written examination, but realist principles underpin most forms of educational assessment as well as work-based ones that use preset assessment tasks or tightly specified competence criteria. Yorke comments that while this approach to assessment is potentially suitable for the kinds of well-structured tasks typically set in HE or found in routine work, it lacks adequacy when it is applied to the complex situations and unpredictable variables that are present in many kinds of professional work. In these situations, a relativist approach is needed that avoids trying to reduce complex activities to more predictable ones for ease of assessment. Relativist assessment uses broad, consensual criteria that need to be interpreted into context; it acknowledges the influence of values in the construction of assessment criteria, in learners' responses and in assessors' decisions; it respects differences in context between learners, and the influence of these on performance; and it treats assessment outcomes as informed judgements that involve interpreting complex sets of information.

The realist/relativist argument can be framed as on the one hand an emphasis on surface validity and reliability or consistency, and on the other a concern with deep validity and robustness. A realist approach provides greater confidence in the comparability of successful candidates, but not necessarily in a way that is meaningful in practice. Relativist assessment is generally highly valid, but it can be harder to ensure consistency. It is perhaps best regarded as aiming to build a 'rich picture' (after Checkland 1981) of the candidate by drawing on multiple sources of evidence, with the level of confidence growing as more and different kinds of evidence are explored; in this sense it can be regarded as a research process rather than one of testing or examination.

### Authentic assessment

The idea of authentic assessment originated in a desire to find more valid alternatives to standardised educational testing, with intrinsic meaning to students as well as value beyond institutional contexts (e.g. Wiggins 1990). More recently it has become associated with reflecting activities that take place in a work context or that have value to society (McArthur 2023). The basic principles of authentic assessment are realism, not in the sense used by Yorke but by being based on activities that take place in the real world; cognitive challenge, in particular linking theoretical concepts with everyday experience; and evaluation, necessitating learners to review and modify their own performance (Villaroel *et al* 2018). This does not automatically rule out methods such as written examinations and assignments, but it does mean that they are used only where they can be designed to reflect the above principles.

Authentic assessment has been applied widely in WIL and other HE contexts where the aim is to draw on or reflect work practice. Discussions of authentic assessment principles and practices relating to these contexts have been put forward by Bosco and Ferns (2014), Ashford-Rowe *et al* (2014), Ajjawi *et al* (2020) and Fergusson *et al* (2022) among others. Bosco and Ferns usefully illustrate that authentic assessment can be used in situations that range from work-related learning in educational settings to learning in the workplace (or with a real-world community). Building on the principles above, these discussions indicate that authentic assessment in IPD can be expected to encompass:

- Real-world activities, or activities that draw on real-world settings rather than being designed specifically for assessment. These should have intrinsic meaning beyond the assessment situation, involve practice of some kind rather than for instance just producing an academic report or presentation, and be subject to similar contextual constraints and issues as actual professional practice.
- High-quality intellectual engagement, through challenging activities and 'wicked' problems (Rittel and Webber 1973) that are subject to the unpredictability and constraints of professional work and require critical engagement between theory and practice; for activities outside of work settings these might be expected to give confidence that learners can use their learning effectively in professional contexts.
- Reflexivity and self-evaluation, requiring learners to position themselves in relation to the relevant activities, critically assess and where relevant modify their actions, and evaluate them in discussion with others. For activities situated in or close to the workplace some involvement of the relevant professional or client community might be expected.

While most literature on authentic assessment tends to assume at most a WIL-type setting where activities are drawing on programmed work experience or aiming to simulate work activity, Fergusson *et al* (2022) apply it to learners who are already in work. A key point that applies here is building the assessment around professional activities rather than attempting to construct academic tasks that draw on them. Ajjawi *et al* (2020) for instance comment that while reflection is an important part of authentic assessment, reflection as an exercise can become detached, unidimensional and involve *post-hoc* justification rather than genuinely critical and creative examination of the practice situation.



