
Representing Teaching Practice

A Book of Bundles

Janet Finlay



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A BOOK OF BUNDLES

REPRESENTING TEACHING PRACTICE

If we are to improve what we do as educators, we need to have the opportunity to observe, reflect on and, possibly, embed the excellent practices of others.

Learning and teaching conferences, funding programme dissemination and open access repositories tend to be premised on the assumption that, as long as excellent practice is described and made available, “transfer of practice” will happen.

Unfortunately the reality is not so simple. Most conventional means of sharing or “disseminating” teaching practice are drawn from research traditions: conference presentations, journal articles and the like. While research is an activity that is grounded in external validation, and that is external to any one institution, teaching is very different (Fincher, 2011). Teaching is situated in a particular institutional context, and although content is often made available externally, actual classroom practice is rarely visible outside. While research is predicated on objectivity and repeatability, teaching is situated, specific and subjective. It is therefore not appropriate to use the same forms to exchange knowledge about these very disparate activities.

In addition, it is naïve to expect that teaching practice can simply be “transferred”. Experience of cross-institutional sharing in the Effective Projectwork in Computer Science (EPCoS) project was that “nothing emerged the same as it went in” (Fincher et al. 2001, p171). Instead, examples of practice brought in from elsewhere are tailored to the needs of the new context. Educators are often resistant to the imposition (whether implicit or explicit) of “best practice” from outside. For these reasons, repositories of “reusable” practice are also of questionable value, unless they are packaged to enable transformation of the practice rather than simply importation.

Recognising the limitations of conventional approaches to sharing practice, a number of representations, specific to teaching practice, have been proposed and explored. These range from in-depth portfolios of complete course deliveries (e.g. Tenenberg & Wang, 2006), through semi-formal representations of learning designs (e.g. AUTC, 2003) to abstracted, concise representations of a specific piece of successful practice (e.g. Goodyear & Yang, 2008; Fincher et al., 2001). But are representations such as these of value in facilitating transfer of practice and, if so, where does that value lie?

This handbook is itself a representation of one attempt to capture and represent those practice-based outcomes of a learning and teaching project that were considered useful to be shared with other educators. The ALiC project team, working with the Share project, began with a focus on sharing their successful practice with the wider community, and publishing this handbook is part of fulfilling that aim. However, it soon became clear that the process of representing practice is at least as interesting and valuable as the representations themselves. The representations of practice contained here are offered in the hope that they will be useful as triggers, leading some to adopt new teaching practices in their own contexts. However, the story of how these came about is equally as important, a story that highlights important questions about the nature of usable representations, the process of representing practice and the role of audience in this process. It is hoped that this narrative will be of value to those interested in using representations of teaching practice and those embarking on similar collaborative attempts to capture practice to share with others.

BACKGROUND

The Centre of Excellence in Teaching and Learning Active Learning in Computing (CETL ALiC) was a collaborative HEFCE-funded project that ran over a five-year period to 2010¹.

¹ For more information see <http://www.dur.ac.uk/alic/>

In that time it explored a range of areas of learning and teaching in Computing, including collaborative project work, synoptic assessment, podcasting and web 2.0 technologies, peer support and problem-based learning. The project team considered how to share practice effectively from the outset. In the initial phases of the CETL this focused on transfer of practice between the four collaborating sites: the Universities of Durham, Leeds, Newcastle and Leeds Metropolitan University. Specific cross-site activities, through which practice at one site was adapted and adopted at another, were successfully implemented, focusing particularly on project work and synoptic assessment (e.g. Devlin et al., 2009; Gorra et al., 2008). This sharing and deliberate transfer of practice was enabled by the long-term partnership between the institutions and the opportunities this gave for close collaboration, peer observation and in depth discussion. However the project team (hereafter called ALiC as shorthand) was also committed to sharing the practice it was developing, in a form that would give educators outside the consortium the opportunity to make use of it in their own practice, outside the context of such collaboration.

Recognising the short-comings of conventional dissemination techniques, ALiC identified a number of initial requirements for the form in which they would represent their practice. Firstly, they were looking for a representation that was both aimed at educators and intuitive to use. More formal representations, such as Learning Designs, were therefore not selected, as they can be complex to use (Falconer et al., 2007). Secondly, they wanted a succinct representation that focuses on a single piece of practice, so that the reader can tell “at a glance” whether or not this practice is relevant to their own context. For this reason, portfolio-based representations were also rejected. With these things in mind, ALiC concentrated on two related representations: patterns (Alexander, 1977) and bundles (Fincher et al., 2001). Each of these uses a structured natural language format, is short and concise and focuses on a single problem-solution pairing. Before looking more closely at how ALiC went about sharing their practice, it is worth diverting briefly to introduce these two representations.

AN INTRODUCTION TO PATTERNS AND BUNDLES

Patterns

Patterns were proposed by architect Christopher Alexander as a way to describe good practices in architectural design (Alexander, 1977). Since then, they have been used to represent practice in a number of different disciplines, including education (e.g. Goodyear, 2005; Fincher, 1999).

A pattern is a structured, natural language representation that describes an effective solution to a recurrent problem embedded in a specific context. For example, Alexander's architectural pattern language contains the pattern 159 "Light on two sides of every room" which has the following problem and solution pair:

Problem:

When they have a choice, people will always gravitate to those rooms which have light on two sides, and leave the rooms which are lit only from one side unused and empty.

Solution:

Locate each room so that it has outdoor space outside it on at least two sides, and then place windows in these outdoor walls so that natural light falls into every room from more than one direction.

(from Alexander, 1977, pp747-751)

Importantly, the solution provided is drawn from examples of successful practice rather than simply based on theory. A pattern generally requires at least three distinct examples of practice where the given solution is successfully applied to the identified problem, the so-called "rule of three" (Appleton, 2000). The invariant properties of those distinct solutions are abstracted to give the essence of what makes that solution successful and what is required for it to work. The representational form varies in what it contains but it generally includes a name, illustration, problem statement, context, solution statement, diagram, summary of

evidence and related patterns. Examples of pattern forms, with links to a number of online pattern collections can be found at the Pattern Gallery².

Bundles

Bundles (Fincher, 1999; Fincher et al., 2001) were influenced by patterns but recognise that there are certain things that teachers need to know in making the decision to take on a new practice. They need to know what the practice is, why it works and what pitfalls there may be in its implementation. They also need to know that the practice has worked successfully elsewhere. Bundles therefore include a specific narrative of a particular piece of practice that has been successful in a single context, rather than an abstraction across several distinct examples from multiple contexts. Notably for the ALiC context, this means bundles are applicable to situations where a particular practice has only been tried at one site.

The bundle representation consciously excludes information that may be less useful to practitioners. The EPCoS project (Fincher et al., 2001) found that teachers do not need details of the original context because they adapt practice rather than adopting it unaltered [Fincher, 2000]. Bundles also assume that ideas do not need to be packaged and labelled in order to be reused: practitioners know their own context and what will work there and do not need the originator of the practice to “second guess” this for them. The bundle comprises a problem statement, a phrase that captures the essence of the bundle, a description of the practice, key criteria for success and potential problem areas, and a solution statement. An example of a bundle from the EPCoS project, named “*Here’s one I prepared earlier*”, can be seen in Figure 1.

² <http://www.cs.kent.ac.uk/people/staff/saf/patterns/gallery.html>

EPCoS Bundle

Here's one I prepared earlier

For some students a lack of motivation can derive from a lack of confidence in their ability to use certain tools or techniques.



This bundle gives students the opportunity to boost their confidence by practising the skills required for their project in a way that does not affect their marks.

