

Aligning teaching and assessment to curriculum objectives

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Purpose

This Guide, one of a series produced by the Imaginative Curriculum project, provides an introduction to how teaching and assessing learning outcomes might be aligned to curriculum objectives.

Audiences

The Guide is written primarily for:

- ❑ teachers looking for ways to improve the quality of their students' learning;
- ❑ course leaders/coordinators who lead whole course curriculum design and/or who help other academics to develop the curriculum;
- ❑ staff developers and others who help academics to develop their knowledge and skills about curriculum design, for example, Tutors for PG Cert HE teaching and learning courses;
- ❑ LTSN Subject Centres who are growing disciplinary knowledge of practice.
- ❑ university administrators and others engaged in quality assurance

The Author

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Introduction

The expansion, restructuring, and refinancing of the tertiary sector that began in the 1990s has meant that universities are severely under-resourced. Classes are not only larger than they were a few years ago, but much more diversified in terms of student ability and motivation. Yet market forces demand quality teaching. Teachers have difficulty in maintaining standards, let alone improving them. They are stressed.

Teaching and learning take place in a whole *system*, which embraces classroom, department and institutional levels. In a poor system, in which the components are not necessarily integrated and tuned to support learning, only 'academic' students spontaneously use higher-order learning processes. In an integrated system, on the other hand, all aspects of teaching and assessment are tuned to support high level learning. Constructive alignment (CA) is such a system. It is an approach to curriculum design that optimizes the conditions for quality learning.

Something very like CA was proposed over 50 years ago by Tyler (1949), but the time was not ripe, partly for reasons alluded to in the assessment sections below.

An example of a poor system

Here is what a psychology undergraduate said about his teaching:

I hate to say it, but what you have got to do is to have a list of 'facts'; you write

down ten important points and memorize those, then you'll do all right in the test ... If you can give a bit of factual information -- so and so did that, and concluded that -- for two sides of writing, then you'll get a good mark. Quoted in Ramsden (1984: 144)

If the teacher of this student thought that a critical evaluation of psychological theories could be handled by selectively memorizing, there would be no problem. But surely the teacher didn't think that. I hope not! As it happened, this particular student graduated with First Class Honours. He liked writing extended essays, and held these quick and snappy assessments in contempt. He made a strategic decision to memorise, knowing that it was enough to get him through.

The problem here? The assessment was not aligned to the aims of teaching. So often the rhetoric in courses and programmes is all that it should be: students will graduate with a deep understanding of the discipline, and the ability to solve problems creatively. Then they are told about creative problem solving in packed lecture halls, and tested with multiple choice tests. It's all out of kilter, but such a situation is not, I strongly suspect, all that uncommon.

A good teaching environment is consistent. Teaching and assessment practices are aligned to the aims of teaching.

So what does a good system look like?

Problem-based learning (PBL) is a very good example of aligned teaching. PBL is most commonly used in professional degree programmes, such as architecture, medicine, and nursing, but it is also used on more 'academic' programmes. The idea is that graduates should be able to *perform*

differently in the area of study on graduation, for example to solve professionally related problems. In PBL, the main teaching method is to get the students to solve professional problems themselves (carefully selected as to difficulty and content), while the assessment is judging how well they have solved them. There is alignment all the way through, from objectives through teaching method, to assessment: all involve focusing on students doing what they should be doing, solving professional problems. Telling them the history of architectural problem solving, or giving them multiple choice tests on the knowledge needed to solve problems, or learning the principles of problem solving, might be interesting and useful, but they are not the central issue. The central issue is putting knowledge to work.

PBL is an excellent example of an aligned system, probably the purest example, but most approaches to teaching can be aligned more effectively than they are already.

What is constructive alignment?

CA has two aspects. The 'constructive' aspect refers to what the learner does, which is to *construct meaning* through relevant learning activities. The 'alignment' aspect refers to what the teacher does, which is to set up a learning environment that supports the learning activities appropriate to achieving the desired learning outcomes. The key is that the components in the teaching system, especially the teaching methods used and the assessment tasks, are *aligned* to the learning activities assumed in the intended outcomes. The learner is in a sense 'trapped', and finds it difficult to escape without learning what is intended should be learned.

In this Guide, let us focus on aligning a semester length unit or course. There are four major steps.

1. Defining the intended outcomes (the objectives)
2. Choosing teaching/learning activities likely to lead to attaining the objectives
3. Assessing students' learning outcomes to see how well they match what was intended
4. Arriving at a final grade

Defining the objectives: the intended outcomes

When we teach:

- a. we must have a clear idea of what we want our students to learn.
- b. on a topic by topic basis, we must have a further idea as to how well we want each topic to be understood.

