

Constructive Alignment - and why it is important to the learning process

What is Constructive Alignment?

Constructive Alignment, a term coined by John Biggs (Biggs, 1999) is one of the most influential ideas in higher education. It is the underpinning concept behind the current requirements for programme specification, declarations of Intended Learning Outcomes (ILOs) and assessment criteria, and the use of criterion based assessment.

There are two parts to constructive alignment:

- Students construct meaning from what they do to learn.
- The teacher aligns the planned learning activities with the learning outcomes.

The basic premise of the whole system is that the curriculum is designed so that the learning activities and assessment tasks are aligned with the learning outcomes that are intended in the course. This means that the system is consistent.

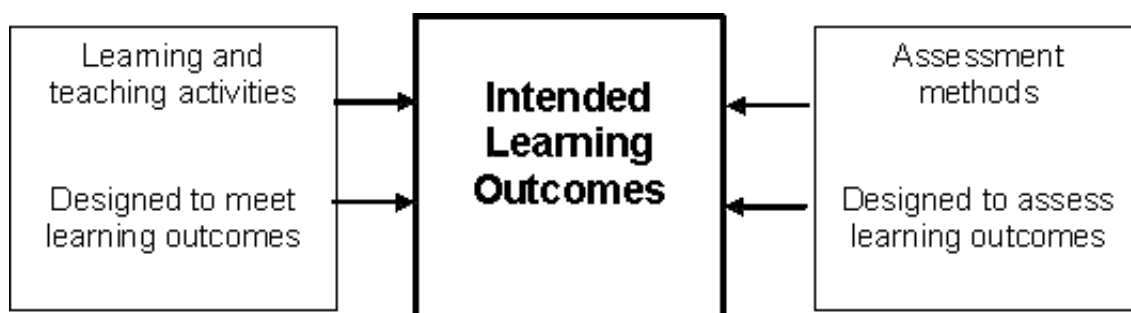


Figure 1. Aligning learning outcomes, learning and teaching activities and the assessment. Adapted from Biggs(1999) p 27

Alignment is about getting students to take responsibility for their own learning, and establishing trust between student and teacher. If students construct their own learning and this takes place inside the students' brains, where teachers cannot reach, then the real learning can only be managed by the students. All teachers can do is to create an environment which is encouraging and supportive of students engaging in the appropriate and necessary mental activity. We can do this by providing the pieces and specifications of what the students must become able to do as a result of modifying their cognitive structures, and set up or suggest activities that students can use to achieve these changes or intended learning outcomes.

We must have a clear idea of what we want students to be able to do at the end of a unit of study, and communicate these intended learning outcomes to students so they can at least share in the responsibility of achieving them. However, we know that students will inevitably tend to look at the assessment and structure their learning activities, as far as they are able, to optimise their assessment performance. We must therefore make sure that the assessment very obviously does test the learning outcomes we want students to achieve, that, by being strategic optimisers of their assessment performance, students will actually be working to achieve the intended learning outcomes. In other words, the ILOs, the learning activities and the assessment must all be aligned. The assessment criteria should differ from the ILOs only in so far as that they might give more detail of performance levels required for specific rewards. If we tell students that we want them to achieve something (ILOs) and then assess them against assessment criteria that do not match, they will feel cheated and will become cynical strategic surface learners. Alignment is really simply a matter of honesty and fairness that establishes the trust required for students to be confident that they can manage their own learning.

Achieving Constructive Alignment

Constructive alignment is actually extremely difficult to achieve: it is virtually impossible to get it right first time, through so-called rational top-down course design. That is why the ILTHE, for example, emphasises the importance of the reflective practitioner; the teacher who constantly modifies course design and delivery, constantly trying to work closer to the unattainable perfect constructive alignment. Moreover, this is not simply a matter of modifying learning activities and assessment. Sometimes, in the delivery of a module, assessment outcomes, or our work with students, reveal learning outcomes we had not anticipated but that we nevertheless recognise as valuable. These emergent learning outcomes need to be identified and incorporated into the intended learning outcomes. Constructive alignment cannot be achieved or maintained in an institutional system that does not allow frequent modification of module descriptions (figure 2).