## Universal Design for Assessment

Universal Design or Design for All began as a concept in architecture in the 1960s, associated with the work of Selwyn Goldsmith in the UK and Ron Mace in the US. Mace described Universal Design as “a way of designing a building or facility at little or no extra cost so it is both attractive and functional for all people disabled or not” (Mace 1985, p147). The principles have since been applied to other fields including learning and more recently assessment. Universal Design for Learning (UDL) has become increasingly important in relation to digital learning environments and media, while being relevant to all modes of education and training. UDL was originally conceived of in terms of making learning more accessible for people with disabilities, but it is equally applicable to cultural differences, differences in ways of perceiving and processing information, different social or work environments, and different levels of affluence, access to resources and digital literacy. It follows a set of principles that are concerned with how learners are engaged; how material is presented and communicated; and how learners can act and express themselves, with the overall principle that as many people as possible should be accommodated equably before adaptations or adjustments need to be considered (CAST 2018, Burgstahler 2021).

Universal Design for Assessment (UDA) applies the principles of UDL to assessment design and practices, extending the basic principle of accessibility of assessment. An important aspect of UDA is that it should remove insofar as possible any need for ‘access skills’ (Nieminen and Personen 2019). These are demands on the candidate that are not directly justified by what is being assessed. The UDL principle of multiple modes of expression point to candidates needing to have different options to show that they can meet assessment criteria. As with UDL, UDA aims to minimise the need for adjustments to be made at the point of assessment, although both can be supported by adaptive technology that responds to how learners are interacting with it and presents material accordingly.

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The principles of UDA can be applied at three points: (a) the translation of the underlying requirements into explicit or implicit assessment criteria (including grade or level criteria), (b) the selection and design of assessment tasks or activities, and (c) how materials, instructions and so on are presented to the candidate. At the *criterion level* it is possible to introduce extraneous requirements when interpreting the overall purpose that is desired to be achieved into an assessable form. This can be a particular issue when adding level or grade criteria or devising a marking scheme that relies on tacit understandings of what constitutes good performance. Generic level or grade criteria can include requirements that may not be justified by what is being assessed – for instance anything from the ability to make a live presentation to being able to provide a written critique. To meet UDA principles, assessment criteria of all types need to be scrutinised for any barriers that are not justified by what the assessment seeks to represent.

At the *activity level* most commonly used assessment tasks have some form of access skills associated with them. These can include being able to memorise extensive information; working under pressure; particular modes of expression (written, verbal, visual etc); being able to verbalise decision-making processes; digital skills; working in groups; being confident under questioning; being capable of accurate manipulation (including error-free use of digital devices); and so on. These are sometimes justified by the basic requirements that the assessment is aiming to examine, but there are many instances where they are invalid, and assessment needs to be redesigned so that it permits different relevant modes of expression.

Finally, the *communication level* concerns how the candidate is expected to perceive and make sense of information relating to assessment, and to respond. This follows similar principles to UDL and includes things such as providing multiple means of communication; ensuring that digital technology is easily accessible; following accessibility guidelines for materials; avoiding language that is more complex than necessary or uses non-essential terms or abbreviations; and avoiding references that may be taken for granted in the originating culture or community but are not so obvious to people from outside of it.



## 05. Working with emerging technology

**D** iscussions of digital technology in relation to assessment tend to focus on three main areas:

1. How technology can be used to improve the presentation of assessment materials, streamline assessment or reduce the workload involved in making judgements and providing feedback. This can be important for instance in adapting assessment tasks and instructions to individual learners (increasingly afforded by adaptive artificial intelligence) and providing rapid feedback (commonly using generative AI). There are however particular dangers in the use of technology for assessment itself. Algorithmic biases and ‘black box’ issues, where the logic and biases behind computer-based decisions are obscured (von Eschenbach 2021), can lead to unsupervised technology undermining the validity and fairness of assessment decisions, while regarding technology as principally an efficiency measure can favour narrow assessment practices that may lack authenticity or validity (Timmis *et al* 2016).
2. The use of digital technology, typically virtual, augmented or mixed reality, to aid the authenticity and range of assessment possibilities, principally through creating complex, realistic scenarios. This might include for instance enabling learners to work in simulated environments or on virtual materials or patients; providing exposure to emergency and hazardous situations to assess reactions, perceptions and decision-making; and developing ‘serious games’ that provide immersion in complex and challenging scenarios while enabling actions and decisions to be observed, discussed and assessed (e.g. Bijl *et al* 2024). An important point in this type of application is to keep sight of both authenticity, avoiding the temptation to be driven by the capabilities of the technology, *and* accessibility, ensuring that the digital environment does not create unintentional barriers for candidates. A further application in some contexts is using augmented reality as a means of enabling the assessor(s) to see ‘through the eyes’ of the candidate, enabling remote observation and discussion of practice.