How it works is you take a previously completed project and ask the student to make a relatively small alteration to some part of it in such a way that they have the opportunity to practice using the relevant tool or technique. This enables the students to become more confident in using the software tools and methods of software development that they will later be required to use in their own work.

This works better if it requires a short amount of time and effort in comparison with the main project work and if it can be done concurrently with other aspects of the main project.

It doesn't work unless the previous project has been carefully designed and executed to match the learning goals. This can be a problem in the first instance, but once developed it can be re-used and/or enhanced in subsequent years.



So: build their confidence using practice exercises.

Figure 1: EPCoS bundle “Here’s one I prepared earlier” (Fincher et al., 2001).

All EPCoS bundles are available from

<http://www.cs.kent.ac.uk/national/EPCOS/bundles/bundles.html>

THE ALIC PROCESS

To begin exploring representations of their practice, ALiC initiated a work package, in the final two years of the project, with the key aim of establishing a process through which practice could be appropriately shared beyond the consortium.

Bundles had been identified in ALiC's original project plan as the intended representation for the project to use. However, at the time that the project started to look seriously at representing practice, an opportunity arose to collaborate with the JISC-funded Planet project (Finlay et al., 2009), which was developing a community-oriented process for capturing patterns. Patterns therefore became the initial focus.

Working with Planet: the Pattern Language Network

The Planet (Pattern Language Network) project aimed to develop a community-based process for sharing teaching practice in higher education using patterns. The project developed a process based on a series of three participatory workshops to elicit examples of successful practice, examine these examples to identify commonalities and develop patterns from this. The process (illustrated in Figure 2) comprised the following iterative stages (Finlay et al., 2009):

1. Pre-workshop activity: participants submit a case story of their practice to the Planet wiki, using a structured narrative template.
2. Workshop 1: participants share, question, elaborate and compare their narratives of practice, with a view to identifying common elements, which might be abstracted as patterns. "Candidate" patterns are identified and entered into the Planet wiki.
3. Inter-workshop activity: the team reviews the narratives and candidate patterns to identify any commonalities between these and those already in the wiki.
4. Workshop 2: participants consider the "candidate" patterns from the previous workshop, and any additional ones

identified, and use structured templates and prompts to refine them, in particular focusing on identifying the necessary evidence for the candidate pattern to fulfill the “rule of three”.

5. Workshop 3: participants review the patterns and attempt to apply them to new problem scenarios around the design and delivery of learning experiences. This helps to evaluate and validate the patterns.

ALiC initially planned to adopt this full process. However, in practice, the team primarily iterated around workshops 1 and 2, with one attempt to apply the patterns (produced by other Planet groups as well as ALiC) to new problem scenarios (workshop 3). Most of the workshop activity was therefore around sharing stories of practice and attempting to derive patterns from these.

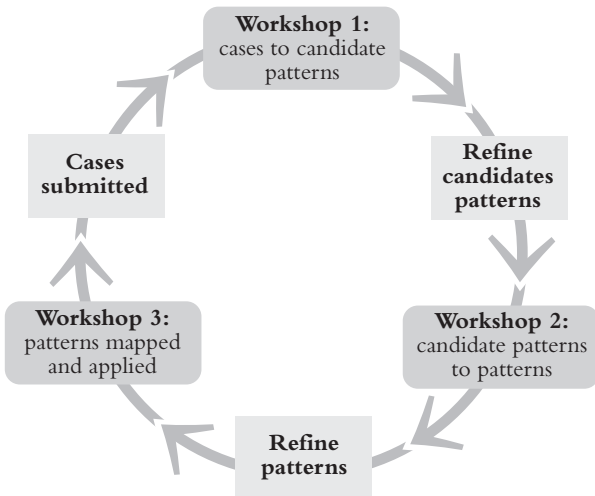


Figure 2: Planet participatory workshop cycle (from Finlay et al., 2009)

The first phase was to create structured narratives to describe examples of successful practice. Specific stories of practice were captured using the STARR template. ALiC fellows were asked to tell the story of their practice using the following headings:

- Situation (what was the context in which it happened?)
- Task (what was needed? What were you trying to achieve?)
- Action (what was done?)
- Results (what happened as a result?)
- Reflection (what did you learn from it?).

This proved to be valuable to support the workshop discussion: it helped the team to tell their stories with a similar level of granularity, allowing them to compare stories more easily. It also ensured that the focus of the initial discussion was on actual practice rather than abstracted lessons or principles.

Planet's structured story-telling activity worked very well for the ALiC team. Although familiar with each other's work through hearing formal presentations and reading reports, ALiC was clear that the structured storytelling had given them a much deeper and more detailed understanding of what each site was doing. Having to prepare the narratives of practice and then having the opportunity to question each other about them, helped to clarify the details of that practice, including what was significant about it. It also helped to highlight what their practice had in common. In later evaluations, all participants rated these discussions around the story of practice as essential elements of the process. One participant summarized it as follows:

“Talking about particular case-studies or practices (sometimes my own and sometimes others) was really helpful in teasing out the similarities (or conversely, the lack of any similarities). . . . the value was really in the discussion as it helped me to focus on the significant factors” (CETL ALiC team member).

However, once the process moved from examining stories of practice, to attempting to propose candidate patterns from these,

things became more difficult. The ALiC fellows were mostly unfamiliar with the pattern approach and some found it challenging:

“I found the concept of patterns quite difficult to grasp, I just didn’t ‘get it’” (CETL ALiC team member).

One of the problems was lack of examples to give the team an idea of what to expect. This was raised by several team members and later remedied by the Planet project, but too late for ALiC.

The abstraction process was also confusing for the team. They were used to talking about the detail of particular practices, but they found it very difficult to identify from these the invariants that led to the success of that practice. These challenges were exacerbated by the fact that, within the ALiC project, there was often only one instance of a particular practice, leaving the team unable to fulfill the “rule of three” and develop full patterns. As a result, in spite of actively participating in half a dozen workshops discussing and elaborating examples of practice, the team only submitted four complete full patterns to the Planet wiki.

What proved interesting about ALiC’s experience of the Planet process was that the greatest value was in the activity of sharing practice within the team, not in developing representations that would be of use to others. Telling stories of practice worked very well; trying to abstract formal representations did not. However, it was not simply telling the stories that was important, if it was, then the case stories themselves might stand alone as shareable representations. It was the opportunity to share, question, elaborate and compare that gave the real value. Being “in the room” was critical.

THE MOVE TO BUNDLES

After struggling with the pattern representation in monthly meetings for the best part of an academic year, the process stalled and the team reconsidered its direction. After some consideration,

a decision was made to return to the bundle representation, which had been specified in the original ALiC bid. Bundles were influenced by patterns, but focus on a specific piece of practice, rather than attempting to abstract invariance over multiple examples. As such it was felt that this might help to address the problem of the complexity of the abstraction process and the fact that, in many cases, there was only a single example of practice. It also seemed to play to the areas that the team had found valuable, for example, the exposition of the detail of an instance of practice.

A new series of monthly meetings was initiated, starting with a facilitated discussion of the use of bundles in EPCoS, with members of that team. Initial ideas were mapped out, based on the stories already identified in the Planet process and reflecting the work packages around which CETL ALiC was organised. From this, ALiC decided to theme the first block of meetings, around the key topics covered in the work packages: employability, research-informed teaching, assessment and feedback, project work, induction, staff development, web 2.0 technologies, cross site working and representing practice. Interestingly, although initial proposals were made for bundles in most of these categories, the final set of bundles represent just four of them: employability, project work, induction and assessment and feedback, with a fifth group, Active Learning, emerging from the bundles eventually produced.

