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Active Tasks to Change the Use of Class Time within an Outcomes Based Approach to Curriculum Design

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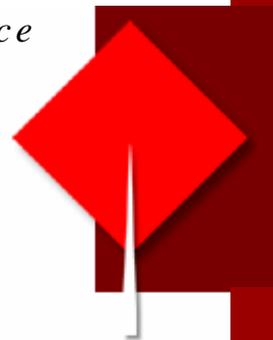
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This paper describes how new roles for instructors and learners can be integrated into course design and delivery by rethinking course design as part of a process-based staff development program. The goal of incorporating online learning tasks was to engage students with course resources prior to class time through active learning. The staff development program guided faculty to consider ways to 'rethink' the use of student and teacher time to engage students in learning tasks to prepare for class time. In this way, students were able to use class time for active discussion rather than listening to a traditional lecture in the classroom. This paper reports on the overall results of this project and provides specific suggestions on how teachers can consider technology options within an outcomes-based approach to curriculum design.

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Introduction

Increasing demand to incorporate technology into teaching places challenges on faculty and institutional systems as they attempt to 'put courses online' (Salter et al, 2003). Lack of time to carefully 'rethink' one's approach to teaching and/or lack of follow up in professional development courses aimed at helping teachers to develop pedagogically sound online components to a course redesign, may partially explain why there is such a strong tendency in many institutions for faculty to limit their use of online platforms for merely presenting content (such as a syllabus, course notes and power points).

Trigwell and Prosser (2001, 1999) describe the substantial variation in the way that university teachers conceive of teaching and learning, and how these approaches relate to student learning. In a traditional paradigm, teaching is often viewed as the transmission of information vs teaching for conceptual change. Studies consistently report that between 73-83% of teachers choose the lecture format as their main instructional method. As described by Blackburn, "Give faculty almost any kind of class in any subject large or small, upper or lower division and they will lecture" (Blackburn et al., 1980; p.41). In the typical lecture class model, class time is generally instructor directed for 90-100% of the time. However, a great deal of research shows that the lecture is little more than an information transaction and is not an effective way to create deep learning or creative thinking (Weigel, 2002).

In a traditional view, the instructor prepares for giving a lecture by preparing the content he/she will present. This teacher centred approach emphasizes 'what do I (the teacher) need to do to prepare this information'. In a learning-centred approach the emphasis changes so that the instructor now asks 'what does the student need to do to learn this material'. The role of teacher shifts from preparing content, to preparing tasks; these tasks are designed to subsequently engage the students with content resources, sometimes challenge beliefs and hopefully will provoke conceptual changes in the students. An example of the differences between the information transmission/teacher focused approach and a conceptual change/student-focused approach is shown by Trigwell and Prosser (2001, p. 155) in the following teachers' comments:

Information transmission/teacher focused approach (ITTF):

Intention: I feel it is important to present a lot of facts in classes so that students know what they have to learn for this subject.

Strategy Item: I design my teaching in this subject with the assumption that most of the students have very little useful knowledge of the topics to be covered. (Trigwell and Prosser, 2001)

When the approach of a teacher is ITTF, it follows that the teacher's intention, when adding an online component, is likely to be focused on delivering content to students by putting power points and course notes online, as exemplified by the statement from the teacher described by Trigwell and Prosser (2001) 'I feel it is important to present a lot of facts'.

Conceptual change/student/focused (CCSF approach):

Intention: I feel a lot of teaching time in this subject should be used to question my students' ideas.

Strategy: In my class/tutorial for this subject I try to develop a conversation with students about the topics we are studying. (Trigwell and Prosser, 2001)

In contrast, the intention of a teacher taking a CCSF approach, is to 'question my students' ideas', with a teaching strategy of trying to 'develop conversations with students, about the topics we are covering'. Arthur Applebee (1996) also describes the need for students to engage in conversations in the discourse of the discipline to achieve understanding as follows:

{Knowledge arises from}: *"ongoing conversations about things that matter, conversations that are themselves embedded within larger traditions of discourse that we have come to value (science, the arts, history, literature, and mathematics, among many others)."*
(Applebee, 1996,p.3)

Lectures, being a monologue vs a dialogue, do not allow students to engage in the type of conversations needed to lead to deep understanding of the course material. Although a well presented lecture may be a means to deliver essential information or ideas quickly and efficiently, research suggests, that as an instructional method, this approach does not result in 'deep learning' of the content presented (Marton and Saljo 1976; Biggs 1978; Entwistle and Ramsden 1983). However, deep learning is required to attain higher quality learning outcomes (Trigwell and Prosser, 1991) such as the synthesis of new ideas and the transfer of learning to new applications.

