A university wide action research project to enhance teaching and learning through constructive alignment

T. Adawi\textsuperscript{1}, M. Gustafsson\textsuperscript{1}, E. Saalman\textsuperscript{1}, T. Stehlik\textsuperscript{2}, N. Thew\textsuperscript{3}

\textsuperscript{1} Chalmers University of Technology, Department of applied IT, adawi/magusta/saalman@chalmers.se
\textsuperscript{2} University of South Australia, School of Education, tom.stehlik@unisa.edu.au
\textsuperscript{3} Kangaroo Education, neill@kangarooed.com

ABSTRACT

We report on a campus-wide educational development project at Chalmers where 35 courses were redesigned using constructive alignment as a conceptual tool. Scaffolding involved workshops, peer and facilitator assessment, and discipline-specific supervision. Increased constructive alignment competence and improved scholarship of teaching and learning practice are the main results. Weaknesses involved accessing literature, doing action research, and designing evaluation.

Keywords
Constructive alignment, action research, scholarship of teaching and learning

INTRODUCTION

In 2010, Chalmers initiated a university-wide development project as part of a prioritized development strategy for quality enhancement in response to the Bologna agreement. The project took as a starting point the institutionalised and explicit use of learning objectives in course descriptions at Chalmers. It consequently, focused on applying a scaffolded constructive alignment approach to all course development for the courses in the project. Our work is based on John Biggs’ (2003, p. 27) understanding of constructive alignment as a marriage between a constructivist view of learning and an aligned design for teaching:

“The curriculum is stated in the form of clear objectives, which state the level of understanding required rather than simply a list of topics to be covered. Teaching methods are chosen that are likely to realize those objectives; you get students to do the things that the objectives nominate. Finally, the assessment tasks address the objectives, so that you can test to see if the students have learned what the objectives state they should be learning. All components in the system address the same agenda and support each other”.

The first aim of the constructive alignment project (CAP) was to develop constructively aligned ‘model courses’ in different disciplines across Chalmers. A second aim of the project was to foster a culture of scholarship of teaching and learning (SoTL) among colleagues. Among the many definitions of SoTL in the literature, many come close to the definition provided by Hutchings and Cambridge (1999, p. 7): “The scholarship of teaching is problem posing about an issue of teaching or learning, study of the problem through methods appropriate to disciplinary epistemologies, application of results to practice, communication of results, self-reflection and peer review.”

In the following, we first describe the design of CAP and provide some indicators of success in relation to the twin aims above. We also discuss some barriers CAP participants experienced using constructive alignment as a systematic course development tool.

THE CONSTRUCTIVE ALIGNMENT PROJECT (CAP)

CAP involved 35 courses from several disciplines across Chalmers. Those responsible for the courses were supported over several months by the project team in setting up and running an action research project. The support consisted, in particular, of two workshops, a webpage with useful resources, individual support in specific areas, and feedback on proposals and the final report. The project team consisted of four academic developers, four educational area co-ordinators, and one overall co-ordinator.

In the first workshop, participants were introduced to the idea of CA and were presented with a few examples of the main steps in CA: how to formulate learning objectives and how to match teaching/learning activities as well as
assessment to the objectives. During the rest of the workshop, they worked in smaller groups to identify specific instances of misalignment in their courses, to design an action research project, and to get peer feedback on the project design.

Within two weeks after the first workshop, participants submitted an “abstract” of their proposed project. Prior to submitting the abstract, the participants were strongly encouraged to read the articles by Biggs (1999) and Weurlander (2009). The abstract contained a brief description of the course, the identified problem in one specific part of the course (or the course as a whole), the planned intervention, how it could improve student learning, and how the impact of the intervention would be evaluated. The academic developers on the project team read the abstracts and provided written feedback.

The focus of the second workshop was analysing how well a course as a whole is constructively aligned. Workshop facilitators provided an example of an analysis and helped discuss pros and cons of this analysis. This was followed by an individual mapping exercise, for which the participants were asked to design a representation mapping all teaching/learning activities and assessment in their courses against learning outcomes.

A few months after the second workshop, participants submitted their final report consisting of a description of the action research project and a critical reflection on how well the course as a whole is constructively aligned. Two peers assessed the final reports based on criteria distributed during the second workshop. On completing their projects, the participants should be able to:

1) analyse and explain what is misaligned in the current course design;
2) compare and contrast some interventions to synthesize an effective course redesign;
3) apply research-based teaching practice to improve student learning strategies and learning outcomes;
4) evaluate the impact of the redesign; and
5) generalize the redesign to make it relevant to other courses.

Two academic developers also assessed each report using the same criteria. The feedback generated was handed over to the educational area co-ordinators and mediated to the participants in individual meetings with the educational area co-ordinator.

The main evaluation of the CA project comprised a questionnaire distributed to all participants; semi-structured interviews with a sample of the participants (by two external evaluators); assessment of the final written reports using a matrix of defined criteria; and feedback from student evaluations in response to re-aligned courses.

**DISCUSSION**

On the whole, CAP has been successful in reaching its twin aims of developing a number of CA “model” courses across different disciplines as well as fostering a culture of SoTL at Chalmers.

Most participants enjoyed and learnt from the project, were enthusiastic about the developments they had made to their courses and, importantly, felt that they had become more reflective about their teaching. They felt well supported throughout CAP and the whole process was experienced as collegial. Institutional curriculum development projects can be perceived as unnecessary, bureaucratic exercises, but we were struck by the strong sense of personal ownership the participants showed relative their own projects.