After this initial session, the team was tasked with writing one bundle each, from the practice they had already discussed through the Planet process. At the next meeting, each participant had written several draft bundles and initially appeared to be much more comfortable with this way of representing their practice. Several bundles were then critiqued in the group and an editing process was established, whereby each bundle was edited by at least two other team members, with a further team member given overall responsibility for final editing and sign off. The aims of the editing were to clarify elements that were unclear to the reader, to add examples from other sites where appropriate and to identify connections between the bundles.

This process produced a surprising paradox. When working with patterns the team had found it difficult to abstract invariant properties across a number of stories. However, when working with bundles, they found themselves over-abstracting. Instead of describing the detail of their practice, they focused on abstraction and generality, assuming that the more generic their description, the more easily their practice could be transferred. The result was that critical details of the practice itself were removed. One ALiC fellow described the team's confusion:

“I think we got this feeling we had to make it as generic as possible so as many people as possible would use it ...”

And their subsequent re-appraisal of the work of representation:

“... the simple fact is that it works the other way.” (CETL ALiC team member).

In some cases, the bundles produced did not describe practice at all but focused only on a piece of technology that had been developed or used.

ALiC reviewed the process with one of the original EPCoS team, which revealed a lack of understanding of the elements of the bundle form: the words used simply did not resonate with this group. The form was therefore revised to reflect the language and understanding of ALiC. Retaining the essential elements of the original form, the new representation provided additional, contextualised guidance on what should be included. The “problem” and “solution” statements were replaced by terms emergent from ALiC practice: “rationale” and “essence”. The body of the bundle explicitly asked for “description”, making it clear that this was the narrative of actual practice, rather than an abstraction away from it. This revised form is shown in Figure 3. Once the bundles had been produced using these labels, and expanded guidance, the final form used in this handbook was developed, where the labels themselves were removed and indicated only by formatting, with the description being

highlighted by the phrase “What we did” to emphasise that this is a description of actual practice. This participatory process of developing the form, led the team to a new recognition of the importance of the particular, rather than the general, in dissemination.

The revision of the bundle form proved to be the impetus to get the process moving again. The new form was much more effective in supporting the team in representing their practice, providing a representation that was meaningful to them. Using the new form enabled ALiC to really start to represent their practice meaningfully:

“writing the bundles helped me to capture what worked and what didn’t in a much more succinct (and useful) manner” (CETL ALiC team member).

In total, 42 bundles were drafted: following the two-stage editing process, 25 are included in this collection. This rather dramatic reduction is mainly due to collections of bundles being merged into one, as they were simply different presentations of the same practice. A few bundles were also discarded as they still described a particular technology rather than a specific practice.

On the other hand, some potential bundles were discussed in the group but never made it to draft form. For example, there was a detailed discussion in one workshop about the importance of informal “coffee meetings” in making collaboration work:

“having coffee together once a week may sound like it’s very prescriptive but actually, fundamentally makes things happen.” (CETL ALiC team member)

This was even named (“Take time to have coffee”) but the bundle was never written. It is unclear why. Perhaps it was felt to be somehow too “trivial”, or perhaps it was not clearly owned and, therefore, fell through the cracks.

ALiC Bundle Name (“snappy name”)

- Here we try and succinctly capture what the bundle is doing or saying or advising, in a natural set of words “a well known phrase or saying”.
- <If you’ve devised a “placeholder” name, something that’s descriptive, but not quite right yet, put it in pointy brackets>

ALiC keywords (not part of the form, included for convenience): what aspect of active learning does this bundle exemplify?

Rationale statement

- The ALiC rationale statement helps orient a user: “This is why you need this practice”
- Do you have this issue? Can you identify with this situation?



Description of Practice

- Here we’re going to tell the story of what we actually did—what really happened. We’ll give specific examples and details.
- This is why the reader trusts us, because this is where we show we know the territory, we know what’s going on and we know what can go wrong.
- We’ll continue to use “signposting”—formulaic phrases that structure our stories. *this bundle is ..., it works better if ..., it doesn’t work unless ...* etc.

We’ll prompt each other (using the formulaic phrases) to capture these stories. “What does it do?” “What’s good about it?” “Why does it work?” “Why did it go wrong?” “What are the lessons here?”

continued

We might additionally ask ...

- We did this in the ALiC context because ...?
- What was easy at your site? What was difficult?
- We've done the same thing at different sites—should we capture that?



Essence statement

- This captures the essence of the practice, the “lessons learned”, the “take away”, the distilled notion.
- It complements the rationale. If we've described why a user might be interested in the practice in the rationale, in the essence we tell them what they have to do to achieve it—without all the specific implementation details that are contained in the “description”

“See also”: here is where we put things that link to other areas—smaller scale practices, or perhaps another experience of this practice at another site, other ALiC bundles, certainly, but other resources too—papers and materials. Thus the “see also” sections instantiates a **network of bundles**: some will reference each other, some will form chains, some will point to the same papers, all forming links.

Figure 3: The revised bundle form for ALiC

WHAT WE LEARNED ABOUT REPRESENTING PRACTICE

ALiC's original aim was to develop shareable representations of those elements of their practice that they considered to be of value to the wider community. However, the process of exploring representations raised some fundamental questions about audience, form and purpose. The outcome of this process at one

level can be found in the bundles in the second part of this handbook, but ALiC's experience also makes an informative case study, from which we can make some observations about representing practice. How generalizable these observations are has not been tested but they are supported by our experience of other activities within the Share project such as the *Disciplinary Commons* (Fincher and Tenenberg, 2011). In the final section, we reflect on these observations.

The process of representing practice may be as valuable as the end product

Although the aim of the ALiC activity was to produce outputs to share with other educators, significant value was gained from the process of representation itself. It could be argued that the most successful element of the Planet project overall was its participatory process for “getting people in the room” to share, examine and collaboratively explore the essential elements of their practice, rather than simply presenting it, as is the norm at “dissemination” events. Although patterns were produced, the time available and the diverse nature of the participants in project workshops meant that these were limited in number and coherence as a collection, yet all groups reported value in participating in the process (Finlay et al., 2009).

This structured workshop process, with story-telling at its heart, proved to be critical in exposing the core aspects of ALiC's practice. That this process was collaborative was also critical as often the person offering the practice did not see what was important about it or what others needed to know. This was evident in the ALiC Planet workshops, the bundle workshops and in the *Disciplinary Commons* meetings, discussed elsewhere (for example, Tenenberg & Fincher, 2007; Fincher & Tenenberg, 2011).

This opportunity to reflect in depth upon their own and each other's practice was recognised by the team as the most beneficial element, allowing them to understand the overall team's activity

much more clearly. As one ALiC team member said to a colleague after one workshop:

“I learned more about your work this afternoon than in sitting through [all those] presentations” (CETL ALiC team member).

The ALiC process has been about creating representations rather than studying their use, and there has, to date, been no assessment of the actual value of the resulting representations to people outside the project. However the question of who is the audience for such representations is a valid one. ALiC was attempting to share practice with the wider higher education community but the exact audience was never identified more specifically than other “educators”, presumably within the computing discipline. However, stories of change submitted largely by experienced computing educators, offer little evidence that such educators make use of representations when they change their practice (Fincher et al., 2012).

It is possible that representations may be more useful to new staff or to staff developers, or that they may simply be a more appropriate means of representing a project’s practice-based outcomes than more traditional methods. However, ALiC’s experience suggests that there is also value to project teams in going through the process of developing local representations of practice, as a way of sharing understanding within the team and supporting their own reflection on their practice, whether or not they are actually used externally.