Recently, an increase in attention to an outcomes-based approach to curriculum design, or curriculum 'reform' as it is commonly referred to in Hong Kong, has provided a strategic shift at an institutional level to encourage teachers to consider the alignment of learning outcomes, learning activities and learning assessments. This involves careful attention to the writing of learning outcomes (what do we want our students to learn), designing appropriate activities (how do we want our students to learn) and considering appropriate assessment to effectively measure the achievement of the learning outcomes (how do we know our students have learned?).

Although an important part of an outcomes based approach is the consideration of 'what the student will do' in terms of active learning,, teachers often describe the challenges of getting students to discuss topics, concepts or issues in class. Large class sizes, diversity of the student population, shyness of students who fear making an incorrect comment in class, are all reasons cited by teachers as challenges to interactive teaching and learning (Salter, 2006). It is easier to engage in a conversation if the students have some introduction to the topic prior to the class time. The professional development program described in this paper guided faculty to consider ways to create pre-class activities to engage students in the learning prior to class and subsequently change the use of class time to allow for more conversations in the discourse of the subject.

Engaging Faculty in Rethinking Their Course Design

Key challenges have been consistently identified by staff as they attempt to integrate a blended approach that incorporates the use of online activities (Salter, 2006):

- Instruction in the use of technology is often provided for staff by the institution's technology support centre rather than integrated with instruction in best teaching practice provided by the educational development centres.
- University teachers are often uncomfortable using technology and are not aware of the types of online tasks and interactivity possible in a blended learning environment. Most begin by adding content in the form of power points or course notes without interactivity.
- When staff learn about the 'types of technology tools' available, the tendency is to 'add on' rather than incorporate activities as part of the course design process. In addition, when they attempt to incorporate online activities for students they are not provided with practice and feedback from instructional designers as they develop ideas for their courses.
- Lack of instructional design support to work in progress results in a tendency for staff to use tools simply because they are available, without considering desired learning outcomes or learning impact.
- Staff generally do not 'rethink' how the use of class time is possible when online components are incorporated
- Following staff development programs, staff are expected to work in isolation to change their course design and teaching practice with limited opportunity for feedback to work in progress.

The process based approach used in the 'E Scholars' program centred around projects (such as curriculum revision, or technology innovations) that were designed to solve a teaching and learning problem. Teachers came to the sessions with their basic course syllabus or course plan and planned a systematic revision of the course to address specific learning challenges. The process based model is effective as a method to help faculty incorporate high quality technology innovation into their teaching in a pedagogically sound way (Hirst et al 2004). Hirst described how academics at the University of Melbourne participated as a cohort in a program that integrated a major curriculum development project (CDDP) along with professional development as staff developed multimedia and educational technologies to use in their courses. The authors report that the CDDP was a sustainable

model and that the 'left in the cupboard' syndrome was not evident in the deliverables associated with this project.

The current paper describes another example of a process based approach to professional development, the 'e-Scholars Programme'. This programme was designed to guide faculty as a cohort to redesign courses and successfully integrate online learning with the face-to-face classroom experience to expand the learning environment. The e-Scholars Programme was designed to engage staff in subject level e-learning development by participation in a learning community that would promote:

- a planned course of professional development for staff to 'rethink' their courses as they redesign to incorporate a blended learning approach
- direct funding (if needed) for development and implementation of the individual subject-level development work
- instructional design support during course design and development
- systematic evaluation of learning impact.