As to (a), we should distinguish between *declarative* knowledge and *functioning* knowledge.

Declarative knowledge is knowledge that we can 'declare': tell somebody, read about. Libraries are full of the stuff. It is the basis of academic disciplines. But it is usually only the first part of the story. We don't acquire knowledge only so that we can tell other people about; more importantly, we need to put knowledge to work, to make it function. To really understand something, you see the world differently, and behave differently towards that part of the world. This is obviously the case in professional faculties; we want lawyers to make good legal decisions, doctors to make accurate diagnoses. But we also want physicists to think and behave like physicists. After

graduation, all our students, whatever their degree program, should see a section of their world differently, and to behave differently, expertly and wisely. Thus, if these are our objectives, then simply telling our students about that part of the world, getting them to read about it, and then getting them to tell all that back to you - in their own words, of course! - is not likely to achieve our intended outcomes. Not for the majority of students. The good ones, the 'academic' ones, will themselves turn declarative into functioning knowledge in time, but most will not if they are not required to.

We have to require them to. We have to state our objectives in terms of what we want students to do. *We should require them to perform their understanding, not just tell us about it.*

As to (b), our curriculum is usually listed in topics to be covered. Once you've told them about it, that's it: topic covered. But some topics are more important than others, they require a deeper level of understanding. Students only need to know about some topics - they know where to go to look it up in future if they have to - while other topics must be understood at a level that allows them to put that topic to work, perhaps in a new context they haven't experienced before. So, again, those topics need to be stated in terms of what the students are required to do, not what you the teacher have to 'cover' in class, or set as required reading.

Overall objectives, and topic objectives, are thus about what the student has to do. **Think verbs.**

Following are four levels of understanding, with some illustrative verbs for each level. Of course, each discipline will have its own verbs as well, and remember that each verb has a topic object. The following is a

general framework, based on the SOLO Taxonomy (Biggs, 2003).

Minimal understanding, sufficient to deal with terminology, basic facts: Memorize, identify, recognize

Descriptive understanding, knowing about several topics: Classify, describe, list.

Integrative understanding, relating facts together and understanding basic theory: apply to known contexts, integrate, analyse, explain the aetiology.

Extended understanding, being able to go beyond what has been taught, deal creatively with new situations: Apply to novel contexts, hypothesize, reflect, generate.

The first step in designing the curriculum objectives, then, is to make clear what levels of understanding we want from our students in what topics.

Once we have done that, we need to decide how we are going to get them to do it. Those verbs, and others that suit your own discipline, become the markers throughout the system. They need to be embedded in the teaching/learning activities, and in the assessment tasks. They keep us on track.

Choosing teaching/learning activities (TLAs)

We usually take TLAs for granted. The default TLAs in many courses are lecture and tutorial: lecture to expound and package, and tutorial to clarify and extend. However, the verbs these contexts elicit are not necessarily high level if the student is not so inclined. Students can get away with being passive, whereas high level

learning requires them to be active in their learning.

There are many options for creating appropriate learning contexts (Chapter 5, Biggs 2003) but even the large class allows a wide range of relevant student activity - if only the lecturer stops talking now and then, and requires students to question each other about just taught content, to reflect, to swap notes, to do exercises, to self-test, and so on (see Chapter 6, op. cit.). Then of course there is a range of activities that can be scheduled outside the classroom, especially but not only using IT (Chapter 10, op cit.). In fact, problems of resourcing conventional on campus teaching, and the changing nature of HE, are coming to be blessings in disguise, forcing learning to take place outside the class, with group and peer teaching, independent learning and work-based learning, all of which are a rich source of relevant learning activities.

Assessing students' learning outcomes

It is no exaggeration to say that faulty assumptions and practices about assessment do more damage than any other single factor. As Ramsden (1992) puts it, the assessment *is* the curriculum, as far as the students are concerned. They'll learn what they think they'll be assessed on, not what's in the curriculum, or what's been 'covered' in class.

The trick is, then, to make sure the assessment tasks mirror what you intended them to learn. That pre-empts the sort of cynical game-playing we saw in our psychology undergraduate, above, with his 'two pages of writing'.

But there's a much broader problem, which must be addressed full-on. The fact is, the most common assessment practices make such alignment all but impossible.