Representational forms need to be flexible and appropriate to the communities that generate them

ALiC’s intention throughout this process was to develop a representation to make available to other educators. The form chosen offers an important guide to the writer as to what to include and exclude, what is important and what requires emphasis. It is also a guide to the reader, signposting key elements in a structured way.

However, the experience of the team illustrates the importance of flexibility in the form and language chosen, rather than insisting on a specific representational approach, and care needs to be taken to ensure that the philosophy of the representation is understood. In the case of ALiC, fundamental differences between patterns and bundles, such as the level of abstraction required, were missed because of superficial similarities in form. Such surface-level adoption of form, without understanding the philosophy of the representation, is common with patterns and was a factor in some of the problems ALiC encountered.

Representations need to be meaningful to the communities generating them and local adaptation can reap benefits. Once the bundle form was revised, or “translated”, to reflect the language of the ALiC team, it was used much more easily. Representations should therefore not be imposed and it may be that forms will need to be adapted to different disciplinary contexts. Certainly, being “precious” about retaining the purity of any particular form is unlikely to be helpful.

Stories are important: the value is in the detail

Throughout the process, narratives proved to be a very effective way of sharing practice within the team. Whilst we would not argue that story is essential to understanding practice, its significance should not be underestimated. This was the most useful part of the workshop activity and the element that made the bundle representation particularly meaningful within the team. Paradoxically, it is this narrative element that is often missing from formal dissemination.

The centrality of the story makes it important to avoid too much abstraction and generalisation when representing practice. The detail of the practice is an important element in ensuring that the representation remains meaningful. This is what makes bundles (and to a lesser extent patterns) different to highly abstracted representations of practice such as guidelines and principles.

A FINAL NOTE ON THE BUNDLES

The twenty-five bundles, which make up the rest of this book, are divided into five themes:

- Active learning
- Assessment and feedback
- Employability
- Induction
- Project work

They are by no means comprehensive but represent a selection of practices that worked for ALiC in these areas.

The final form of the bundles is as follows:

1. A name, representing the essence of the bundle.
2. ALiC keywords, showing to which work packages these bundles refer.
3. A rationale statement (in bold) that gives the reason you might want to adopt the bundle.
4. A description, including
 - a. **This bundle**: a statement of the essence of the practice described.
 - b. **What we did**: a description of the actual practice
 - c. A series of “conditional” phrases which indicate the key criteria for success, the things that must be in place and those things that might cause the practice to fail. These include:
 - i. **This only works if...**
 - ii. **This works better if...**
 - iii. **This works best if...**
 - iv. **This doesn't work unless...**
5. An essence statement, prefaced by **So**:, which captures the crux of the solution in a general form.

Whether they represent practice that you can adapt to your context or not, we hope you will find the stories therein of interest.

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Active Learning



COVERING ALL THE MATERIAL

ALiC keywords: assessment, peer review, active learning

You have a broad subject area that you want to get your students to research.



This bundle describes a way to engage students in researching a large topic area thoroughly.

What we did: We used a formative assessment that required students to do research into a collection of related topics, in our case, computer security threats including viruses; denial of service attacks; and phishing. Students were instructed to research all the topics but to write a short report on only a specific subset of the topics. The reports were submitted to staff who ensured that the report reached a minimum quality level. The reports were then distributed to students for review and marking. Students were given marking criteria to help them. By reviewing and marking the work of others (having already researched the topic themselves) the students get a good overview of all the topics, without having to write up all the topics themselves.

It only works if the assessment is first reviewed by staff to ensure that substandard or difficult to read work is removed from the mix and marked by a staff member.

It doesn't work unless students are given clear marking criteria that they fully understand.

It works well if the reports are distributed to students when they are normally in subgroups (for example, lab groups or tutorial groups).

It works better if students are not in the group when others are marking their work.

It works well if students review and mark a topic twice ensuring that students learn the material but do not become bored by the exercise.



So: if you want to cover a large topic get students to research all of it, report on part, and mark the rest.

LEARN BY TEACHING OTHERS

AliC keywords: active learning

Students may not grasp concepts until they explain them to others



This bundle describes getting students to develop a better understanding of core concepts or technologies by having them produce learning resources for others on the topic.

What we did: The tutor identified software functionality or a study topic that the students needed to know and asked them in small groups to produce a multimedia learning resource, such as a podcast, about this topic. The students then made their resource available to others to view. One example was getting students to produce a series of podcasts to demonstrate how to use a particular database system.

It works better if the student already has the technical knowledge needed to produce the resource.

It works better if there is a reward for the students, for example, assessment marks.

It doesn't work if the student has no interest in the subject area.

It doesn't work if the student has insufficient time to research the topic.

So: encourage and reward your students to produce multimedia learning resources to share with other students, and to learn by teaching others.

See also: Covering all the material

Assessment and feedback



GETTING HONEST FEEDBACK

ALiC keywords: feedback, groupwork

Working together and being assessed as a group can often be emotive for students and they can find it difficult to be honest about their experiences when feeding back to the staff involved.



This bundle describes how to introduce an industrial partner as a neutral facilitator to collect student feedback face-to-face, to encourage honest and open feedback.

What we did: At the end of a group project we ran a focus group, facilitated by an industrial partner from outside the project, where students were asked to reflect on the activities undertaken and provide feedback on how these had worked, including aspects of the group work.

Students understood that the industrial partner was a neutral facilitator who had no vested interest in the process. The use of an ‘outsider’ to run the group’s feedback discussions provided a way of concentrating on relevant issues and enabled students to give their views in a comfortable setting. This led to more honest, open feedback.

It only works if the neutral facilitator has experience in eliciting feedback.

It works best if the facilitator knows what kind of feedback is being sought.



So: use a neutral facilitator to obtain feedback from your students about emotive areas such as group work.

See also: “I learned a lot”

I KNOW THE EFFORT YOU MADE

ALiC keywords: group work, assessment

Students engaged in group work often feel that their individual marks will be jeopardised by non-performing team members.



This bundle describes an assessment strategy for group work that helps to reassure students that marking is fair. Cross-site working especially causes anxiety for students who may feel that a non-performing team at the other site will jeopardise their marks.

What we did: We introduced an assessment strategy that ensured that marks for group projects were allocated via a series of assessments, some individual and some group-based, so that students gained marks from a variety of assessment types.

A contribution matrix was used by each student group to define precisely the input each individual had had to every section of an assignment or group task, so there was less ambiguity about how each student had performed and who had done the work. These matrices helped to reassure students that their individual efforts had been recognised by their peers.

This only works if assessment during the project distinguishes between product and process e.g. a good student may make a tremendous effort on their part of a product but the whole product may not function properly or fail to meet the standard expected.

This works better if ‘product’ and ‘process’ tasks (and their associated marking criteria) are clearly distinguished within group projects.

This works best if there are a variety of task types throughout the project and a variety of assessment methods available to suit all the skill levels within the cohort.

This doesn't work unless the whole group agree upon the contribution matrices before submission.



So: develop an assessment strategy that ensures that an individual student's marks are gained through a variety of different assessment types, some individual and some group based and that, where an assessment is marked as a group, a contribution matrix for each group member is agreed and presented by the group.

LEARN TO PEER ASSESS BY ASSESSING PEERS

ALiC keywords: assessment, feedback.

You want your students to peer assess each other but your experience tells you they are not skilled at giving effective feedback to each other.



This bundle identifies an effective way to help students to learn how to peer assess before they have to do it 'for real'.

What we did: We put students into small groups and gave each group three anonymised samples of previous work, one poor, one good and one excellent, together with the marking scheme and the expected performance criteria associated with the work. The students were not told which piece of work was which.