Theoretical Framework of the e-Scholars Programme

The design of the programme builds on the foundational work done at the University of Waterloo during 2001-2005 (Salter et al 2004, 2003). The building blocks for the programme to guide staff in their course re-design combine three key components:

- an outcomes based approach to student learning (OBASL)
- the 'T5 model'
- applied 'learning mapping'

OBASL: In an outcomes based approach to student learning (OBASL), when designing a course the designer/teacher must consider the learning outcomes (what you want the student to learn), the design of appropriate learning activities (how the student will learn) and assessment (how will you measure the student's learning). An important aspect of OBASL is to ensure the alignment of these components with each other and with the university graduate attributes.

The T5 model: In applying the T5 model, the learning environment and supporting resources are designed to include five key elements: Tasks (learning tasks with deliverables and feedback), Tools (for students to produce the deliverables associated with the tasks), Tutorials (online support/feedback for the tasks, integrated with the tasks), Topics (content resources to support the activities) and Teamwork (role definitions and online supports for collaborative work). The learning tasks are designed to help the student achieve the learning outcomes by providing appropriate learning activities. Learning tasks require students to engage with the course content to produce a completed task as a 'deliverable'. The deliverables, and feedback to these deliverables, are the primary vehicles for learning. (Salter et al 2003, 2004).

The T5 approach provides a simple model to support faculty in a paradigm shift that encourages the design of an interactive, task-based 'learning environment' rather than a focus on 'information transmission' through content delivery. The goals for the T5 model include (Salter et al 2004)

- Assume/embed re-use of learning objects
- Maintain faculty 'ownership' of learning design
- Scaffold transition from concept to design
- Focus on learning activities, supported by content
- Provide a model suited to on-campus (classroom based) and online courses
- Encourage rethinking of learning process and roles
- Increase Results Oriented Instruction (ROI) through learning productivity
- Emphasize performance support, not information system.

Applied Learning Mapping: The 'learning mapping' process extends the usefulness of the T5 approach by guiding staff to consider the most appropriate places to integrate learning tasks and feedback in a course. During the 'learning-mapping' process, instructors develop a 'paper-prototype' of their new course design by mapping out course learning modules / units of learning. After the mapping process, instructors may have mapped out a number of tasks to be used throughout the course delivery as the two examples described in detail later in this paper will demonstrate. Tasks may be incorporated before and/or after face to face class time, but tasks prior to class effectively change the use of class time to provide more interactivity during class time. Students can receive feedback to their learning tasks in various ways including online feedback, peer feedback, instructor feedback and in class feedback. This formative feedback is also essential to learning.

In summary, a combination of the T5 model with applied learning mapping (Salter 2006):

- Represents a task-based approach to learning
- Incorporates a strong emphasis on feedback to all tasks (formative feedback)
- Maintains the textbook as an important resource in support of learning tasks
- Discourages presentation of content either in face to face lectures with the overuse of power points or by putting content online
- Identifies different ways to use time and space (class time vs. study time)
- Provides a framework for instructors to map out their course
- Does not require instructors to become experts in instructional design
- Provide recommendations, exemplars and templates for learning tasks
- Allows flexibility for the instructor.

Implementation of the e–Scholars Programme at this University

A Teaching Development Grant for \$ 1,125,000 (HK\$) was awarded to the project leader to provide funding support for up to 15 academic staff who would like to engage in a small scale project to appropriately integrate technology in learning and teaching. Academic staff were invited to apply to participate and if accepted could receive up to \$75,000. (HK\$) for the development of their project through the 'RE-design for Blended Learning' fund. Successful applicants, as a cohort, received professional development in re-designing their subjects to a blended mode. In addition, discretionary funding of up to \$75,000 was awarded to successful applicants for the development and implementation of the project. This funding was available after completion of the professional development workshop and associated project deliverables that mapped out the course in a redesigned format.