Two approaches to assessment

Two approaches to assessment underlie current educational practice. The first is the traditional model. We teach, then we test. Next, we order students along a quantitative scale, usually a percentage scale, which is done by the familiar process of 'marking', and then we allocate grades. Grading can be carried out by stipulating arbitrary cut-off points: 75+ becomes an A, 65 - 74, B, and so on. A common alternative is to grade on the curve or to *norm-reference*. That is, the top 15 per cent, say, are awarded A; the next 25 per cent B, and so on.

In either method of grading, the common feature is that the students' performances have to be quantified. Quantification is achieved in one or both of two ways. First, knowledge is broken down into units that are classified as correct or incorrect, and the correct units are added or averaged. Second, a performance, such as an essay or a problem solution, is reduced to independent components (such as content, style, originality, etc.), which are then rated on separate rating scales, the maxima of which are frequently chosen to add up to 100. The final performance is then assessed as the sum of the separate ratings. It is then assumed that we have a clear, 'objective' scale along which we can compare students' performances.

The second approach to assessment is *criterion-referenced*. That is, the score an individual obtains reflects how well the individual meets preset criteria, those being the objectives of teaching. This is what I am talking about here: alignment between objectives and assessment. But before I deal with this, let me outline some of the problems with the traditional model.

What's wrong with the traditional approach to assessment?

Underlying the quantitative approach to assessment is what Taylor (1994) calls the 'measurement model', which derives from individual differences psychology. Psychologists were concerned about how individuals differed from each other on fixed traits. They created sophisticated test procedures, which relied on several assumptions. For example, traits are normally distributed, and so therefore test scores should be too. Thus, an ability test is constructed on the assumption that very few are really bright, most fall in the middle and a few really dull, in the familiar bell shape. Unfortunately, the educational fraternity pounced on psychometric-type tests, watered them down, and used them inappropriately in the classroom.

There are many problems with this approach. Underlying them all is that there is no essential alignment between what outcomes are intended, what is taught, and what is assessed. Any quick and dirty test with a modicum of face validity ('two pages of writing', for instance) can be used to produce an ordering of students.

Here are only some of the particular problems:

1. Expressing performances as percentages is assumed to create a universal currency that is equivalent across subjects areas, and across students. This assumption is completely unsustainable. How can 50% in English be equivalent to 50% in History? How then can scores on these different scales be averaged? Think about it.
2. A high average in most components of a course covers failure in other components. The reasoning here - that the student clearly had the ability to

pass, so an overall pass is justified - is also unsustainable. The logic of awarding a pass to a student on a section of the course in which that student has already failed is difficult to grasp.

3. Tests should be unidimensional, and have a high test-retest reliability. Complex performances are however not unidimensional, and teaching is supposed to produce change in what is being measured, a change usually called 'learning'. Measuring change, using a model that assumes that what is being measured is stable, seems somewhat peculiar.
4. The effects of quantitative assessments on student learning ('backwash') negative. Quantifying sends the wrong messages to students. For example:
 - Ideas are equally important
 - Individual trees are more important than the wood
 - You can skip or slack on certain areas if you are doing well elsewhere
 - Written tests make declarative knowledge more important than application
 - Verbatim responses must gain some credit
 - Grading on the curve makes success and failure depend on uncontrollable factors such as relative ability and luck
 - As there is no intrinsic connection between the curriculum and assessment, just focus on what will get you through the assessment.

For a further treatment of this controversial topic see Biggs (2003, Chapters 8, 9).

So what's the alternative?

The alternative is an assessment system that tells you how well each individual student's assessed performances match what is required. Surely this is the aim of all teaching. It requires teachers to state desired outcomes in the form of standards or criteria that students are to attain. How well they attain them, minimally or beyond reasonable expectations, is reflected in the grading system. Most students should be able to reach them at an 'acceptable' level.

Matching individual performances against the criteria is not a matter of counting marks but of making holistic judgments. And this is where teachers start to worry. Judgment is 'subjective', isn't it?, while quantitative marking is precise and objective. In case of dispute you can point to a number, a score: You didn't get enough marks, sorry. Isn't that much easier than justifying a holistic judgment?

No. Those 'marks' are themselves an accumulation of mini-subjective judgments. The residual error is probably greater than that in an holistic judgment that can be justified by argument and reference to the criteria. Rather, I would ask you to justify why 75 and over should be an A. Why not 70? Or 90? It is almost universally accepted that getting half right, 50 per cent, should be a pass. Why? Numbers, and arbitrary cutting points, only appear to make the process objective and precise. It is not at all.