Students assessed the work in their groups, using only the marking scheme and expected performance criteria. Within the group they agreed on a final mark and feedback to give to the

student who submitted each piece of work (this would not actually be delivered to the student but they would present it as if it would).

Each group then reported back on the mark they awarded each piece of work and they explained the associated feedback.

It only works if a real assessment and real submissions are used.

It only works if everything that can be used to identify the student who authored the sample work has been removed.

It doesn't work unless students are familiar with the course material and assessment format used in the sample work.

It works best if the assessment is relatively short.



So: use a range of sample work from previous cohorts to give current students the opportunity to practice how to peer assess effectively.

MAKING CONNECTIONS

ALiC keywords: synoptic assessment, integrated learning

Students sometimes struggle to relate learning from one module to another.



This bundle describes a way of enabling students to make use of knowledge between modules, by having a single integrated assessment across a number of different modules.

What we did: We used synoptic assessments during the second semester for level 2 students. In the first four weeks of the second semester (Semester B), a Project Management module was

delivered and partly assessed by a group presentation. This was followed by the delivery of three modules in parallel, which were assessed through a single assessment.

Module	Requirements	Individual or Group?	Draft Project Plan	WIP Presentation	Final Presentation
Project Management	Management Documentation	Group	40%		60%
Software Solutions B	Software product & documentation	Individual		40%	60%
Group Project A	The Product & Developmental Work	Group		40%	60%
Group Project B	The Product & Evaluation	Group		40%	60%

Marking Scheme synoptic assessment—Computing Academy 2007/08 (Leeds Metropolitan University)

Computing students could, for example, choose to work on a case-study-based scenario as a development team for a (fictional) software company. Each student needed to contribute to both the content of the product and the project management of the group, providing evidence of each individual's contribution in a Group Project Portfolio. The assessment of the product took place at three points of product development in the form of an early draft project plan, a work-in-progress (WIP) presentation, and a final product demonstration and presentation (see Table). The students were assessed on subject knowledge, communication skills and project planning in the three group presentations. Lecturers could request additional written reports as supporting evidence.

It only works if sufficient time is allowed for preliminary organisation and establishment of assessment criteria by the tutors.

It works best if frequent communications and collaboration occurs amongst staff members who are involved in a synoptic learning exercise to provide a coherent structure for the students.

It works best if assignments are combined into ONE seamless, synoptic brief.



So: use synoptic assessments to help your students see the wider picture and allow them to learn that a solution for the problem statement for one assessment requires the knowledge and experience of the subject areas from different modules.

See also: Two for the effort of one and a half

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SO THAT IS WHAT YOU WANT

ALiC keywords: formative assessment, group work, reflection, feedback, self-assessment

Assigning summative marks to work does not capture the learning journey of students or take account of the processes involved in group tasks.



This bundle describes a way of using formative assessment in groupwork situations.

What we did: We allowed student groups to submit draft copies of large assignments e.g. a design document. We gave them feedback on this work and allowed them time to re-submit another copy for final grading.

We did this in groupwork because students need to reflect on their own personal learning during a group project.

Allowing students to submit draft group assignments means that they can use the feedback to tell them what they have done well, what they still need to learn and what they need to do further to achieve 'success'. With formative assessment for large assignments, students can reflect on their own part of the work, get a clearer idea of what is needed to improve the work of the group as a whole and a better picture of how feedback comments relate to their individual contribution to the group effort.

It only works if sufficient time is allowed for students to reflect and act on the feedback.



So: use formative assessment to encourage individual reflection in a group task, to help students examine their personal contribution and to allow the group to alter its behaviour to achieve success.

TWO FOR THE EFFORT OF ONE AND HALF

ALiC keywords: synoptic assessment

Staff become discouraged when students do assessment but do not learn from the assessment.



This bundle describes a way to ensure that students make use of the learning we want them to get from an assignment by requiring that they reuse the assessment from one course as the foundation for assessment in another course.

What we did: Teaching staff of two conceptually-linked courses or course components worked together to develop an assessment that students could begin in one course component and continue in another course component.

For example, when the year-long level two Software Engineering team-project required each team to implement a database as part of the project assessment **and** the level two Advance Databases required students to be assessed on their ability to design a database, an assessment that would suit the needs of both course components was constructed.

Working closely together with the intention of ensuring cross-course learning, the staff adjusted the delivery schedule, provided a sequence of events that ensured there was time for lessons learned by students in the first assessment to be applied to the next assessment, and designed a new assessment that would provide a foundation (the database design) for the later assessment (an implementation of an improved design).

For the Advanced Databases course component the students were assessed on their individual understanding of how to design a database but not on the actual running database. In the team-project the teams were assessed on the actual implementation of

an improved design of the database. The assessment followed a sequential path. Firstly, the individual students designed a database based on the scenario of the team-project. Next the staff assessed the individual database designs and provided students with an individual mark and feedback intended to help students improve their design. Students gathered in their teams to review their individual assessments and decide how to proceed on the actual build of the database for their team-project assessment. The student teams reacted in number of different ways. Some teams implemented the best design, that is to say the database that was given the highest mark and the most complementary feedback. Other teams had a member of the team design and develop the team-project database by applying the lessons-learned from a number of individual databases, taking the best ideas from a few database designs, rather than implementing one member's design. And, finally, teams that felt that none had succeeded in the assessment started again from the beginning, while trying to avoid the mistakes identified in the individual members' feedback.

It only works if staff work closely and cooperatively to develop assessment that fulfils the learning objectives and delivery schedules of both courses.

It only works if students are given feedback that allows them to identify the strength and weaknesses of their solutions to the initial assessment before needing to begin the subsequent assessment.

It will not work if the assessment is designed to support the desire to make synoptic assessment part of the curriculum rather than to meet the learning objectives of the course components.



So: if you want your students to learn from an assessment give them an assessment that is the foundation for a subsequent assessment in a different course component.

See also: Making connections

Employability



CROSS-SITE WORKING

ALiC keywords: collaboration, cross-site working, international projects, group work, employability

Students need to demonstrate an ability to work in diverse teams, irrespective of skills, discipline or location.



This bundle describes a way of providing students with a realistic experience of working with a diverse team, made up of people from different sites and even countries.

What we did: We initially ran a cross-site project for a number of years between two ALiC partners in the UK—Newcastle and Durham—as a pilot for an international cross-site project. We used this to evaluate the technologies and support needed for communication between sites. We reviewed assessment regimes, schedules and rules of both institutions carefully and discussed in detail what each institution wanted to achieve for their students by undertaking the project.

One of the concerns of tutors was that the learning outcomes and assessment needs of both institutions would not be met during the activity. Students also feared that joint assessment with their teammates at another university would not be fair to them.

To address these concerns we ensured that students had a similar set of assignments and learning outcomes to the rest of their local class even though their project differed. We also ensured that students at each site would have a similar workload and assessment schedule and, most importantly, that there was a loose dependency between the teams in terms of how their efforts were assessed and what they had to produce.

In the pilot an assignment was shared between teams of level 2 students from Durham and Newcastle who were undertaking

a software engineering module. The cohorts of students were enrolled on Computer Science, Information Systems or Natural Sciences programmes. Twelve ‘companies’ were formed and each consisted of a team of 4-7 people from each institution. All the teams worked to the same scenario but teams from each institution worked on different deliverables. For example, each company’s remit was to supply software with the same specification and a similar look and feel to the interface, but the local teams worked on different development platforms.

The original intention was for cross-site software development with, for example, Durham teams implementing of the back end of the system and Newcastle’s the front end. However this was rejected as too risky for a company if one team performed badly.

