In her book *Assessment Clear and Simple* (2004), Barbara Walvoord defines assessment as “the systematic collection of information about student learning, using the time, knowledge, expertise, and resources available, in order to inform decisions about how to improve learning” (pp.2). Palomba & Banta (1999) also discuss the benefits of good assessment in enhancing student learning, asserting that it “enables educators to examine whether the curriculum makes sense in its entirety and whether students, as a result of their experiences, have the knowledge, skills and values that graduates should possess” (pp. 5).

It is in this spirit that this issue’s featured authors reflect on the assessment tools and strategies they use in their respective classrooms. For example, Dr Iliana Magiati (Dept of Psychology) talks about how mapping the professional competencies that characterise her discipline (clinical psychology) onto the aims and assessment methods of the postgraduate module she teaches has benefited her students in terms of ensuring a more targeted development of their knowledge and clinical skills (see pp. 5). In a similar vein, Ms Chua Siew Beng (Dept of Management & Organisation) ponders the benefits and challenges of using rubrics to assess students’ learning. Her article (on pp. 2) describes how a well-designed rubric, where the criteria for evaluation are clearly and comprehensively articulated, not only facilitates the evaluation process but also enables deeper learning. Meanwhile, Dr Peter Alan Todd and Dr Darren Yeo (Dept of Biological Sciences) examine the issue from a different perspective, questioning whether students are doing too much continuous assessment (CA) in their courses. In their article (on pp. 11), they share the results of a survey they conducted amongst their students to find out if this is the case. They also look into what students consider a reasonable CA workload, and the types of CAs (e.g. quizzes, take-home essays) students feel are valuable in enhancing their learning.

We are also pleased to include an article which considers what the writers call “the critical interactions that underlie graduate education” (pp. 16). Dr Saif A. Khan, A/P Laksh Samavedham and Professor Farooq Shamsuzzaman candidly reflect on common tensions that inform graduate education, including the lack of agreed outcomes between the student and their thesis supervisors and mismatched performance expectations. Their article also looks into some ways such tensions can be managed with the ultimate aim of “growing” well-educated scholars from these graduate programmes.

References:

Rubrics: Beyond Scoring, An Enabler of Deeper Learning

Ms Chua Siew Beng
Department of Management & Organisation,
HRM Unit, NUS Business School

Introduction
Rubrics are scoring guides commonly used by educators to facilitate the grading of students’ submissions and performance in a course. According to Andrade (2000), a rubric is defined as “a scoring tool that lists the criteria for a piece of work or ‘what counts’” (pp. 13). Rubrics provide a scheme of measurement for a piece of work submitted by a student (Moskal, 2000). A rubric typically has three components:

- the criteria which count for the assignment,
- the levels of quality gradations which define students’ performances, and
- a scoring strategy which determines how all the criteria are considered in assessment.

A scoring strategy is holistic if all criteria are considered aggregately to make an overall judgment. However, if the assessment is done on a criterion by criterion basis, which may or may not result in an overall final score, the scoring strategy is described as analytical.

Depending on how they are used, rubrics can be described as scoring rubrics or instructional rubrics (Moskal, 2000; Andrade, 2000). A scoring rubric is used exclusively for the purpose of assigning a grade to a finished piece of work, while an instructional rubric is one which is used throughout the course of teaching a module to encourage student performances in desired areas of learning.

The following sections describe how rubrics could afford deeper learning and the potential pitfalls to avoid.

Articulating Learning Outcomes and Expectations
A well-designed instructional rubric can serve to articulate lecturers’ expectations clearly and encourage students to be thoughtful of what is required of their efforts in an assignment. For example, in an oral presentation, a lecturer may wish to encourage students to actively engage the audience. The quality of “active engagement” can be communicated by articulating what is expected of students without simply relying on a vague term like “active” (Table 1).

<table>
<thead>
<tr>
<th>Rubric for Presentations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Criterion</strong></td>
</tr>
<tr>
<td>Engaging the audience</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

Table 1. Example of a rubric for presentations (Andrade, 1997).
In the example shown in Table 1, the rubric helps the lecturer to provide information on an important aspect of the assignment (criterion); what students can do to meet expectations specified in the criterion (quality) and how a student has fared after completing the task (feedback).

As an ongoing reference for students in a course, a well-designed rubric can direct them to attain the desired level of performance through a system of feedback. The descriptions accompanying each level of quality in a rubric serve as a guide for actions students can undertake in the initial stages of their preparation for an assignment. Following the completion of an assignment, the lecturer can provide specific or customised face-to-face feedback to each student based on the rubrics, or give additional written comments on the rubrics document. These multiple approaches to feedback, facilitated by rubrics, help students to have a clear picture of how they have performed in their assignments.

### Enabling Higher-order Thinking Skills

Rubrics can help to encourage higher order thinking in learning too. Very often, students submit assignments and project reports which have been meticulously completed, but lack the critical insight and reflection that are desired in higher education. To overcome this challenge, it is useful to incorporate Bloom’s Taxonomy into instructional rubrics to communicate what is expected and desired in a completed piece of work.