3. Challenges to assessment practice posed by learners having access to advanced digital tools such as generative AI and software that can recognise and manipulate images. Much of the discussion in this area focusses on the potential for AI platforms to aid plagiarism as well as to detect it (e.g. Khalil and Er 2023). At least some of these concerns are driven by a desire to preserve traditional methods of assessment such as standard essays and assignments, rather than recognising that emerging technologies provide learners with tools that they are likely to have access to in work and wider social contexts and will need to become adept at using. Even before the advent of sophisticated AI, professionals have needed to be able to make informed judgements about digital information and outputs. This can include for instance exercising a high level of information literacy and fact-checking, evaluating answers and decisions provided by technology (the ‘black box’ issue referred to earlier), and quickly identifying faulty, sabotaged or suspect outputs and intervening to minimise damage (Billett 2018, Collins 2018). A more productive approach is to employ authentic means of assessment that accept and actively make use of emerging digital tools and capabilities, expect learners to work effectively with them in real-life or realistic contexts, and require the outputs of digital technology to be evaluated from a critical and contextually aware perspective.

## 06. Assessment in integrated professional development

**G**iven the foregoing, what should assessment in integrated professional development look like? An integrated development sequence will typically span several years and take would-be or developing practitioners from novice to competent or proficient level, and it will also need to satisfy both academic and professional criteria. What is assessed might be expected to change across the duration of the pathway, though the basic principles need to be consistent so that there is a sequence leading to the point of sign-off that is accessible, eminently valid, and increasingly authentic and robust. It is useful to consider first how this applies at the culmination of the sequence, then how it might be adjusted to earlier stages where there may be for instance less access to extended practice or exposure to complexity and unpredictability.

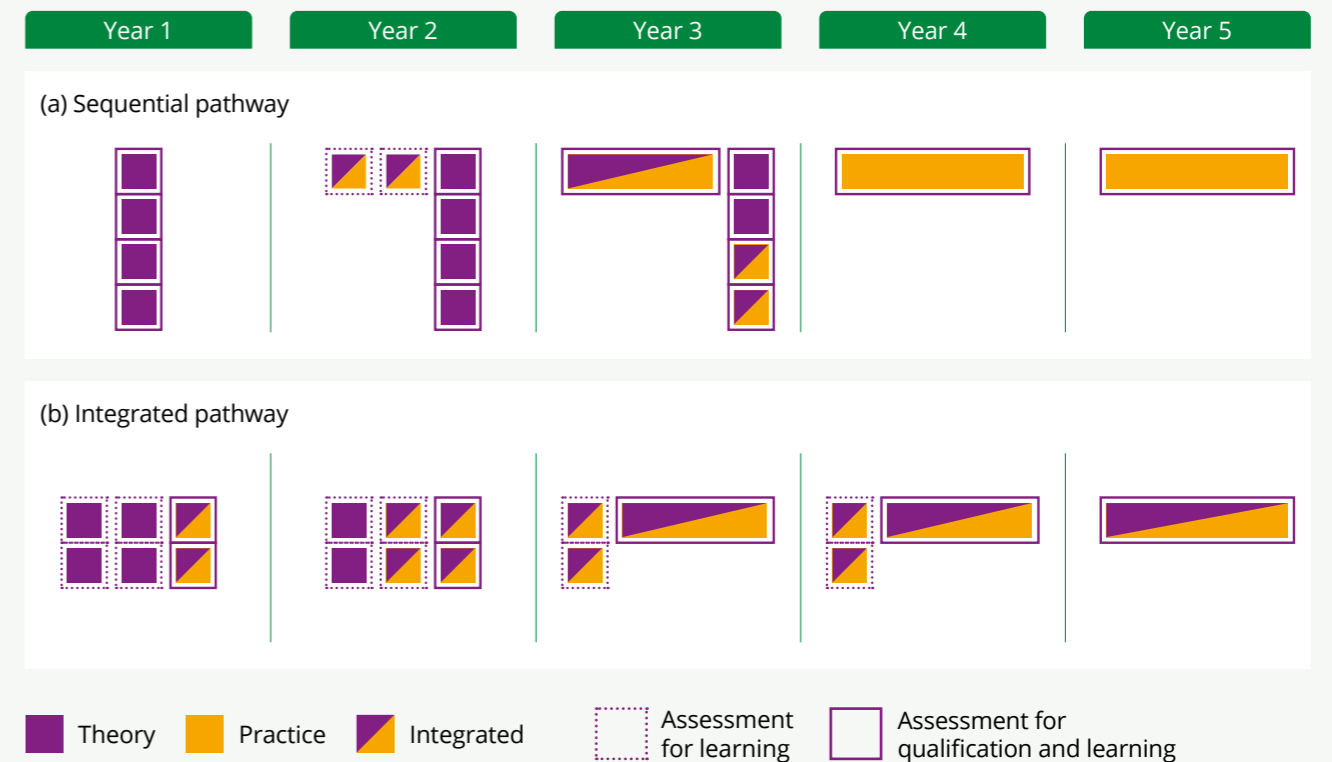
As a basic principle it is necessary first to have an explicit definition of what is expected at the point of sign-off. This first requires a clear notion of the level of complexity that a qualified practitioner needs to be able to deal with; the level of proficiency expected at the point of qualification; and any requirements relating to criticality, typically aspects of practice where mastery is essential. Secondly, it requires a working definition of what practice involves. This is likely to be in the form of a description of key practice activities, such that they are workable in all the contexts in which practice takes place and can accommodate medium-term changes to things such as legislation, technology and working methods. Implicit in this need to be the ability to practise with ethical literacy and competence, the depth of understanding needed to work in unpredictable and changing practice contexts, the ability to make considered professional judgements, and the ability to construct complex sequences of action to produce outcomes that are situationally appropriate. At this final point of the integrated sequence, it is perhaps unnecessary to emphasise that candidates need to be doing much more than demonstrating skills and behaviours in isolation or propounding decontextualised knowledge.