Students were provided with video conferencing facilities and team email. Effective cross-site communication was a key factor in the success of the project work, particularly as the cross-site teams did not know each other before.

It works best if the project allows a loose coupling of cross-site teams so that one team’s work is not wholly dependent on that of the other team.

It only works if there is an effective communication mechanism for teams at the different sites.

It works better if there is a similar focus and schedule for the assessment at each site.



So: look for opportunities for your students to work with students from other institutions both at home and internationally and design the activity to make the students work together while giving them confidence that their effort will be given credit.

See also: I know the effort you made

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FACING THE MEDIA

ALiC keywords: multimedia, real-world experience, authentic experience

Students may need to work with the media in their future careers but may not have the opportunity to develop the skills of summarising information and expressing it clearly verbally.



This bundle describes a way to provide an authentic experience of a media interview.

What we did: We made video recordings of students being interviewed about a topic in Public Health Nutrition. They were given a short time to prepare for the interview, to reflect the reality of being asked to appear on radio or television at short notice, to speak about some topic in their area of expertise. The video recording gave a feeling of authenticity to the exercise that would otherwise have been absent and provided a mechanism for them to receive feedback and reflect on their performance.

The students were asked to give a short video interview, suitable for an internet podcast or television news on a specific nutritional topic. Each student was given printed scientific information about a micro-nutrient. The students were given a limited time to summarise the scientific information in a way that could be easily understood by the general public and prepare for their interview.

The session was conducted in a flexible physical learning space, away from the usual classroom environment. Students were provided with laptops with wireless internet access and a range of printed resources to facilitate the research of their given micro-nutrient. Three academic staff, the Course Leader and two members of CETL ALiC were on hand to support the students and conduct the video-recorded interviews. Having two interviewers meant that waiting time was halved; this increased the time pressure and ensured that no student had to wait too much longer than any other. Two final-year undergraduate Public Relations students who had returned from a placement year (that included a range of media and public relations duties) provided assistance in the smooth running of the event and were on hand to share their own real-world experience with the students involved in the activity.

Each student was individually interviewed and was able to take away his/her video to reflect on later.

It works best if a stranger conducts the interview, as this makes it more authentic.

It doesn't work unless there are sufficient people available to support the session, both academically and technically.



So: use external interviewers and video recording to provide students with an authentic experience of facing the media.

See also: Say it in plain English

REFERENCES

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PRO TOOLS

ALiC keywords: experiential learning, employability

Many of the software tools used to teach students are designed principally for learning and students therefore do not get experience of using industry-standard tools.



This bundle describes how we have incorporated the use of industry-standard tools into teaching programmes that include software development.

What we did: At Durham, the introductory programming language taught to undergraduates is Java and the course makes extensive use of BlueJ. BlueJ is an environment that promotes an object-first model of learning programming through graphical manipulation of objects. However, BlueJ is not used in industry.

Towards the end of the first year, Eclipse is introduced to students and then further embedded in the second year. Eclipse is an IDE tool that is typically used in industry—not only for Java, but also for other languages.

During the second year, other industry-standard tools are also introduced—some that are common to many different languages. Such tools include version control systems (SVN, CVS, Git), bug tracking systems and continuous integration environments. Other supplementary technologies such as wikis and blogs also contribute to the technology platform that supports software development.

Introducing these tools has allowed for remote software teams to work together effectively. In using these tools, students gain experience that is directly transferable to the workplace.

It doesn't work unless there is sufficient technical support for these tools.

It doesn't work unless staff are familiar with industry-standard tools.



So: retain the use of tools that assist in learning and teaching, but ensure that these tools are only used as long as is absolutely necessary before introducing tools that students might expect to find in industry.

SAY IT IN PLAIN ENGLISH

ALiC keywords: active learning, authentic experience, employability.

Students are encouraged to present their knowledge in academic language and don't always get the chance to practice expressing themselves in plain language aimed at a broader audience, a skill they might need in future professional employment.



This bundle describes a way to give students practice at expressing themselves clearly and succinctly in writing, in a realistic professional setting.

What we did: A group of final year undergraduate Public Health Nutrition students, studying a Continued Professional Development module, were asked to write a press release appropriate for a tabloid newspaper, based on scientific data about

a particular micro-nutrient. We added time pressure to the exercise in order to provide an authentic experience of responding to press demands at short notice.

We invited a guest speaker, a lecturer in Public Relations and Communication, to talk to the students about presenting information in plain English for a broad audience, including word limits for newspaper columns and time slots for TV and radio interviews. The guest expert remained on hand throughout the session to offer guidance to students as they undertook the writing process. Students particularly appreciated the involvement of a professional in a subject that they had not been exposed to in any of their prior study.

It works best if students have the opportunity to get feedback on their efforts from the guest expert prior to submission.

It works best if the writing is done under time pressure to simulate a professional context.



So: Give students the opportunity to get feedback from a professional to learn how to express themselves plainly under pressure.

See also: Facing the Media

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VOLUNTEERS PLEASE

ALiC keywords: student development, knowledge transfer, employability

Students need opportunities to develop their skills and knowledge outside the classroom to prepare them for employment.



This bundle encourages volunteering as a way to develop employability skills.

What we did: The level two and level three undergraduate students were asked to volunteer to become mentors for the After School Computing Club running in local secondary schools. The clubs were run by teachers in their respective schools supported by the university, which provided the resources including materials, and activities for the student mentors.

Materials and activities were devised and structured by the University to use mentors to help and support the teachers who may not have the skills required to teach computer programming and to provide an opportunity for pupils to learn computer science. This practice was also devised for the student mentors to use their skills, demonstrate their knowledge and to develop and enhance their employability skills and to help increase their confidence. An example activity involved developing a game for mobile phones.

We found that the student mentors preferred to be at least in pairs for peer support and not to feel so exposed as mentors. We have also found the need for the university coordinator for the activities to have a role of pastoral care for the mentors to report and discuss any issues related to the clubs that cannot be discussed with the teachers.

For the club to run smoothly, there should be at least one mentor for every 8-12 pupils in a club and each club should have

a preliminary session with the teachers and mentors to fully understand the set-up at the school and for the mentors to fully understand the agenda for each session and what is to be achieved.

The process for running a club is:

1. Advertise for student volunteers to become mentors at computing clubs with an induction meeting for the volunteers.
2. Allocate mentors to the schools and introduce them to the teachers running the clubs with the first sessions organised.
3. Oversee the running of the clubs
4. Final feedback for future practice and mentor self-assessment.

It works better if there is a structured setup of events/activities and a clearly defined volunteering procedure associated with a University scheme and the activity is in collaboration with institutes and schools outside the university.

It doesn't work if the activity impacts on students' term time learning and the students are unable to complete all the activities.



So: Create an event or activity with collaboration outside the university for students to volunteer to pass on their knowledge and enhance their skills.

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WHAT YOU LEARN IS REAL

ALiC keywords: student development, knowledge transfer, employability

Students do not always appreciate what they learn in university is applied and researched in the real world by industry.



This bundle describes how we have made use of industry contacts to demonstrate to students that the skills and knowledge that they gain at university is relevant to future careers.

What we did: We invited established contacts in relevant industries to present an aspect of their current research activities, and to link it clearly with the current university research and teaching curriculum. We achieved this by asking the presenter for a title and abstract and then getting a member of staff in that research field to communicate with the presenter about the curriculum in that area.