So we come back to holistic judgment. Teachers *should* be able to justify their judgments. And this is so much easier if the criteria to be met are spelled out in the initial objectives. Dealing with student disputes then becomes a seminar on the nature of good learning, not a demeaning quibble over a mark here, a mark there.

An example: Arriving at a final grade

Let us look at an example of qualitative grading. The following were the grading criteria I used in a unit in a Master's programme for educational psychologists.

CURRICULUM AND INSTRUCTION

Course Objectives and Grade Criteria

Grading will be based on your attaining the following objectives:

1. demonstrate that you correctly understand and can apply the principles of good teaching and assessment to chosen contexts.
2. demonstrate a knowledge of selected aspects of curriculum design and management and how they relate to the educational system in Hong Kong.
3. show how the content and experiences in this course may enhance your effectiveness as an EP.
4. show evidence of reflective decision-making

Final grades will depend on how well you can demonstrate that you have met all objectives:

- A:** awarded if you have clearly met all the objectives, displaying deep knowledge of the base content, original and creative thinking, perhaps going beyond established practice.
- B:** awarded when all objectives have been met very well and effectively.
- C:** awarded when the objectives have been addressed satisfactorily, or where the evidence is strong for some objectives, weaker but acceptable in others.
- F:** less than C, work plagiarised or not submitted.

The students were given the above, and the final assessment was based on a portfolio they submitted comprising: a paper, a report, a rationale of a group presentation, and a self-evaluation in which they made their case as to how they thought they had addressed each of the objectives. On an assessment sheet handed back to the students, each item was discussed in terms of what objectives it met and how well. The grade was immediately apparent. No counting, no arbitrary, unsustainable decisions. It took a little longer than marking a final exam, but not much longer.

There's a postscript. The university required reporting in percentages, otherwise the computer system could not calculate final grades. So I simply used the existing arbitrary percentage cut-offs, but after the event. That is, my qualitatively allocated grades determined the percentage reported, not vice versa: a percentage did not determine the grade. The backwash to students was therefore qualitative, not quantitative; they knew what they had to do to get an A. On the other hand, knowing that they had to accrue 70 marks to get an A is not very helpful, except they had to scabble for marks wherever they could. So, in my case, if 70+ was an A, and I had judged the portfolio to meet the requirements for A, then if it was a bare A, I awarded 72 of these mark things; if it was a good A, I gave 78, and so on. The final irony was that final grades were reported in? Yes, A, B, C, and F categories! So I graded in categories, converted into marks, only to be converted back into categories again. Just why teachers were not required to report in categories in the first place is one of those eternal mysteries of university administration. The effect on most staff was, unfortunately, to mark in percentages from the start, with all the attendant problems mentioned above.

So we can get around many bureaucratic obstacles to aligned teaching and assessment. The important thing in an aligned qualitative approach is that the criteria for differentially acceptable levels of performance are there for all to see, and the determination of a student's performance is completely transparent, as criterion-referenced assessments are, or should be. Norm-referenced assessments cannot be transparent in the nature of the case, because it depends on how clever the other students are as much as on how clever you the student are.

Some might perceive a difficulty at this point. What if most of my students, say eighteen out of a class of twenty, met the criteria for A? Wouldn't I be seen as a soft touch? Wouldn't others look at the results and say: The standard is obviously too low? Well, yes, I'm sure many would say that. The important thing is how I derived those criteria for an A. If I derived them by judging, perhaps in consultation with the profession, that a graduating psychologist needed to meet certain criteria, and they were those I'd adopted for a grade of A, then it's party time, surely. Congratulations all round.

What is more likely is that the Board of Examiners would throw up their arms and demand a regrade: No more than fifteen percent should be A's, twenty at absolute most! Otherwise, whatever will they think of us!

This is measurement model thinking. Because ability is distributed along the normal curve, the majority of the class must, by a law of nature, be awarded middle grades, a few top grades, a few low passes or fail. That argument assumes that ability determines learning outcomes, not that good learning is facilitated by good teaching. My definition of good teaching, on the other hand, is where we started. If we

can provide an environment in which unpromising students display the quality of work that only good students had displayed hitherto, that's good teaching. Good teaching beats the distribution of ability, it does not follow it.

Anyway, the student intake is certainly not normally distributed with respect to ability. Even these days, we're still only accepting less than half the upper ability end of the age range.

