Rethinking assessment and feedback with a principle informed approach

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Abstract

Digital transformation has occurred across the education sector over the last two years. Whether as an acceleration of a planned strategy or an emergency response, changing assessment practice has been a priority.

We have learned lessons about equity, about learning design and about interoperability. We have seen success stories and consistently high levels of student attainment. A move away from traditional unseen exams to other forms of assessment has seen many students, particularly those from disadvantaged backgrounds, perform better.

Assessment is central to the educational process. Done well, it drives improvement, shapes student behaviour and provides accountability to employers and others. It can also be a source of dissatisfaction, frustration and anxiety. Does it assess the right things? Does it take place at the right points in the learning journey? Is it susceptible to cheating? Existing and emerging technologies are starting to play a role in changing assessment practice and could help address these issues.

This paper will discuss the outcomes from a recent Jisc review and survey of the UK higher education assessment and feedback landscape and how a principle informed approach can drive effective practice supported by the use of technology.

Through consultation with higher education organisations, and a review of the current literature, a new set of principles for assessment and feedback have been developed. The principles offer an actionable way to improve learning teaching and assessment and can be applied to any aspect of learning design underpinned by the effective application of technology.

We illustrate these principles in practice with examples from France, the Netherlands and the UK.
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1 Background to our landscape review

Digital transformation has occurred across the education sector over the last two years. Whether as an acceleration of a planned strategy or an emergency response, changing assessment practice has been a priority.

We have learned many lessons and in late 2021, it seemed appropriate to take stock of where we are as a sector and think about what good practice will look like in future. Through consultation with higher education organisations, a survey and a review of the current literature we gained a picture of the UK assessment and feedback landscape in higher education.

We were able to pinpoint a set of principles for good learning and teaching practice and show how application of these principles can improve assessment and feedback.

This paper discusses the survey, the principles and some case studies that illustrate these principles in practice.

2 Survey of UK higher education assessment landscape

Jisc conducted a survey of 46 UK higher education organisations at the end of 2021. Jisc previously undertook a survey about electronic management of assessment (EMA) in 2014. The question sets differed between the surveys so the 2021 survey does not represent a longitudinal study following on from the previous work. There is, however, sufficient overlap between questions for the most significant differences to be interesting.

2.1 Online submission

Most institutions have now implemented online submission of student work. It is not surprising to see that this is the most frequent use case. In 2014 just under 30% had already made online submission mandatory institution wide and that figure now stands at 54% with a further 44% saying it is widely used.

2.2 Online marking

In 2021 32% of respondents said online marking is institutionally mandated and a further 54% said it is widely used. The figure for widespread usage is thus 86%: almost double what it was seven years ago. This seems to represent a significant change in attitude. In 2014 not only was online marking relatively little used, it was also one of the biggest areas of resistance to the introduction of digital technology to support assessment and feedback processes.

2.3 Digital tools to support feedback

Increased use of digital tools to support feedback is also a welcome development given that our previous research found effective engagement with feedback to be key to enhancing learning. Previously, 58% of respondents were making fairly widespread use of technology to support this process. That has increased to 91% in 2021.

What is equally evident, is that many approaches that have been known for some time to be pedagogically effective eg peer review and group work, remain among the least well supported by digital tools in UK higher education. That is not particularly surprising as our past research found many of these approaches were not well supported by core tools and innovative developments proved difficult to scale up.

2.4 Technical challenges

However, staff don't just want digital tools: they want digital tools that work well together. Educators want the flexibility to create an ecosystem that works for their students. A surprising 83% of

respondents reported interoperability as the main technological challenge issue. This figure appears higher than it ought to be given that well-established open standards exist.

2.5 Pedagogic challenges

Our 2014 survey did not ask respondents to separately identify pedagogic challenges. We did however ask people to identify the most significant 'pain points' and one of those elements shows a stark contrast with the 2021 results. In 2014 just over 6% of respondents identified accessibility/inclusivity as a significant issue. In 2021 this has risen to 51%. It is assumed this difference relates to the legal compliance and raised awareness of these issues. Our new Jisc principles for assessment and feedback, emphasise the importance of accessibility and inclusivity in the design of assessment and feedback practice.