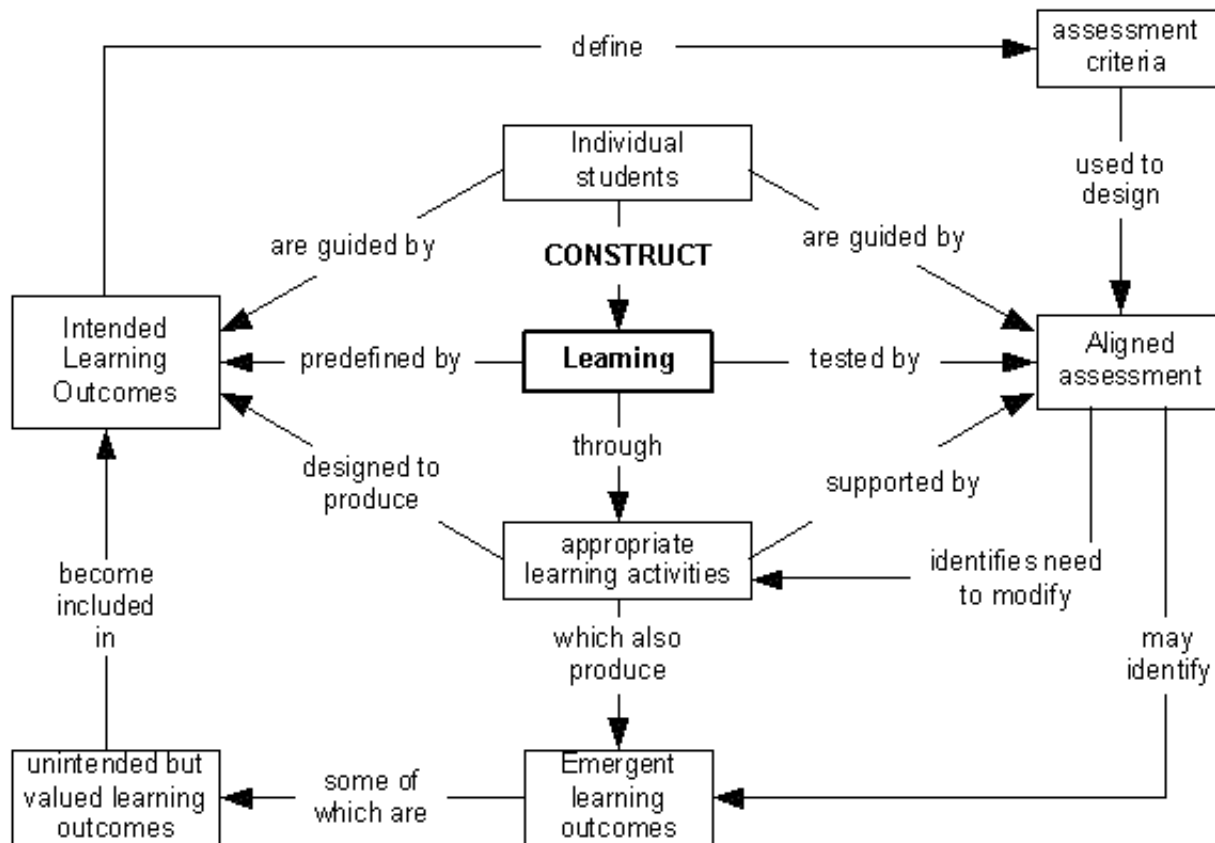


Figure 2. Concept map illustrating the main ideas put forward by Biggs and the relationships between them in the Curriculum Design Process.

If we are taking a single component of a programme, we can 'Constructively Align' that course by tackling the following steps:

- Define the learning outcomes.
- Select learning and teaching activities likely to enable the students to attain the outcomes.
- Assess the students' outcomes and grade the students learning.