In short, there is absolutely no justification on educational grounds for prescribing fixed proportions of grade categories. Such a policy, which is not uncommon, is adopted for cosmetic reasons: it's good PR to show even grade distributions across department, across years. But it cuts right across any attempt to set up aligned teaching, and must therefore be resisted.

Another example: The learning portfolio

When I first used portfolio assessment in another unit in an undergraduate programme, the backwash took over, and in effect dictated the TLAs (and in fact what led me to CA). In this case, alignment was created bottom up.

The unit in question was a compulsory semester-long unit in the third year of a four year part-time evening Bachelor of Education programme at the University of Hong Kong. The students were primary and secondary teachers in Government schools. The general aim of the unit was not to teach students about psychology (they already had completed a first year unit in educational psychology), but to get them to demonstrate that they could drive their classroom decision-making with their

psychological knowledge, based on reflective practice. Such an aim would be appropriate to advanced units in most professional programmes.

Once the topics were decided, it was necessary to define the levels of understanding that were to be attained. This was done in terms of the verbs indicating the level of understanding required for each letter-grade:

- A. *Reflect* on their own teaching, *evaluate* their classroom decisions in terms of theory, and thereby *improve* their teaching, *formulate* a theory of teaching that demonstrably drives decision-making and practice, *generate* new approaches to teaching on that basis.
- B. *Apply* course content, *recognize* good and poor applications of principles. 'Missed A', that is, had a good try at reflecting but didn't quite make it.
- C. *Understand* declarative; *discuss* content meaningfully, *know about* content topics. Also include 'missed B'.
- D. *Understand* in a minimally acceptable way: essentially 'missed C', or 'badly missed B'.
- E. 'Missed D'; plagiarised; didn't participate satisfactorily; didn't hand in work.

If students could unequivocally demonstrate in the items chosen for their portfolios the level of performance indicated by the verbs in the category, that category grade would be awarded, given that the other performance tasks were all satisfactory. Thus, formulating the actual objectives was not at all complicated, and the ensuing assessment procedures were also straightforward.

In the first class of the semester, I circulated the above objectives and

discussed them, making sure the students knew the standards they would have to meet. They were told that they had to convince me that their learning in the unit met the objectives. They were to decide on the evidence for their learning in the form of items for their portfolio, and to explain where they thought the portfolio as a whole met the objectives. Specifically, the requirements were:

1. Four pieces of evidence selected by the student
2. A reflective journal, including answers to the main idea questions for each plenary session.
3. A justification for selecting the items, and the overall case they were supposed to make as a learning package. This provided very good evidence of students' metacognitive awareness of their learning.

A list of possible item types suggested items was provided by request, but original item types were encouraged.

The portfolio was a completely new task to them, to which most initially reacted very negatively. They demanded guidelines, examples of possible items, and complained bitterly about the perceived workload. In the event, I have to admit that their initial complaints about the workload were justified. Four items, apart the journal and the justifications, were too many. Three would have been better.

The following dialogue, condensed from several sessions, illustrates how this happened (S are students, T is teacher):

- S: What sort of items do we select?
- T: That's up to you. Think hard about the objectives. Here's a list of sample items you might include. (I take a few and explain how they might work).
- S: Can we have a trial run?

T: Yes, and if you're happy with my assessment of it you can submit it as an item.

S: How do we show we can reflect?

T: Use your journal.

S: What do we put in it?

T: What you think are critical incidents in your teaching. Talk it over with your colleagues. Form a learning partnership. Sit next to your partner in class, get their phone number or email. You can help each other.

S: Wouldn't it be better if we had discussion groups of students teaching the same subjects as we do? Then we can share experiences on similar problems.

T: Certainly. You can form groups in the room next door.

S: We need direct teaching on the topics. Will you lecture us?

T: Only if I really need to. There's a topic for each session. The pre-reading should do, just a few pages, before each session. I'll then meet half the class at a time, while the other having are in discussion groups. We can clarify each topic in the lecture, as necessary. And so on.

In short, the assessment task drove the students' learning activities, which had to address the objectives, and the TLAs evolved around that.

The students' experience

Student reactions gave an interesting insight into the way alignment worked. One student referred to the portfolio as 'a learning tool'. In fact, it is difficult to separate what is a TLA and what an assessment task in an aligned system. Students learn what they are supposed to learn, and they are graded on how well they learn it. What could be simpler?

The negotiated teaching activities stimulated the students to respond in the way required, as the following quotations from their portfolios indicate::

What (we are expected) to prepare for the portfolio undoubtedly provide me a chance to reflect on my daily teaching. This would never happen if this module proceeds in the same way as the other modules. I would not be so alert about my own teaching and eager to make changes and improvements.