The second key challenge borne out from the survey relates to support for staff to rethink their assessment design and with the emphasis universities are now placing on redesigning the curriculum this is an opportunity to explore the role technology can play in supporting effective assessment and feedback.

Academic integrity is the third key pedagogic challenge highlighted in the survey and in discussions with the sector. Significant concerns around how to stop students cheating in a digital environment are continually raised and reported on in the media. There is a fairly widespread assumption that it is easier to cheat in the digital world without necessarily stopping to address the fundamental questions around why students cheat in the first place. From the sector consultation which formed part of this review, underlying issues include over assessment and assessment bunching causing students to panic; not paying sufficient regard to students' personal circumstances and the stresses they face; and students not really understanding the principles of academic integrity and how they relate to ethical practice in the world of work. Tackling these areas, coupled with designing assessments that don't readily lend themselves to tailor-made answers, will go a long way to addressing the issue.

2.6 Cultural challenges

Staff resistance to change remains the most persistent cultural challenge. The number who see it as a significant issue has dropped only 1% since the previous survey and 88% feel the issue is problematic (as opposed to 93% in 2014). This is followed by students not engaging with feedback and this highlights the need for students to better understand the role of feedback in the learning process.

3 Rethinking assessment and feedback practice

The challenges and issues raised through the Jisc survey of the higher education assessment and feedback landscape informed the development of new guidance for higher education organisations.

Assessment and feedback practice has been on a trajectory away from assessment of learning to what is termed assessment for learning. Key to this has been helping students monitor and regulate their own learning and trying to ensure that any feedback activity feeds forward leading to future improvement. Current assessment practice increasingly includes activities that could be termed assessment as learning. The very act of undertaking assessment and feedback activities is an essential part of the learning process. All three aspects of assessment still need to happen but we are thinking differently about the relationship between them.

Assessment *of* learning describes the institutional quality assurance processes that lead to students acquiring some form of verified credential.

Assessment *for* learning is the overall learning design, ensuring we are assessing the right things at the right time with plenty of formative opportunities to feed forward. This is the cog wheel making everything revolve.

Assessment *as* learning is the lived experience of what all that feels like if it is working well. Tasks appear relevant, students can see what they have gained by undertaking the activity, they feel involved in a dialogue about standards and evidence and the continuous development approach helps with issues of stress and workload for staff and students.

Figure 1: Model of assessment and feedback, Jisc, 2022

4   Principles of good learning, teaching and assessment

Educational principles are a way of summarising your shared educational values as a university. They serve to guide the design of learning teaching and assessment. A well-thought-out set of principles:

- describes a shared set of values and a vision
- summarises and simplifies a lot of research evidence on good pedagogic practice
- provides a benchmark for monitoring progress
- serves as a driver for change

Principles offer a robust way of gaining ownership and buy-in and they need to be written in a way that requires action rather than passive acceptance.

4.1   Our seven principles

These are our seven principles which have evolved from the outcomes of the review and sector consultation. We suggest ways in which each principle can be achieved. The principles offer an

actionable way to improve learning teaching and assessment and can be applied to any aspect of learning design.

What the principle is	ways to achieve this
Help learners understand what good looks like	by engaging learners with the requirements and performance criteria for each task
Support the personalised needs of learners	by being accessible, inclusive and compassionate
Foster active learning	by recognising that engagement with learning resources, peers and tutors can all offer opportunities for formative development
Develop autonomous learners	by encouraging self-generated feedback, self-regulation, reflection, dialogue and peer review
Manage staff and learner workload effectively	by having the right assessment, at the right time, supported by efficient business processes
Foster a motivated learning community	by involving students in decision-making and supporting staff to critique and develop their own practice
Promote learner employability	by assessing authentic tasks and promoting ethical conduct