Assessment activities themselves need to embody a number of principles that go beyond the standard requirements of validity, consistency, fairness and robustness. A major consideration is the authenticity of assessment, which at sign-off will normally mean being grounded in actual work activities rather than for instance set tasks or assignments based on work. That does not preclude supplementary means being used where there is an explicit need for them; some, such as the candidate making explicit their reasoning and how they would approach alternative scenarios can be highly important, for instance in ensuring depth of understanding, guarding against learning practice by rote, and ensuring ability to operate across a broad span of contexts and respond to changes. Others, such as realistic simulations, may be necessary to give assurance about the ability to handle situations that are important but that are too infrequent, hazardous or difficult to assess in real life. The need for accessibility implies being rigorous about removing any requirements that do not relate directly to the underlying purposes of the assessment and providing candidates with multiple valid means of demonstrating that they meet assessment criteria. A good yardstick for this is that assessment should not introduce requirements beyond those needed for practice in the relevant area, given any potential adaptations and adjustments that can be made in the work context.

As a final principle, assessment needs to be considered more as a research process than one of testing. This means, rather than attempting to reduce professional practice to components such as skills, knowledge and behaviours, using multiple sources of evidence to make judgements about holistic performance and capability (cf. Eraut 2004, Higgs 2014). It means respecting differences between individual candidates and their work situations, interpreting criteria into context, and examining evidence, engaging in dialogue and making appropriate judgements to determine whether the candidate is ready to practise. It does not mean undermining consistency and robustness, but it does mean weighing up evidence and making decisions according to the level of criticality that is appropriate; to use a legal analogy this may need to be beyond a reasonable doubt for many aspects but it can be to a good level of probability for less critical ones.