There are 4 phases to the implementation of the e –Scholars project:

1. Professional Development
2. Subject development
3. Implementation
4. Evaluation, Dissemination, Revisions.

A detailed description of the eScholars program is reported elsewhere (Salter, 2006). The approach used in the staff development series for the e –Scholars program at this University is modelled after The New Classroom Series, first offered in November 2001 by Salter and Richards at the University of Waterloo. More than 200 faculty, staff and librarians at the University of Waterloo participated in the series between 2001 and 2005. After completing the series at the University of Waterloo, 78% of the participants reported using the model to some extent to add task-based online components to a course. By invitation, the New Classroom Series has been adapted and delivered internationally to faculty and instructional designers in Hong Kong, Sri Lanka, Thailand and Australia as well as at the University of Waterloo and in four Ontario colleges. The e-Scholars program implemented in the Hong Kong Polytechnic University expanded the original design to provide funding for subject development and support for the implementation and evaluation phases of each redesigned subject.

Subject Level Evaluation: Outcomes of the e-Scholars Programme

Analysis of the post-session feedback from the professional development workshop in this university's offering of the eScholars program showed that all participants (n=19) in the e-Scholars program rated that they would highly recommend the workshop series to other staff who plan to re-design courses (mean score 5/5 on 5 point scale) and rated the format of both in class coaching and out of class homework to engage with the content resources as very beneficial (mean score 4.6/5 on 5 point scale). Participants also indicated that the course had helped them 'rethink' their approach to incorporating a blended component as shown by the following unedited comments (July 2006). These representative comments show the shift desired to a more learning-centred approach to the course redesign as well as the practicality of the workshops in helping the teachers to achieve these goals:

The course helped me change my course to a more interactive manner re using class time differently and using online interactions.

The templates for learning tasks really help with the application of the ideas to practice.

Teachers are encouraged to do their own subject evaluation to assess whether the changes they made in their course design helped the students to achieve the desired course learning outcomes. Table 1 shows the methodologies and indicators suggested to staff as a guideline for completing subject level evaluations:

Table 1: Methodologies and indicators for completing subject level evaluations

Methodology	Indicators
Student Feedback (questionnaires, focus groups)	<ul style="list-style-type: none">perceived usefulness of the learning tasks, perceived increased opportunities for interactions (with peers/instructor/course material) relative to other courses
Instructor Feedback (questionnaires, focus groups)	<ul style="list-style-type: none">perception of the success of course redesign in overcoming the stated instructional challenges, perceived usefulness, perceived interactions (with peers/instructor/course material) relative to other courses, perceptions re students preparedness for class
Classroom observations	<ul style="list-style-type: none">observations of classroom actual interactions, changed usage of class time, preparedness of students, student responses to questions
Student Performance	<ul style="list-style-type: none">preparation for class, student usage of online components, performance on tests/assignments to show achievement of learning outcomes related to the content of the course that was taught in a new way
Attributes of the redesigned course	<ul style="list-style-type: none">Review of the final course deliverable to assess:<ul style="list-style-type: none">opportunities for students interactivity with content, instructor, peers (tasks/blogs/forums other tools and how they were used to engage students in learningquality of students commentstype of feedback to student learningtype and number of learning tasks for students to practice course material.

Two case studies of redesigned courses that exemplify how two teachers assessed the learning impact of their course redesign, shows the types of changes made in the course design and impact of

these changes on the use of classroom time, teacher time, and student time are provided. The changes incorporated into these two examples promote time on task and engagement with learning. Since educational researchers acknowledge that these are key factors to academic success and deep learning (Trigwell & Prosser, 1991; Weigel, 2002; Vella, 2000) we believe that the course revisions made have the potential to impact on student learning. Upon completion of the professional development program, and with scaffolded support during the course development phase, these instructors are demonstrating the following changes in their course design:

1. Increased interactivity and engagement for students with subject material: The instructors who participated in this program are creating a learning environment for their students that includes online and face-to-face activities, as appropriate, to increase student interaction with content, peers, and instructor.
2. Increased feedback for students to 'learning in progress': instructors have created feedback to student work to provide formative feedback to the students' understanding of course material
3. Increased opportunities for practice: instructors have created tasks for students to practice concepts and course material and engage in active learning.

Case Examples

Tables 2a and 2b summarizes information from the courses taught by Dr. Macro Pang, (a 100 student Research Methodologies course) and Dr. Piyush Sharma (a 50 student Marketing Research course) to provide an overview of the challenges, the changes in the roles of the teacher and student and resulting impact on student learning. In both of these examples the teachers identified the learning challenges that interfered with the students' achievement of the desired course learning outcomes. In these examples, changes were made that involved a shift from a face to face classroom to a 'blended' model to incorporate use of an online learning platform to provide tasks and feedback to students in addition to providing content resources online.