Table 1: Principles of assessment and feedback

Our 2021 principles reflect the prominence of issues such as accessibility and inclusivity in current thinking. Where we continue to champion examples of good practice that were recognised some time ago, it is with a new perspective on *why* and *how* certain approaches are more effective than others. Relating these principles to practice and exploring the role technology plays in supporting these principles is explored in the Jisc guide 'Principles for good assessment and feedback 'available online: https://www.jisc.ac.uk/guides/principles-of-good-assessment-and-feedback

4.2 Putting the principles into practice: case studies

We looked internationally for examples of good practice where institutions were using digital technology to implement these principles. Many of these examples were showcased at a joint event on the future of assessment and feedback with EUNIS, GÉANT and IMS Global at the end of 2021. All slides and recordings from the event are available online: https://www.eunis.org/future-af/schedule/

Here are some summary examples from France, the Netherlands and the UK.

Principle #4 - Develop autonomous learners: Peer assessment at VU Amsterdam

Students in pharmaceutical sciences at VU Amsterdam (Vrije Universiteit) undertake peer assessment of one another's reports as a mandatory pass/fail part of their course. The exercise is

structured so that the students are undertaking the peer assessment individually but the report they are evaluating is the work of a group of three students. The students are required to address each of the assessment criteria so the feedback is complete. Use of technology enables direct linking to the assessment criteria and enforcing the requirement to address each criterion.

Learners are also required to rate the quality of the feedback they receive from other peer reviewers. This activity engages learners with the assessment criteria and also encourages them to reflect on the process of giving good quality feedback.

Feedback given by students matches well with instructor feedback. This means staff time can be saved by monitoring a random sample to ensure quality is being maintained.

This approach, whereby engagement with the feedback process feedback is an individual responsibility, works much better than previous initiatives where groups gave feedback on other groups (Verheijen 2022).

Principle #4 - Develop autonomous learners: Two stage examinations at the University of Glasgow

It is not unusual for a learner to walk out of a formal examination and immediately think of something they should have done differently. Normally it's too late but what if you had the chance to put it right? Research by Professor David Nicol and colleagues at the University of Glasgow has taken this idea step further and researched the impact of a two-stage examination structure.

In their model a student takes an exam and then completes reflective questions to surface their internal feedback about their performance. They are asked to identify any weaknesses they are aware of and any aspects of their work on which they would like to have expert feedback.

The students then take the same exam again but this time working in groups. At the end of this stage, they answer another set of reflective questions, for example, about how the group answer differed from their own, whether the group discussion made them aware of strengths and weaknesses of their own answer that they hadn't identified and which answer they thought was better. The purpose of this study was to find out more about how students generate inner feedback through comparisons. The finding was that this process is very powerful.

'invariably students' self-generated feedback comments based on the reflective questions were more elaborate and specific than the teacher's comments. ... While the teacher gave general comments about the strengths and areas in need of improvement, the students were more likely to state exactly how the improvements could be made.' Nicol and Selvaretnam (2021)

The fact that students undertook the work individually and reflected on their performance before engaging in dialogue, served to start them generating inner feedback so they gained greater value from the group discussion. The key to harnessing inner feedback is to make the process explicit using reflective questions to which students must respond in writing. The researchers believe that the findings have broad applicability and that providing a rubric or high-quality exemplars as comparators could equally help students better evaluate the quality of their own work.

Principle #5 - Manage staff and learner workload effectively: Timely feedback for large classes at the University of Utrecht

The University of Utrecht department of law faces a 'massiveness' problem. The department has 800 new students each year and the current learning design requires them to complete an essay each

week. Feedback and grades must be returned within three days in order to feed into the next assignment. This has to be managed with a team of two professors and 25 'correctors' who provide feedback. The correctors are a combination of assistant professors, teaching assistants and third-year students.

The University has implemented Revise.ly feedback software to help solve this problem. The correctors use a shared comment set to ensure that the approach to feedback is consistent no matter who does the marking. Although the role translates as 'corrector' in English, all comments use a 'feed forward' approach to help with future improvement. The tool is integrated into the learning management system using the LTI open standard. It can be used on any device and fits easily into the existing workflow, including incorporating it into workflows involving plagiarism-checking or peer-review.