Setting the Learning Outcomes

This is how we are intending to define the course for our students, (though the students maybe influenced by the assessment). We need to think about the learning as what we want the student to do. We want the students to 'behave' like engineers making competent decisions in their future careers; the outcomes should mirror this. As we want the students to do things, then it makes sense for the outcomes to be specified in terms of verbs, this will also have the added benefit of leading us to design assessments that measure the objectives.

In considering the verbs to describe learning outcomes, we can return to the work on levels and the different levels of learning. We will probably want to mix the levels of learning required having some lower

level outcomes that deal with the basic facts, as well as having higher levels that require the students to deal with new situations. This will provide us with the basis of the learning outcomes for our unit.

For example if we are aligning a course on networks, then our low level outcomes would be to state Kirchhoff's Law and Thevenin's Law. However, we also would want extended understanding where we would expect students to apply these laws to new contexts, perhaps designing their own circuits.

Selecting Learning and Teaching Activities

We need to consider activities that will cause the students to engage with the learning. Course documentation usually defines the amount of study, in many institutions this is defined in terms of contact time in lectures and tutorials. However, we have seen (see learning styles) that these are not the most effective way for the majority of students to learn as they can adopt passive learning approaches. Consequently, we need to consider approaches that require participation that is more active and encourage more high-level learning. Therefore, if we want students to consider that we expect them to synthesize concepts and link them together then we should consider assessment activities that encourage that behaviour, such as a mini-lab project, or a case study such as designing and costing a new power plant in a location with particular requirements.

Assessing and Grading the Student

We need to ensure that we assess the learning outcomes. If we are seeing how the students apply knowledge of the environment and environmental legislation to new situations then that is what we should assess. However, we should also consider how we assess the student and arrive at the final grade. We can take two approaches to assessment. The first, the traditional norm assessment model, is where we break down the students 'learning' into their responses to individual questions and sub units, assigning marks to their 'correct' responses. The problem with this is that it encourages students to play the assessment game, and go for a mark 'trawl' in exams, trying to pick-up bits of marks here and there. The alternative is criteria-based assessment where grades are awarded according to how well students meet the desired learning outcomes (see table 1 for an example).

Objectives	Grading Criteria
Grading will be based on you attaining the following criteria:	Grades will depend on how well you can demonstrate that you have met all objectives:
<ul style="list-style-type: none"> ● Demonstrate appreciation and understanding of the delicate balance in the environment. ● Demonstrate understanding of sustainability and related issues in the environment. ● Have knowledge of relevant UK and EU environmental legislations. ● Relate specific pollution control technologies to industries. ● Appreciate the range of engineering related environmental problems. 	<ul style="list-style-type: none"> A: Awarded if you have clearly met all the objectives, displaying deep knowledge of the content, creative thinking, applying the concepts effectively to new situations B: Awarded when all objectives have been met well and effectively C: Awarded when the objectives have been addressed satisfactorily, or where evidence is strong for some objectives, but weaker in others. F: Less than C, or work not submitted

Table 1. A constructively aligned assessment scheme (adapted from Biggs 2003)

Nearly all degree programmes will require the criteria grades to be converted to a grade, this is fairly straightforward; a good 'A' gets 78%, a bare 'A' gets 70%, and so on. For a more in-depth discussion of assessment, see Biggs(1999) Chapters 8 and 9.

Advantages of Constructive Alignment

Constructive alignment encourages clarity in the design of the curriculum, and transparency in the links between learning and assessment. In a truly Constructively Aligned curriculum it facilitates deep learning as the activities are designed for that purpose. This should improve the quality of learning and graduates in our profession.

Further Reading

John Biggs (1999): *Teaching for Quality Learning at University*, (SRHE and Open University Press, Buckingham)

Norman Jackson (2002) QAA: Champion for Constructive Alignment! (Imaginative Curriculum Symposium, November 2002)

John Biggs (2003): *Aligning Teaching and Assessment to Curriculum Objectives*, (Imaginative Curriculum Project, LTSN Generic Centre)

Claus Brabrand (2006): "Teaching Teaching & Understanding Understanding"
(19-minute award-winning short-film on Constructive Alignment).
URL: [<http://www.daimi.au.dk/~brabrand/short-film/>]

Source

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