Staff, postgraduate and level two and level three undergraduates were all invited to attend these interactive events and there was a two to three week advertising campaign. We found that the timing and location of the seminar for an extra-curricular activity was important to ensure a good attendance, avoiding timetabled periods and having a venue close to other teaching. We encouraged presenters to be interactive and to pitch their seminar at undergraduates.

It doesn't work unless there is a clear link between the work being presented and teaching and research at the university.

It works better if the seminar has some interaction that involves and engages the audience, and in particular the undergraduate students.

It doesn't work unless the seminar is pitched at an undergraduate level to ensure student involvement.

It doesn't work if the seminar is a recruitment presentation.



So: get presenters from relevant industries to demonstrate how their research relates to what the students are learning and the research being conducted in the university.

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Induction



WHY CAN'T WE BE FRIENDS?

ALiC keywords: first year experience, networking

Students often feel isolated and unsupported when they are new to the institution.



This bundle describes how we run a department-specific induction programme to help first year students to develop a culture of peer-supported learning from the beginning of their course.

What we did: We have, for the last four years, run a department-specific induction programme in the first week of the academic year. The induction event is run primarily by members of staff who teach level-one modules, because this allows the students and staff to meet for the first time in a more relaxed atmosphere than the lecture hall. The induction programme comprises a series of competitive team-building activities. Teamwork helps students to get to know their peers and making the activities competitive, with small prizes to be won, helps the students stay engaged.

We start with a 'speed-dating' activity where students are put into a small group then asked to give their name and one fact about themselves to each of the other people in the group in round robin in about 5 minutes. We then shuffle the groups and repeat the exercise. The intention is to get the students to meet at least 75% of their peers in about 2 hours.

We then give them a series of group activities, themed around subjects to be taught on the course, research being done by the department, and topics in the news, but designed to be fun and get them working together. Some of the activities allow students to develop a product that is shown to the whole cohort, who then vote for the winners. We have tried leaving teams together for several days and swapping students into different teams for each

activity. The students preferred the latter. Moving them around enabled them to get to know more of their peers and minimised the negative experience of teams that did not work well together.

It works best if a number of tasks have to be completed during the session and if students swap groups for each different task.

It works better if the event is held in a space suitable for teamwork with a display area for them to show their results.

It works better if tasks are relevant to their course and anticipate subjects that they will learn later.

It works better if small prizes, such as chocolates, mugs and t-shirts, are offered for the winning teams.



So: organise fun team-building activities based around their course to give students the chance to get to know and support one another.

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Project work



A TANGIBLE OUTPUT

ALiC keywords: reflection, project work, employability

Where an undergraduate student is doing project work as part of a research group, there is a danger their individual work will get lost or treated as just another component of the larger project outcomes.



This bundle identifies a simple way to create a tangible conference style output as evidence of work performed by a student integrated into a research group.

What we did: Undergraduate students doing their project as part of a larger research group were asked to present a “conference-style” poster describing their work at the end of their project. These posters were included as standard displays alongside other research posters within the school. This prevented their work disappearing as just another component of a larger project and provided a satisfying and recognisable public deliverable.

As part of the process we arranged a meeting for all students, their research supervisors and project co-ordinators where each student gives a short talk on their own work, based on their poster, within their own research group. Presenting work is routine practice for active researchers and this provided an opportunity for the inexperienced to answer questions and receive feedback on their work.

It works best if the posters are completed at the end of work and displayed publicly as research work done by the institution.

It doesn't work if the poster is viewed as just another component of the project work to be done.

It works better if the talk is presented to all students and supervisors within the research environment and is short (approximate 5-10 minutes).



So: Get students to create a poster to reflect the work they have performed and make sure the posters are valued and used by the institution. Give the student the opportunity to present his/her research based on the poster.

DELEGATE MANAGEMENT RESPONSIBILITY

ALiC keywords: project management

You have students who need to learn to manage teams, and you have student teams who need to be managed.



This bundle describes how we used students at one level to project manage students at a level below.

What we did: Level three undergraduate students needed to experience team management as part of their Project Management module. They were therefore given responsibility for managing a team of level two students, who were undertaking a Software Engineering team project. We placed the project management students in pairs where possible.

We had first to get agreement from the institution that more senior students could be given the responsibility for managing more junior students, but with escalation capability to staff when they needed it. To get agreement we had to give an assurance that project management students would not be involved in assessment of the students they were managing.

The project management students were given a time allocation to do the team management. In addition, their assessment was constructed to ensure that their performance was not relative to the performance of the project team they were managing, but was based solely on their own project management activities.

This doesn't work unless the module coordinators for the two modules (project management module and the module delivering the project work) are working together closely.

This doesn't work unless the project managers are perceived as being critical to the success of the project team.

This works best if the project managers act in pairs.



So: if you have students who need to learn to manage, find opportunities in earlier parts of the course where they can practice their skills.

See also: Pay the skills forward and Upward management for international relations.

DISTRIBUTED STORY WRITING

ALiC keywords: group work, creativity

Students undertaking team projects can find it hard to know how to get started.



This bundle describes a simple activity we have used to help students at the start of a new project. It helps them to be creative and to begin to develop an idea or problem solution.

What we did: First we explained to the students that the purpose of the session was to get them thinking about the issues.

The students sat in their teams and we gave them a theme for a story related to the project task, for example, creating software for a Personal Digital Assistant (PDA).

Each student then wrote an initial paragraph on the theme in the form of a story related to the project task, for example, how the software would be used. This took place in silence. After five minutes, the students had to pass what they had written to the student on their right. Each student then continued to write the story that the other student started. The exercise often dissolved into laughter as the story writing completed one iteration around the team. At the end, the stories were read out, and students were encouraged to discuss the ideas and themes that had emerged, to give them a starting point for further developing their product or project assignment.

It works best if silence is maintained for as long as possible whilst the stories are being written. This gives each student time to think.

It works better if there is a relaxed atmosphere and breaking the silence is treated light heartedly. Students should be allowed to ask the facilitator questions or point out when they are having difficulty.

It works better if the story topic is something that students can relate to.

It doesn't work unless students feel that the task is related to their discipline area or the project task, and unless they understand the purpose of the session.

It doesn't work if the session lasts too long—the exercise should be short so that the focus is on ideas and not on polishing the text.



So: use distributed story writing to help students widen their perspective when dealing with problems and assignments.

I LEARNED A LOT

ALiC keywords: reflection, feedback

Students don't always reflect critically on their performance when left to do it alone and they can find it difficult to do in a group facilitated by staff who are assessing them.



This bundle describes a way for students to review their experiences and also receive feedback from their peer group at the end of a project.

What we did: At the end of a project we ran a 'focus group' or workshop to review project experiences. We identified a series of themes relating to the project and used these as topics to promote discussion for the session e.g. communication technologies, assessment, the project tasks, problems encountered. We got a neutral person, who was not involved with assessing the students, to facilitate the session. In our case this was an industrial partner. With the students' permission, we recorded the session and provided all participants with an anonymised transcript of the session soon after.

We found that this approach helped the students to reflect on their experiences during the project and to review all of the feedback they had received (including their results and feedback from assignments, and from the employer who looked at their work). Reflecting with their peers helped them to put their experiences into perspective and gave them a clearer idea of their personal achievements. The use of an 'outsider' to run the group's feedback discussions provided a way of concentrating on relevant issues and enabled students to give their views in a comfortable setting.

It only works if the focus group has a 'neutral' facilitator who is experienced at eliciting feedback.

It doesn't work unless there is a relaxed atmosphere and students feel able to talk and share their experiences with each other in a non-threatening environment.

It doesn't work if students do not understand the purpose of the session.

It doesn't work if the session is run by someone who assesses the students.