Learners find the approach very helpful because the feedback is readily accessible and the structured approach means they can search what type of comments they want to see (eg focus on structure) and review this type of comment across different assignments. The search function was added at the request of the students.

Principle #6 - Foster a motivated learning community: French Ministry of education assessing the process of thinking

We tend to focus on immediate peers when we talk about learning communities but academic development is also taking place at scale. Across France open standards and data science are being applied to improve assessment practice.

The French ministry of education uses digital technology to develop more authentic ways to measure traditional competencies and 21st-century skills. These assessments don't only provide information about whether the answer is correct. They capture a rich set of data that reveal the students' thought processes.

Solving problems in mathematics and science requires students to use cross-curricular skills such as calculating, modelling, and scientific reasoning. Until recently, it has been difficult to measure these skills because traditional math and science assessments contain test items that are scored, based on a student's final answer.

Using an extension of the open standard QTI (question and test interoperability), the ministry is developing PCIs (portable custom interactions) to deploy authentic assessments that measure skills such as creativity, problem solving, collaboration and critical reasoning. The questions cover a wide range of types including game-like situations and interaction with chat bots to measure creativity. Researchers make sense of a vast amount of data derived from these digital tests by defining patterns based on what knowledge and skills are involved in answering each question and common types of error. In simple terms, there is a difference between the activity pattern of a student who has conceptual understanding and knows how to apply it in context and another who achieves the same answer via trial and error or guesswork.

Large-scale research, such as this French example of educational data mining (Salles et al 2020), has the potential to deliver valuable insights to help learning designers. More immediately, the examples of authentic question types openly shared, can provide inspiration and a rich reference source for others to use. If you thought that item banks and automated marking could only be used with very basic multiple-choice questions (MCQs) think again. View a set of presentation slides on this case study and the session recording.

Principle #7 - Promote learner employability: group member evaluation at Maastricht University

In the world of work, overall team performance is as much a part of recognition and reward strategy as individual performance. Assessing a learner's contribution to group work is thus a very authentic scenario but fraught with difficulty.

At Maastricht University in the Netherlands, students in the department of data science and knowledge engineering experience authentic learning and assessment from the start of their course. The department has a philosophy of problem-based and project-centred learning. Students work in groups of six to seven to solve real-world problems.

The issues that arise will be familiar to anyone who has tried group learning. Students complain that some of them work harder than others with some students failing to complete tasks or handing work in late. It can be hard for tutors to get to the bottom of the issues as some of the complaints are contradictory. Often, they don't hear about the issues until a deadline is approaching by which point it is too late to intervene and improve the group dynamic.

The solution to the problem was to implement group member peer evaluation at a point when the group has had time to settle down but there is still time for the initiative to result in improvement. Group member evaluation is done anonymously using a tool designed by FeedbackFruits* in collaboration with a group of universities. The tool is integrated into the learning management system via LTI (the learning tools interoperability open standard). Learners have to evaluate themselves before they assess other group members. They then look at how their self-evaluation matches that of their peers and have the opportunity to discuss this with their tutor.

A rubric was developed to assist the evaluative process. The rubric has six categories: attending internal team meetings; responsibility; communication; interaction and collaboration; initiative and timely submission of assigned work. There is a descriptor equating to: acceptable; satisfactory or exemplary for each category. Students were at first encouraged, but not obliged, to provide additional feedback in the form of a comment. It is now felt to be good practice to require further comment on a low score. The reason behind a low score on attendance may be self-evident but a poor score for 'initiative' can be less so.

Most students value the initiative and take it seriously although some take longer to build up trust in the practice. Some timid learners have had their confidence boosted to find that peers appreciate their ideas and think they should speak up more. View a presentation about this case study and see the session recording.

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* This is one of a number of tools developed through an initiative known as the 'Edtech DoTank': a collaboration between SURF (Jisc's equivalent in the Netherlands), universities and a supplier. The outputs are made available to other universities.

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Author biographies

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Gill Ferrell has led the EUNIS Learning and Teaching SIG since 2009. In 2021 she joined the 1EdTech Consortium as Program Director for Europe. She has previously worked for Jisc and still undertakes learning and teaching consultancy for them.

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