**FIGURE 1.** Assessment in hypothetical sequential and integrated pathways.



Most integrated pathways and programmes will have multiple assessment points along the route, regardless of the requirement in apprenticeships in England for a major end-point assessment. Some of these are likely to have a formal function beyond providing feedback, either contributing to an academic qualification or professional recognition, or needing to be passed in order to progress to the next stage. While particularly in the early stages of the programme a fully authentic, practice-based approach to assessment is less feasible, the same underlying principles can be applied. Key differences will typically be that learners are working with what might initially be constructed scenarios or extracts, short practice episodes, and cases designed to build and assess understanding and skills in specific areas, with assessment criteria scaled back to a novice or advanced beginner level. Later in the programme greater complexity will need to feature, although authentic scenarios and simulations may still have a role to play. An important point throughout is that academic knowledge and professional skills are not

formally assessed in isolation from each other or in a way that is remote from the contexts in which they will be used. Checks on academic understanding, including the deeper scientific or intellectual building-blocks of the profession, and on individual skills and techniques, may be highly necessary, but there is a case for treating these as preparatory rather than as part of the formal assessment of the programme. The simplified schematic in Figure 1 illustrates how assessment activities might differ between a hypothetical five-year sequential development route (a three-year degree plus two years of workplace training) and an integrated one of the same length. An important message to convey from the outset is that the assessment that matters is integrated, supports development as an increasingly self-managing practitioner, and involves constructive activities that have meaning to the learner and direct relevance to their future practice, as opposed to being based on separate components that will be brought together at a later date.

## 07. Conclusions and challenges

**A** decade ago, Yorke and Vidovich (2014), writing in principally an Australian WIL context, commented that assessment practice tends to lag behind developments in pedagogy. More recent research and accounts of practice for apprenticeship-type routes (e.g. Lester and Bravenboer 2020, Konstantinou and Miller 2020, Pan and Ressin 2022) suggests that while there are examples of good assessment practice, there are also those where there is (to paraphrase Biggs *et al* 2022) a 'deconstructive misalignment' between teaching and learning practices (including workplace learning) and those of assessment. Added to this is the issue of programmes that are integrated at a structural level but where theory and practice are still disconnected at a day-to-day level (Lester 2024a).

In some professional contexts assessment practices have tended to remain relatively conservative in the face of change. This is perhaps understandable as professions can be reluctant to move away from methods that have been apparently robust, relatively cheap to administer, and may also offer flexibility for learners who do not have continuity of employment for the duration of their training or who lack employer support. Many of these methods were broadly successful for the sequential or parallel pathways for which they were designed, at least according to the criteria of the time; problems occur when they are carried over into integrated routes, where they act as a drag on the development of more appropriate assessment pedagogies. A similar issue is also present in the British apprenticeship system, which is currently premised on a model that has its origins in craft and trade training and treats concepts such as 'skills' and 'behaviours' somewhat simplistically. Since the recommendations of the Richard Review (Richard 2012) were adopted, it has also included some specific requirements for assessment and sign-off which are now need of revisiting at least in the context of professional apprenticeships (Lillis and Varetto 2020).

Developing fully integrated assessment approaches can also create challenges for higher education institutions. A cursory and somewhat random examination of assessment regulations and strategies across a small sample of degree apprenticeships delivered in England suggests that while there is some good practice, there are also plenty of instances where assessment strategies are borrowed from full-time degrees without more than a basic nod to work practice, usually in the form of work-related assignments and a work-based project. The Health and Care Professions Council for instance commented five years ago that while some providers were redesigning their curricula specifically for apprenticeships, "almost all ... noted that learning outcomes and assessment strategy would be reflective of existing programmes" (HCPC 2019 p16), a situation that may have improved slightly since but is likely still to apply to many degree apprenticeships.

In HE, work-based learning of various kinds has variously been described as a disturbing practice (Boud 2001), a source of creative disruption (Bravenboer 2019) and a challenge to institutions' discipline-based structures and practices (Garnett 2016). Degree and other higher apprenticeships have brought additional challenges, including working within regulatory and funding regimes previously alien to universities as well as new practices associated with features such as assessment 'gateways' and end-point assessments. Initial concern with getting these right is understandable, particularly given the funding penalties and reputational damage that can result from provision being judged as requiring improvement or inadequate. However, if properly integrated pathways are to be embraced by professions and institutions, as opposed to providing sequential or parallel programmes within a nominally integrated wrapper, then there is a need to accept disturbance, embrace the possibilities offered by disruption and redesign structures so that new pedagogies are supported, and assessment strategies can be designed that align with them.