Table 2a: Case Example - Course 1 Research Methodologies

Learning Challenges: This cohort consisted of full-time Rehabilitation Sciences students. The topics are numerous and broad, the students feel overwhelmed and the teacher felt rushed to cover all the content in limited time, students did not see the relevance of the material presented in the course
What was changed in the course redesign? <ul style="list-style-type: none">• Pre-class tasks were introduced – students were required to answer a few basic, open ended questions online prior to class. To complete the tasks, students referred to the text book to review the basic information. The students received a 1% grade for completing the task for each module. Correct answers were not required, as these tasks were mainly used to encourage preparation for class. Marking was based on completion not correctness to encourage students to 'have a try'.• Post-class tasks were also introduced – Within one week of the lecture, students completed a few multiple choice questions online to test their understanding. The questions in each module contributed 1% of the overall grade.
How was feedback provided? <ul style="list-style-type: none">• Feedback in class to pre-class tasks.• Instant online feedback to multiple choice questions.• Teacher could assess student understanding and modify lecture accordingly.• Students were able to pose questions in class and discuss concepts.
Role change/Time Change <ul style="list-style-type: none">• Teacher – prepared tasks for students and provided feedback prior to and in class.• Student – engaged in new material prior to class time.• Class time – greater discussion and feedback.

Data collected to assess impact

SFQ (Student Feedback Questionnaires) – 22/87 students stated that online tasks were the most useful aspects of the course. The teacher found the overall course results were improved from previous years by almost half a grade. 80% of students reported they liked doing the online tasks and felt they helped them be prepared for the summative assessment (final exam).

Table 2b: Case Example - Course 2 Marketing Research

Learning Challenges:

This cohort consisted of part-time students with limited time and limited background knowledge of material. They did not have their own life experiences to draw from, and needed to learn the relevance of real life application of the concepts tools and techniques used in the course.

What was changed in the course redesign?

The course was reconfigured from a 14 week, once a week 3-hour lecture to a course consisting of 10 modules. Each new module consisted of pre-class, in class and post class activities.

Course evaluation changed to provide more formative feedback – changed from one major research project and 3 in class tests – to 3 inter-linked assignments and a 1% grade for completing the pre-class activities for each module.

- Pre-class tasks – provided real-life marketing case studies, students responded to questions online.
- In class – the teacher reviewed the students' responses and spent additional time on misunderstandings that showed up in the online submissions, followed by interesting discussions of the topic, and finishing with a review of the concepts.
- Post class – students answered multiple choice questions about the concepts and read additional case examples as a resource.

How was feedback provided?

- Student-instructor feedback – through email and WebCT and students also booked appointments to discuss specific problems they had with the tasks.
- Instructor-student feedback – online via the web ct course platform for assignments and quizzes, and in class feedback during lectures where common problems were discussed.

Role change/Time Change

- Teacher – in the past preparation of lecture material included examples and case studies that would be presented in class. The change allowed students to view cases prior to class, identify problems in understanding, and use class time to discuss the material.
- Prior to the change – students were mainly passive listeners during the lecture. After the change the teacher reported much more participation and discussion as the students were more aware of the topic and knew what they didn't know and needed to discuss in class.

Data collected to assess impact

SFQ (Student Feedback Questionnaires) – The teacher's overall ratings on SFQ improved from previous years. N=35, Students reported that this was a valuable learning experience (rating 4.3 on 5 point scale), they were encouraged to ask questions/discuss ideas (4.2 on 5 point scale) and that the teaching and learning activities helped them to achieve subject learning outcomes (4.3 on 5 point scale)

The students in both courses reported that they enjoyed doing the online tasks with 80% of students in the Research Methodology course stating that they liked the online component and that it helped them to prepare for the final exam. In the Marketing course, students also rated the activities as helpful in attaining the course learning outcomes (4.3 on a 5 point scale). It is important to note that the marketing students were part-time students, holding full time jobs and attending class in the evenings from 6:30-9:30, and also busy with families and jobs during the week. It is not surprising that this cohort typically does not prepare for class by reading the textbooks or assigned readings. In past offerings of this course, the teacher described that most students would show up unprepared and tired, and there would be little in class discussion. However, with the re-designed course the students reported that they enjoyed being able to read the content modules and do pre-class online tasks prior to class and submit questions and assignments online at their convenience. In fact, the teacher found that most were on line during 12 am to 6 am.