For example, in a written report where critical evaluation is required, the articulation of what “critical evaluation” encompasses provides direction for students to channel their efforts optimally in order to meet the expectations articulated. If such critical evaluations include the ability to synthesise and evaluate, the rubrics communicated ought to incorporate these desired performance indicators. The example in Table 2 provides a comprehensive view of a lecturer’s expectations of what “critical evaluation” means.

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Critical Evaluation (Synthesis and Evaluation)</td>
<td>The work demonstrates strong ability to put together findings and identify contradictions, tensions, and alignments in observations to come up with something new or unique; and to discriminate amongst these ideas, information, procedures and solutions etc...so as to decide on well-considered choices and opinions.</td>
</tr>
<tr>
<td></td>
<td>The work demonstrates adequate ability to put together findings and identify contradictions, tensions, and alignments in observations to come up with something new or unique; and to discriminate amongst these ideas, information, procedures and solutions etc...so as to decide on well-considered choices and opinions.</td>
</tr>
<tr>
<td></td>
<td>The work demonstrates uneven and superficial ability to put together findings and identify contradictions, tensions, and alignments in observations to come up with something new or unique as well as a limited ability to discriminate amongst these ideas, information, procedures and solutions etc...so as to decide on well-considered choices and opinions.</td>
</tr>
<tr>
<td></td>
<td>The work demonstrates weak ability to put together findings and identify contradictions, tensions, alignments in observations to come up with something new or unique as well as a limited ability to discriminate amongst these ideas, information, procedures and solutions etc...so as to decide on well-considered choices and opinions.</td>
</tr>
</tbody>
</table>

Table 2. Example of a rubric for project reports (Peirce, 2006).
Relying on Rubrics: Potential Pitfalls

As with all measures of performance, the quality of gradations may be debatable for users of rubrics. Since, according to Andrade (2005), rubrics are not self-explanatory, it is desirable for lecturers to discuss and communicate to students, through the use of examples and illustrations before each class/assignment, what each criteria/gradation means prior to the implementation of a rubric. In addition, incorporating additional feedback mechanism, such as a general comment, or peer feedback, will enrich the use of rubrics as an instructional tool (Andrade, 2005).

Another issue that may arise with the use of rubrics is the tendency for students, as well as lecturers (for the sake of convenience) to link a ‘score’ to each gradation of quality. For example, in the illustration cited in Table 2, “strong ability” may be perceived to be equivalent to a grade “A”, while “weak ability” may be associated with a “D”. This is counterintuitive to the use of instructional rubrics and should be avoided. It is important that lecturers stick to the fundamental motivation of using instructional rubrics as a developmental tool and ensure students are informed of the bases of the rubrics used prior to implementation.

Conclusion

While many critics have expounded on how rubrics are rigid and may stifle students’ motivations to learn beyond what would count towards their final grades, these views are often a result of rubrics being used to make marking more efficient with little consideration for students’ learning outcomes. Indeed, if used correctly and appropriately, rubrics not only facilitate classroom evaluations and feedback mechanisms, they also promote the level of learning desired by instructors for their students. Ultimately, the usefulness of rubrics is dependent on how they are used.

References


About the Author

Ms Chua Siew Beng currently teaches Level 1000 and 2000 modules in the areas of Management & Organisation, Human Resource Management and Human Relations. She believes that the best way to engage students is by instilling the values of passion, mindfulness and creativity through innovative pedagogy and a supportive classroom climate.
Improving Assessment & Teaching in a Postgraduate Clinical Psychology Professional Training Module: Applying the Scientist-practitioner Module & Competency-based Approach

Dr Iliana Magiati
Department of Psychology

I have written this brief report to share my experiences and reflections on teaching a postgraduate professional training module in clinical psychology and to highlight how “mapping” the competencies that characterise the discipline one teaches onto the aims and assessment methods utilised for teaching a particular module can result in substantial improvements in what is taught, assessed and learnt. I hope this reflective exercise can be of relevance to colleagues teaching in various professional training programmes in the medical and social sciences, irrespective of the particular discipline in which the interns are trained.

Background

The training one receives in clinical psychology has traditionally followed the scientist-practitioner model—clinical psychologists are trained to embrace a research orientation in their practice and to maintain clinical relevance in their research (John, 1998). This integrated approach has resulted in the long-held view that psychological practice should be evidence-based, integrating “the best available research with clinical expertise in the context of patient characteristics, culture and preferences” (American Psychological Association, 2006, pp. 273).