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# References

## A

Ajjawi, R., Tai, J., Nghia, T., Boud, D., Johnson, L. and Patrick, C.-J. (2020) "Aligning assessment with the needs of work-integrated learning: the challenges of authentic assessment in a complex context", *Assessment and Evaluation in Higher Education* 45 (2), 304-316.

Ashford-Rowe, K., Herrington, J., and Brown, C. (2014) "Establishing the critical elements that determine authentic assessment", *Assessment & Evaluation in Higher Education* 39(2), 205-222.

Atkins, M., Beattie, J. and Dockrell, W. (1993) *Assessment issues in higher education*. Sheffield: Department of Employment.

## B

Baker, D. and Robertshaw, D. (2022) "What next for end-point assessments", *Higher Education, Skills and Work-Based Learning* 12 (1), 78-91.

Biggs, J., Tang, C. and Kennedy, G. (2022) *Teaching for quality learning at university*. Buckingham: Open University Press/McGraw Hill.

Bijl, A., Veldkamp, B., Wools, S. and de Klerk, S. (2024) "Serious games in high-stakes assessment contexts: a systematic literature review into the game design principles for valid game-based performance assessment", *Educational Technology Research and Development*, <https://doi.org/10.1007/s11423-024-10362-0>.

Billett, S. (2018) "Assessing and securing conceptual and symbolic knowledge required for digital era work" in Harteis, C. (ed.), *The impact of digitalization in the workplace*, 197-212. Cham: Springer.

Bloxham, S., den Outer, B., Hudson, J. and Price, M. (2016) "Let's stop the pretence of consistent marking: exploring the multiple limitations of assessment criteria", *Assessment & Evaluation in Higher Education* 41 (3), 466-481.

Bosco, A. and Ferns, S. (2014) "Embedding of authentic assessment in work-integrated learning curriculum", *Asia-Pacific Journal of Cooperative Education* 15 (4), 281-290.

Boud, D. (2001) "Creating a work-based curriculum" in Boud, D. and Solomon, N. (eds.), *Work-based Learning: a new higher education*, 44-58. Buckingham: SRHE/Open University Press.

Boud, D. (2007) "Reframing assessment as if learning was important", in Boud, D. and Falchikov, N. (eds.) *Rethinking assessment for higher education: learning for the longer term*, 14-25. London: Routledge.

Boud, D., Costley, C., Cranfield, S., Desai, J., Nikolou-Walker, E., Nottingham, P. & Wilson, D. (2023) "The pivotal role of student assessment in work-integrated learning", *Higher Education Research & Development*, 42 (6), 1323-1337, DOI: 10.1080/07294360.2022.2152981.

Bravenboer, D. (2019), "The creative disruption of Degree Apprenticeships in the UK" in Talbot, J. (ed.) *Global Perspectives on Work-based Learning Initiatives*, 57-83. Hershey PA: IGI Global.

Bravenboer, D. and Lester, S. (2016) "Towards an integrated approach to the recognition of professional competence and academic learning", *Education + Training* 58 (4), 409-421.

Burgstahler, S. (2021) "What higher education learned about the accessibility of online opportunities during a pandemic", *Journal of Higher Education Theory and Practice* 21 (7), 160-170.

## C

CAST (2018) *Universal design for learning guidelines version 2.2*. Wakefield, MA: CAST.

Checkland, P. (1981) *Systems thinking, systems practice*. London: John Wiley.

Collins, H. (2018) *Artificial intelligence: against humanity's surrender to computers*. Cambridge: Polity.

Costley, C. and Armsby, P. (2007) "Work-based learning assessed as a field or a mode of study", *Assessment & Evaluation in Higher Education* 32 (1), 21-33.

## D

Dreyfus, H. and Dreyfus, S. (1986) *Mind over Machine: the power of human intuition and expertise in the era of the computer*. Oxford: Blackwell.

## E

Eraut, M. (1998) "Concepts of competence", *Journal of Interprofessional Care* 12 (2), 127-139.

Eraut, M. (2004) "Informal learning in the workplace", *Studies in Continuing Education*, 26 (2), 247-273.

Eraut, M., Maillardet, F., Miller, C. and Steadman, S. (2005) *Learning during the first three years of postgraduate employment*. Final report to ESRC Teaching and Learning Research Programme: Early Career Learning at Work (project LiNEA).