Although the focus of this paper is on the way teachers 'rethought' their approach to developing and delivering their courses, it is important to consider ways to guide students so that they know why, and how, to engage with the changes. Students approach learning differently based on past educational and personal experiences, and beliefs as well as perceptions of the task (Entwistle, 1998; Prosser & Trigwell, 2001). In order to help students understand that the class time was not going to be used to deliver content, and that subsequently their engagement with the tasks was important for their learning, careful attention was given to preparing the students for what (in most cases) was a new type of learning experience. For example, the following instructions were provided by one of the teachers of a Generic Anatomy course when she introduced the use of an online discussion forum. The following written instructions were given by this instructor to the students regarding the required completion of pre-class tasks:

The purpose of asking you to do this is to make the lecture time more meaningful to you. The work you will do before coming to class will NOT be completely repeated in class. Therefore it is essential that you devote some time to these tasks and come prepared to the lecture. (...more details were then provided for the students about the tasks and how they were to be completed through online submission...). Your responses to all of these questions will help us know how to best present the material in the lecture.

Out of the 480 students in this generic anatomy class, 400 students responded by posting questions and comments into the online discussion spaces provided. The instructor commented on how surprised she was by the quality and quantity of the responses. Here are is small sample of responses, representative of the type of student postings:

I'm not very clear about the principle about using sympathetic stimulation to initiate heartbeat, you know, in today's clinical practices, there is a treatment precaution using sympathetic defibrillator to initiate heart beat to cure the atria fibrillation, but it's difficult to understand the principle of it, could you explain it for us in a non-academic way? Thank you.

Why during the presystole, there is a S4 sound generated? Is that only for patient with coronary illness? Is the decrease in sensitivity to sympathetic stimulation during adding due to the loss of cells from SA node and conduction system? Are that cells receptor protein or just normal myogenic cells?

If there is an immune response for body defence in immune system, are there any changes to the cardiovascular and lymphatic systems, such as changes in heart beat rate, blood flow and lymph flow rate? What are the clinical skills for assessing clients' cardiovascular, immune, lymphatic system?

These responses indicate that the students had read the material, engaged in the discourse of the subject with understanding, and subsequently posed thoughtful questions. The instructor changed the use of class time to respond to the students' questions as part of the lecture.

Conclusion and Educational Implications

The results of this study have interesting implications for assessment of student learning and show the importance of formative assessment to drive learning and motivate students' behaviour to engage in learning. It is often reported that students are only interested in marks. However, the tasks performed by students in these courses provide examples of how formative assessment, with little value in terms of marks, can be used to drive learning. In the Research Methodologies course described in Table 2a, the pre-class activities were 'marked' on completion; students received a 1% grade for each completed each module. But it is important to note, that as described in the table, the mark was given for a 'good faith effort', that is, for 'completion' rather than for 'correctness' of the answers. Submissions from a few students were randomly selected for quality checks and misconceptions were discussed in class. The response rate was excellent, greater than 95% completion rate for each pre-class task.