Many interviewees, when asked about the influence of CAP, spoke of “seeds being sown”. In practical terms, new and more informed conversations about course development have been started within departments; fresh ideas about the sequencing of courses within programs are discussed; and faculty networks of proponents for CA are emerging. These networks, or **communities of practice** (Wenger, 1998), are potentially powerful forums to support future curriculum development projects within the disciplines. Some departments are now running their own local CA projects and seminars, and several presentations at the 2011 Chalmers annual conference on teaching and learning had a CA focus.

The four education area co-ordinators have been crucial to the success of CAP. They have been highly effective in their mentoring role and in helping participants develop a more reflective stance to teaching. In their own way, each of them acted as a **critical friend** (Stenhouse, 1975), or a trusted colleague with the ability to pose critical questions while maintaining a good understanding of a colleague’s actual context. Importantly, with extensive experience of teaching in the disciplines and some knowledge (or experience) of educational theory (or research), they were able to bridge the perceived gap between educational theory and specific teaching practices in the disciplines. With a foot in both worlds, they acted as **cross-disciplinary** critical friends, helping participants adapt educational research to educational practice in the disciplines.

Interviewees spoke in well-informed terms about the reasons underlying their course redesign and the intended effects. Most participants were convinced of the merits of constructive alignment as a conceptual framework for reforming their courses. However, several participants mentioned that they would have liked to study more “before-
and-after” examples of course redesign, like the examples described in Biggs (2003). Moreover, some participants asked what other curriculum development approaches are currently in use in higher education, and how constructive alignment fits into the wider picture of contemporary educational theory and practice.

Some projects focused solely on revising learning outcomes, suggesting that this is a more difficult and time-consuming step than we had anticipated. Wieman et al. (2010), similarly, found that “[d]eveloping those goals is also a much larger part of transformation process than we realized. It requires a major reorientation from thinking about education in terms of the content faculty deliver to seeing it in terms of the operational competencies one wants students to acquire. This reorientation does not happen quickly or easily” (p. 14). Much of the feedback on the final written reports therefore centred on issues in selecting and formulating learning outcomes. Elmgren and Henriksson (2010) describe many of these issues and strategies for dealing with them. Our participants often mentioned that Bloom’s taxonomy (Bloom et al., 1956) had been helpful for selecting and formulating learning outcomes.

The mapping exercise, where participants were asked to map the learning activities and assessment in their courses against the learning outcomes, was an eye-opener for many and was seen as a very rewarding exercise. However, in the written reports, there was a tendency to map the contents of the course, or what the teacher planned to do, against the learning outcomes. As a consequence, it was difficult to assess genuine alignment in some of the redesigned courses.

In retrospect, one weakness of CAP was that it did not provide any explicit training in how to design, run and evaluate action research projects (though the assessment criteria provided some guidelines). Perhaps for this reason, most reports lacked strategies for evaluating the impact of the intervention beyond the traditional course evaluation or the final exam. Kember (2000), who initiated and co-ordinated a large cross-institutional action research project in Hong Kong, reports that the participants “asked for far more help with evaluation than any other facet of the projects.” (p. 38) and hence devotes a whole chapter in his book Action learning and action research to different evaluation methods.

In general, the final reports made little or no mention of relevant literature. Weimer (2006) claims that the lack of relevant references is a generic problem when faculty report on changes in their own teaching practice. She writes that “because this scholarship does not build on or integrate previous knowledge, no organized, coherent base for teaching and learning has emerged from this literature, despite many years of scholarship” (p. 63).

CAP was in itself an action research project and, based on the lessons learned, we will, in the future, integrate CAP into two of the courses in the faculty development program at Chalmers (Christie & Adawi, 2010). In this way, most course managers will be introduced to CA as a conceptual framework for curriculum development in the course “Teaching, learning & evaluation” and they will be provided with ample and apt tools for reforming courses. Moreover, in the course “Pedagogical project”, the participants are provided with the necessary tools for conducting an action research project and have a whole year to complete their project. At the same time, both courses need to be re-designed to better suit this integration.

Action research consists of a spiral of cycles, where each cycle involves a new process of problem solving, generated by the previous cycle. In the next cycle of the project, we will address the following three questions: What are the perceived benefits and barriers of constructive alignment by faculty? How can we, as academic developers, support faculty in conducting discipline-based action research? What is the role of the cross-disciplinary critical friends?

The constructive alignment project receives continuing funding and support under Chalmers strategic plan, and it is presented here as a viable academic development model for consideration by other higher education providers. At Chalmers, the CA project has kick-started a period of curriculum renewal and development.

REFERENCES


Drawing from the theory of constructive alignment, in this conceptual argument, it can be concluded that aligning the activities of the pedagogical practices (teaching, assessment, and learning outcomes) and delivering them through information and communication technology promotes students’ graduation rates. Open Access is an initiative that aims to make scientific research freely available to all. To date our community has made over 100 million downloads. It’s based on principles of collaboration, unobstructed discovery, and, most importantly, scientific progression. As PhD students, we found it difficult to access the research we needed, so we decided to create a new Open Access publisher that levels the playing field for scientists across the world. How? Defining learning outcomes at programme and course level, to enhance teaching and learning. Teaching: To facilitate attaining the ILOs. Assessment: How well the student has attained the ILOs. ILO: What the student has to do. Outcome-based Approaches to Student Learning (OBASL): teaching and assessment congruent with the Intended Learning Outcome. Bibliography and some websites on constructive alignment.