Instead of bombing us with lengthy lectures and lecture notes, we have to reflect on our own learning experiences and to respond critically ...I feel quite excited as this course is gradually leading me to do something positive to my teaching career and to experience real growth.

Student reactions to the portfolio were initially negative:

How about the assessment? Aiyaa! ANXIETY! ANXIETY! ANXIETY! I was so puzzled and worried about it when I received the handout on the first meeting.

And a backhander to me:

This (the portfolio) is going to be a nightmare! At least, if it had been an essay, I would have known what is expected of me ...Have I ever caused the same kind of fear among my students? *I must bear in mind to be more reasonable and careful when giving my students assignments from now on ... only give them assignments that are well designed and really necessary to help them in their learning ... make sure they understand what is expected of them ... make sure*

sufficient time is given for completing
....

By the end of the unit, however, reactions were more positive:

You will be willing to do more than what the lecturers want you to do. The circumstance is like a little kid who has learnt something new in school and can't wait to tell his/her parents.

I learn more from the portfolio than in the lesson.

All (the teacher) said was 'show me the evidence of your learning that has taken place' and we have to ponder, reflect and project the theories we have learnt into our own teaching ...How brilliant! If it had only been an exam or an essay, we would have probably just repeated his ideas to him and continued to teach the same way as we always do!

Another example of alignment in an engineering program is given by Houghton (2002), which is designed specifically to fit within existing QAA procedures.

Conceptions of teaching, of the curriculum

It is now well accepted that teachers teach according to their beliefs about the nature of teaching and of what the curriculum is about. Some see the curriculum as being entirely concerned with content the students have to take on board, the 'transfer' conception: knowledge being transferred from the teacher's head to the students' heads (I would rather see this as 'reduplication', otherwise the teacher is left a babbling ignoramus after each lecture). Others see the curriculum as

process, as the experience the students have, which includes the values that are transferred in the so-called 'hidden' curriculum. Where does CA stand on these issues?

Actually, I think CA is neutral on most. It is a meta-principle of curriculum design, which can incorporate a variety of particular conceptions. The only aspect it cannot incorporate is, as I say, norm-referencing. But you can criterion reference anything. For example, say I am a very stern traditionalist. Here are the topics to be covered, and they have to be learned exactly right, verbatim. Very well, the objectives are clear, the TLA is exposition, the assessment is based on verbatim recall. It does not tap the upper reaches of constructive learning (memorisation is a narrow-band constructive activity), but it is one, and the design is aligned throughout.

CA does emphasise process, however. The verbs are really ways of requiring students to think in required ways, not just to achieve outcomes. But again, the processes are built into the objectives and they can be high level or low level.

The value of CA in addressing the hidden curriculum came out beautifully in many of the student comments, some of which are quoted above. All were teachers, and the experience of being required to reflect on their own learning, enabled them to reassess their teaching, as is seen in the following:

When I am a learner, I expect the teachers to provide me with good learning. When I am a teacher, I just neglect the learners. Is this fair?

As Ronald, one of my classmates, said, 'They are practising what they preach'. His words recall my memory of Michael

Fullan's premise in his book *Change Forces*: 'Faculties of education should not be advocating things for teachers or schools that they are not capable of practising themselves.

Constructive alignment is precisely that: practising what you preach. The medium is the message.

Advantages of aligned teaching

The advantages of teaching and assessing in this way have been emphasised already. In sum:

- It's more rewarding as a teacher, and more enriching. We are forced to reflect on what we mean by 'understanding', and how we can foster it.
- The students see that what they are learning is real. They're being required to show that they can operate more effectively with what they have learned, not just talk about it. Cynicism, that enemy of deep learning, is much less likely.
- The outcomes on graduation translate into informed action, which is what the community expects.

Disadvantages and impediments

- Although the approach is common sense, it requires a different way of thinking about teaching, and in particular about defining levels of understanding.
- It requires a theory of teaching your discipline over and above knowledge of the discipline itself; and knowledge

about options for teaching and assessment. This is where LTSN centres and staff developers can be vital resources and supports.

- Time. Academics are more stressed than ever, and in the initial stages setting up an aligned system requires thought, and the redesign curriculum, teaching methods, and assessments.
- Institutional requirements, such as quantitative reporting, and grading on a curve, make aligned teaching difficult.

It looks like the negatives outweigh the positives, but that's only if you think quantitatively.

Why not try it for yourself.

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