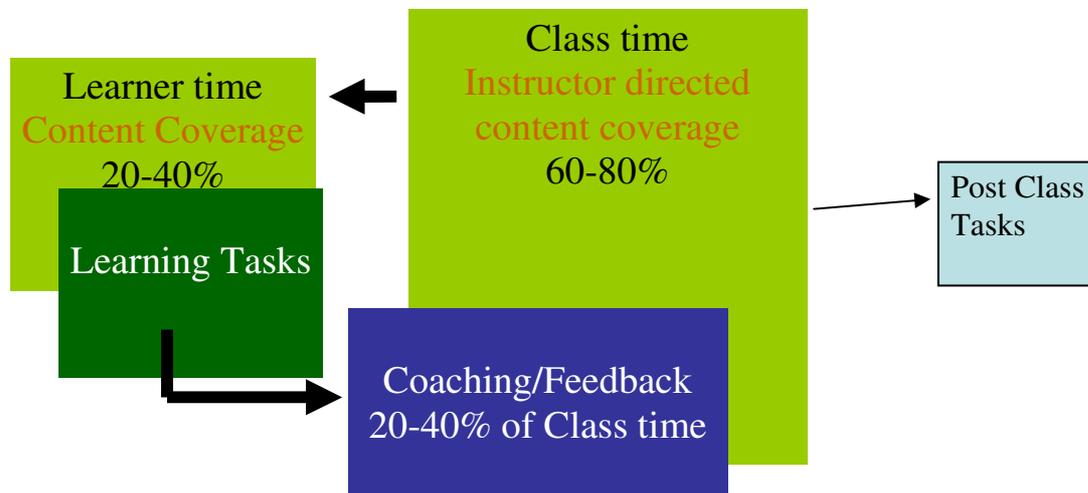
In the Marketing Research course, described in Table 2b, 10% of the total course grade was given for completion of the pre-class activities, again with marks given for completion, not correctness; by design these were tasks to enhance learning, mistakes were expected, and encouraged, as part of the learning process. The goal of the tasks was to engage students to do the assigned readings and to self-test their understanding. The teacher describes that "Interestingly, most students completed the tasks with only one or two instances of loafing or just filling up the form (found in spot checks of homework). This clearly showed that they were engaging more meaningfully with the course content. As a result, I saw a tremendous improvement in their class participation and overall individual performance, and in their evaluation of my own teaching in the student feedback forms." (P. Sharma, personal correspondence).

Academic workload should also be considered as people often fear additional tasks and feedback to provide students with formative feedback will increase an already overloaded academic workload. However, the thoughtful design of the tasks, and the use of online and in class feedback to the tasks (rather than formal marking) did not increase the academic workload. The teacher of the Research Methodology course describes that: "There was no significant increase in the workload. I usually provided feedback on these tasks during the regular class time." (Marco Pang). The teacher of the Marketing course described that the online administration of the redesigned course actually was time saving as it was an efficient way to assess student work and share feedback with students. In the long run, he views the approach as a way to save time: "Most of the extra work was only one time i.e., in setting up the online course design. In the next year, I had to only tweak my examples and cases a little bit, and rest of the course material was already good to go."

Following participation in the eScholars program, 19 courses have been redesigned to incorporate blended learning that provides increased interaction and feedback for students. The types of changes made by the teachers incorporated online pre and post class tasks by using a number of different online tools within the course platform. These tools included quizzes, discussion forums, blogs and wikis. However, prior to choosing a tool, the prime consideration was to define the learning outcomes for the module/course and to choose tools that would be appropriate to design the types of tasks needed to engage the students with learning. Several of the teachers who participated in the eScholars program are continuing with their scholarly approach to learning and teaching by publishing and presenting their course redesigns in their disciplines. An example of the use of a wiki-book group project with peer evaluation was presented by one of the eScholars in a discipline specific professional conference (Penfold & Pang, 2008).

Figure 1 summarizes How the T5 model (Salter et al, 2003) guides teachers to create increased interaction by moving learning tasks outside of class time to engage students with content and shifting class time to less instructor directed, content coverage approach.

Figure 1: T-5 Model



Shifting content out of the class time, by using learning tasks and feedback online, allows class time to be used for coaching and feedback and a more conversational, dialogic approach to teaching, in contrast to a traditional lecture that is designed to cover course content.

Future work is needed to further evaluate the effectiveness of using models, such as the T5 model, to help teachers to design learning centred approaches to course design. In addition, research into how these changes influence student learning outcomes and how students can be guided towards tasks, so that the students have a clear understanding of the purpose and educational rationale behind the approach is in the early stages. This research will be important to help with understanding how students' approaches to learning may be influenced by the provision of well-designed learning tasks.

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