## F

Fergusson, L., van der Laan, L., Imran, S. and Danaher, P. (2022) "Authentic assessment and work-based learning: the case of professional studies in a post-COVID Australia", *Higher Education, Skills and Work-Based Learning* 12 (6), 1189-1210.

## G

Garnett, J. (2016) "Work-based learning: a critical challenge to the subject discipline structures and practices of higher education", *Higher Education, Skills and Work-based Learning* 6 (3), 305-314.

Gray, D. (2001) *A briefing on work-based learning*. York: Learning and Teaching Support Network.

Guba, E. and Lincoln, Y. (1989) *Fourth Generation Evaluation*. Newbury Park, CA: Sage.

## H

HCPC (Health and Care Professions Council) (2019) *Reviewing our approach to quality assuring Higher and Degree Apprenticeships*. HCPC committee report 7.3.2019. <https://www.hcpc-uk.org/globalassets/meetings-attachments3/education-and-training-committee/2019/01.-07.03.2019/enc-03---reviewing-our-approach-to-quality-assuring-higher-and-degree-apprenticeships.pdf>, accessed August 2024.

Higgs, J. (2014) "Assessing the immeasurables of practice", *Asia-Pacific Journal of Cooperative Education*, 15 (3), 253-267.

Holmes, L. (2015) "Becoming a graduate: the warranting of an emergent identity", *Education + Training* 57 (2), 219-238.

Hordern, J. (2015) "Productive systems of professional formation" in Billett, S., Harteis, C. and Gruber, H. (eds.), *International Handbook of Research in Professional and Practice-based Learning*, 163-193. Dordrecht: Springer.

## J

Jessup, G. (1991) *Outcomes: NVQs and the emerging model of education and training*. London: Falmer.

## K

Khalil, M. and Er, E. (2023) "Will ChatGPT get you caught? Rethinking of plagiarism detection" in Zaphiris, P. and Ioannou, A. (eds.) *Learning and Collaboration Technologies*. Cham: Springer.

Konstantinou, I. and Miller, E. (2020) "Investigating work-integrated learning and its relevance to skills development in degree apprenticeships", *Higher Education, Skills and Work-Based Learning* 10 (5), 767-781

## L

Lester, S. (2001) "Professional accreditation and National Vocational Qualifications: an exchange of experience", *Journal of Vocational Education and Training* 53 (4), 573-588.

Lester, S. (2009) "Routes to qualified status: practices and trends among UK professional bodies", *Studies in Higher Education* 34 (2), 223-236.

Lester, S. (2011) *Work-based assessment principles and practice*. Publication of the project TRAVORS2. Available from <https://devmts.org.uk/assmt.pdf>, accessed August 2024.

Lester, S. (2014) "Professional competence standards and frameworks in the UK", *Assessment and Evaluation in Higher Education* 39 (1), 38-52.

Lester, S. (2017) "Reconciling activity-based descriptions of competence with professional work", *Higher Education, Skills and Work-based Learning* 7 (4), 381-393.

Lester, S. (2024a) *Beyond Degree Apprenticeships: conceptualising integrated professional development*. Bolton: UVAC (conceptual paper).

Lester, S. (2024b) "Integrated professional development pathways: learning-integrated work?" in Barr, M. (ed.), *Approaches to work-based learning in higher education*, ch. 8. London: Routledge.

Lester, S. and Bravenboer, D. (2020) *Sustainable Degree Apprenticeships*. London: Middlesex University.

Lester, S. and Costley, C. (2010) "Work-based learning at higher education level: value, practice and critique", *Studies in Higher Education* 35 (5), 561-575.

Lillis, F. and Varetto, A. (2020) "Changing the course of IfATE: healthier higher and degree apprenticeships for regulated healthcare professionals", *Higher Education, Skills and Work-Based Learning* 10 (5), 799-813.

# References

## M

McArthur, J. (2023) "Rethinking authentic assessment: work, well-being, and society", *Higher Education* 85, 85-101.

McClelland, D. (1998) "Identifying competencies with behavioural-event interviews," *Psychological Science* 9 (5), 331-339.

Mace, R. (1985) "Universal design, barrier-free environments for everyone", *Designers West* 33 (1), 147-152.