So: Give students the opportunity, at the end of a project, to reflect on how it went with their peers in a neutral environment. Give them a record of these discussions that they can use to help them reflect on their own performance.

See also: Getting honest feedback

MAKE IT REAL

ALiC keywords: induction, project work

Undergraduate interns only have a short time with a research group and can find it difficult to integrate quickly within an established group



This bundle describes how to help undergraduate students to integrate into research groups.

What we did: We gave the undergraduate student relevant and challenging work that genuinely contributes to the research group with milestones and time management of the research agreed by the student and the supervisor. On recruitment, undergraduate interns experienced a similar induction process to new research students or staff including access to social facilities and activities.

It only works if the supervisor can identify an authentic piece of research that can be completed in the time available.

It doesn't work if the supervisor or research group members are unavailable for long periods of time during the student's project.



So: give undergraduate interns an authentic research project and treat them like any other researcher in the team.

See also: A tangible output

PAY THE SKILLS FORWARD

ALiC keywords: project work, knowledge transfer

Students learn invaluable lessons that are then lost from one cohort to the next.



This bundle describes a way to ensure that lessons learned by one group of students can be passed on to the next.

What we did: Level three undergraduate students undertaking a Project Management module were tasked with managing a level two undergraduate team engaged in a Software Engineering team project. The level three students had experienced the team project in the previous year. The 'project managers' combined their past experience of team work together with their study in project management to support the level two students. As part of their assessment, the level three students had to record the problems they encountered when managing the level two team, the solutions they applied, and the results of their efforts.

We asked them to capture their experience as “patterns” i.e. using a formal structure used to capture a solution to a common problem within a specific domain. The patterns from all level three students enrolled in Project Management were then shared anonymously with their peers, using a blog that was restricted to staff and relevant students. The first year that this was done, a pattern language for team project management began to emerge. We then stored the patterns and shared them with the following year’s Project Management cohort. This cohort was then tasked with enhancing the collection of patterns: by provided more examples to existing patterns; fine-tuning existing patterns; and adding new patterns. We also took patterns developed by students and integrated them into the course of lectures, which helped students to see the value of their work as well how to improve it.

In these ways, the pattern language was refined and extended each year, allowing lessons to be passed on.

It only works if the patterns are reviewed to ensure the anonymity of contributors and filtered for incorrect or inappropriate content.

It works better if there is a process for refinement and structure when passing the patterns to the next cohort.

It works better if the tool provided to capture lessons learned is intuitive and accessible.



So: use a structured form and a formal process to encourage students to share, refine, and build knowledge resource to pass knowledge from one cohort to the next.

See also: Delegate management responsibility, Upward management for international relations

REFERENCES

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SHOW THEM HOW IT'S DONE

ALiC keywords: tutorial, screencast

Installing, configuring or using complex software can be challenging for students.



This bundle describes a way of demonstrating to students how to install, configure or use complex software using screencast tutorials.

What we did: Over the lifetime of the CETL, students at Durham and Newcastle engaged in collaborative group tasks that involved producing software with associated documentation and presentations. Often, this required the students to establish a coherent working environment comprising specific software development tools such as Eclipse, Subversion, MySQL, J2ME environments and so on.

Students sometimes had problems setting up and using these tools in the context of their particular university environment, and needed to do this at different times. Rather than deliver face-to-face one-off tutorials at each institution, which may not have been delivered at the time the students needed the information, we made screencast tutorials, with an audio commentary, demonstrating the process step-by-step. This meant that students could view the material, when they needed it, as often as they wanted, and it could be made available at both institutions.

It only works if the video and audio quality is sufficient to capture the detail of what is happening on screen.

It works better if the recordings are principally made available for viewing using a web-browser that requires no special software to be installed.



So: create screencasts of the essential aspects of complex computer-based tasks if these need to be accessed repeatedly.

UPWARD MANAGEMENT FOR INTERNATIONAL RELATIONS

ALiC keywords: cross-year tutoring, project management, group work

You have international postgraduate students who perform poorly in group-based work.



This bundle describes how we introduced cross-year project management to help international postgraduate students to settle into more effective group work.

What we did: To alleviate some of the language and social integration problems faced by international postgraduate students we have established a cross-year system whereby home undergraduate students, in their final year of their degree and enrolled on the Project Management module, manage teams of postgraduate students.

This is advantageous to both sets of students. The home students gain experience of working with and project managing international teams. The international students get support from fellow students to help with their team working skills as well as their written and verbal skills.

We found that the international students were timelier in the production of their work, and relied less on the lecturer, when they had a student project manager working with them. We also found that the international students found the experience less stressful than working on their own.

It only works if the expertise and function of the home students are made clear to the more senior international students from the start.

It works best if the home students are from the same discipline as the international students, but on a different course.



So: provide international students with home student managers from a different degree programme but from within the same discipline, if you want to help international students to perform better in group-based work.

See also: Delegate Management Responsibility; Pay the skills forward.

REFERENCE

Burd L., (2006) 'Using Peer Tutoring to Support Chinese Students Conducting Group Work', *7th Annual Conference of the Subject Centre for Information and Computer Science*, Trinity College, Dublin, 29th-31st August 2006.

WEIGHS TO BE FAIR

ALiC keywords: groupwork, assessment

Students often find it difficult to distribute tasks fairly between members when doing group work.



This bundle describes a simple way we can help students to balance the workload allocation during a group project by negotiating and agreeing the relative complexity of tasks.

What we did: When students were in groups and considering how to divide up the workload for their group projects, we gave them an example of a grid template that applied a weighting to the common tasks they were likely to encounter during their project. An example simple weighting scheme would award each task a weighting between 1 and 5, with 5 being the most technical, intensive, or time-consuming aspect of the overall project. So, for example, proofreading a document was given a weighting of 2 while writing a major section of a group document was given a 5.

Students were given the framework as a starting point and then negotiated within their groups to agree the actual weightings of tasks required for their project and to ensure that the workload was evenly distributed between them.

It works well if tasks can be deconstructed easily and students are able to construct their weighting grid before the real work begins.

It works better if students are given an example grid depicting a range of common tasks.

It doesn't work if there are a lot of complex tasks for students to do during the project. If this happens, the process becomes very bureaucratic and time consuming.



So: Give students tools to help them categorise tasks according to their relative difficulty and to negotiate a fair distribution within the group.

See also: What skills do I already have?

WHAT SKILLS DO I ALREADY HAVE?

ALiC keywords: project work

Students need to know what skills they started with in order to evaluate their progress throughout a project and at the end.



This bundle identifies an effective way to help students reflect on the skills that they have developed and improved, together with new ones learned during a project.

What we did: First we described in detail the ideal skill-set that a student should have gained at the end of the project—these were based on the formal learning outcomes used for module descriptions—and gave these to the students.

We then got our students to self-assess their pre-existing ability level for each of these skills, at the start of the project. We have used both a simple checklist for informal discussion in small groups and including the self-assessment as part of an individual essay assignment e.g. students can indicate if they think their ability level is poor, average, good, excellent, expert. We also asked them to give an example that demonstrates the ability level they are claiming where possible.

We then got the students to revisit this work at the end of the project. We have done this through both a reflective workshop and a reflective report assignment. Revisiting their starting point helps the students to get a clearer idea of what they have achieved during the project.

It only works if skills are described clearly at the outset, with examples, and there are not too many skills on the checklist.

It doesn't work unless the students are given opportunities to develop all the skills listed on the checklist.

It works better if there are marks awarded for completion if using a written assignment.

It works better if workshops (when used) are informal and non-judgemental.



So: give students an activity that gets them to reflect on their skills before a project starts and to review at the end.



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