Mansfield, B. (1989) "Competence and standards" in Burke, J. W. (ed), *Competency based education and training*, 26-36. Lewes: Falmer Press.

Mansfield, B. and Mitchell, L. (1996) *Towards a competent workforce*. Aldershot: Gower.

Mordhorst, L. and Jenert, T. (2023) "Curricular integration of academic and vocational education: a theory-based empirical typology of dual study programmes in Germany", *Higher Education* 85, 1257-1279.

Moss, P. (1992) "Shifting conceptions of validity in educational measurement: implications for performance assessment", *Review of Educational Research* 62 (3), 229-258.

## N

Nieminen, J. and Personen, H. (2020) "Taking universal design back to its roots: perspectives on accessibility and identity in undergraduate mathematics", *Education Sciences* 10 (12), DOI: 10.3390/educsci10010012.

## O

O'Driscoll, M., Allan, H. and Smith, P. (2010) "Still looking for leadership – who is responsible for student nurses' education in practice?", *Nurse Education Today* 30, 212-217.

## P

Pan, Y-C. and Ressin, M. (2022) "Degree apprenticeship end-point assessment dilemma: the balancing act between business contribution and academic exploration", *New Vistas* 8 (1), 14-21.

## R

Richard, D. (2012) *Review of Apprenticeships*. London: School for Startups.

Rittel, H. & Webber, M. (1973) "Dilemmas in a general theory of planning", *Policy Sciences* 4 (2), 155-169.

## S

Sandberg, J. (2009) "Understanding of work: the basis of competence development" in Velde, C. (ed.), *International perspectives on competence in the workplace*, 3-20. Dordrecht: Springer.

Spencer, L. and Spencer, S. (1993) *Competence at work*. New York: John Wiley.

## T

Taylor, F. (2011) *The principles of scientific management*. New York: Harper.

Timmis, S., Broadfoot, P., Sutherland, R., and Oldfield, A. (2016) "Rethinking assessment in a digital age: opportunities, challenges and risks", *British Educational Research Journal* 42 (3), 454 -476.

## V

Villarroel, V., Bloxham, S., Bruna, D., Bruna, C. and Herrera-Seda, C. (2018) "Authentic assessment: creating a blueprint for course design", *Assessment and Evaluation in Higher Education* 43 (5), 840-854.

Vitello, S., Greatorex, J. and Shaw, S. (2021) *What is competence? A shared interpretation of competence to support teaching, learning and assessment*. Cambridge: Cambridge University Press and Assessment.

Von Eschenbach, W. (2021) "Transparency and the Black Box Problem: why we do not trust AI", *Philosophy and Technology* 34, 1607-1622.

## W

Wiggins, G. (1990) "The case for authentic assessment", *Practical Assessment, Research and Evaluation* 2 (2), DOI: PAREonline.net/getvn.asp?v=2&n=2.

William, D. (2001) "Reliability, validity and all that jazz", *Education 3-13*, 29 (3), 17-21.



William, D. (2011) "What is assessment for learning?", *Studies in Educational Evaluation* 37 (1), 3-14.

Winch, C. (2016) "Assessing Professional Know-How", *Journal of Philosophy of Education* 50 (4), 554-572.

Winch, C. (2023) "Qualifications as guarantees of proficiency: do we understand their role?", in Glückler, J., Winch, C. and Punstein, A. (eds.), *Professions and Proficiency*, 15-34. Cham: Springer.

## Y

Yorke, J. and Vidovich, L. (2014) "Quality policy and the role of assessments in work-integrated learning", *Asia-Pacific Journal of Cooperative Education* 15 (3), 225-239.

Yorke, M. (2011a) "Work-engaged learning: towards a paradigm shift in assessment", *Quality in Higher Education* 17 (1), 117-130.

Yorke, M. (2011b) "Assessing the complexity of professional achievement" in Jackson, N. (ed.) *Learning to be Professional through a Higher Education*. Output of the project SCEPTRE, Surrey University. <http://learningtobeprofessional.pbworks.com/w/page/36485403/Assessing%20the%20Complexity%20of%20Professional%20Achievement>, accessed August 2024.

Yorke, M. and Knight, P. (2006) *Embedding Employability into the Curriculum*. York: Higher Education Academy.



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