There has also been a strong emphasis in competency-based education in professional psychology (Kaslow, 2004). Clinical psychology professional training programmes aim to provide interns with knowledge, skills and experience so that they can demonstrate core foundational competencies in their profession when they graduate. In the medical professions, Epstein and Hundert (2002) defined competence as “the habitual and judicious use of communication, knowledge, technical skills, clinical reasoning, emotions, values, and reflection in daily practice for the benefit of the individual and community being served” (pp. 227), and this definition is also highly relevant for applied professional psychology. Supporting interns in developing intervention competencies is thus complex and involves helping them develop knowledge, skills and attitudes, which includes critical and reflective thinking as well as solid theory-research-practice integration skills.

Context, Aims and Content

Within this professional training context, I taught PLC5004 “Psychological Interventions and Therapies” at the Department of Psychology in academic years (AY) 2009/2010 and 2010/2011, as part of a comprehensive 2-year curriculum for the NUS Masters in Psychology (Clinical) programme. The programme involves other taught modules (i.e. Psychological Assessment, Child and Adult Psychopathology, Graduate Research Methods, Ethics and Professional Issues, Medical Psychology and Advanced Psychological Practice), four 4-month supervised clinical placements, a research thesis and four written case study reports.

PLC5004 aims to facilitate the development of knowledge and skills in evidence-based psychological interventions for various
presenting problems in children and adults. The modes of teaching in PLC5004 included didactic teaching, videos, role plays, self-directed readings, small group discussions and case vignettes. The first three weeks focused on broad topics and skills (e.g. challenges in evidence-based practice; generic therapeutic skills; psychological formulation). The following ten weeks focused on evidence-based psychological interventions for specific disorders.

Teaching PLC5004 for the First Time in AY 2009/2010

When I first taught this module in AY2009/2010 (with a total of 10 students taking this module)¹, I included the following modes of assessment:

- a small group presentation critically reviewing the evidence base of psychological interventions for specific psychological disorders [20% of the module’s continual assessment (CA) component];
- an essay critically reviewing the evidence for a psychological intervention not covered in the seminars (30% of the module’s CA component)
- a final exam paper which comprised of integrated research/ theory questions and/ or brief case vignettes (50% of the module’s CA component).

Student feedback, with a response rate of 50%, was positive for that semester (see Figure 1).

Nevertheless, based on my personal observations and informal intern feedback, there were several areas for improvement:

- The assessment designed seemed “dry” and isolated from the learning aims of the course. The interns presented, often in rote mode, the evidence for or against a particular intervention with little consideration of the complex individual client and setting factors that could influence the decision-making process and treatment delivery. My initial choice of assessment methods provided few opportunities for interns to experience the process of thinking like a “scientist-practitioner”.
- The presentation and the essay were targeting similar skills and knowledge, and involved similar learning processes (i.e. reviewing literature, critically presenting evidence, identifying gaps of problems with evidence); thus

\[\text{Figure 1. Mean student feedback ratings by academic year (maximum best rating is 5).}\]
opportunities for interns to learn and practice diverse skills were not provided.

- The interns needed to be encouraged to be more active participants in the learning process in preparation for their roles as scientist-practitioners.

**Teaching PLC5004 for the Second Time in AY 2010/2011**

In an effort to redesign my assessment methods for the following academic year (AY2010/2011, with a total of 5 students taking the module), I mapped my existing assessment methods onto the three elements of evidence-based practice in professional psychology as outlined by the APA (2006; see Figure 2 and Table 1). The “mapping” illustrated in Table 1 clearly shows that the assessment methods for AY2009/2010 were inadequate in terms of supporting the development of clinical expertise and making links between research and specific client characteristics.

I then searched the existing literature on teaching graduate courses in professional psychology for other assessment methods that have been employed. A number of relevant papers were reviewed (i.e. Leffingwell, 2006; Lee, 2007; Rodolfa et al., 2005; Spruill et al., 2004). After evaluating the various assessment methods in the selected literature, the following methods were introduced in AY2010/2011, with the aim of actively engaging interns in their learning and providing opportunities for developing not only their knowledge, but also their case-applied thinking and clinical skills:

- **Intern-led workshops.** Interns were actively included in the seminar by developing, organising and presenting intern-led workshops which focus on a particular intervention approach/technique; the intern would present the background and evidence base of this approach (theoretical component) as well as how this technique can be implemented in clinical practice (applied component) while discussing diversity issues. As the module was organised in a disorder-specific format, this workshop allowed interns to think “transdiagnostically” about intervention strategies and techniques that have been shown to be effective and can be employed for a range of clinical presentations. Compared to the evidence-based review presentation last year, this workshop provided interns the opportunity to learn about the technique (knowledge) and its background (theoretical basis), to examine its effectiveness (research) and to present on its applications (practice; “how to”), thus targeting multiple elements of developing professional competencies.
○ Case report written assignment. A written case assignment replaced the literature review assignment of the previous year. The interns were given a choice of two detailed cases. They had to critically review the literature on psychological interventions for the particular case, identify evidence-based interventions and related resources, books, videos or web sites, after which they had to develop a proposed treatment plan and explore possible challenges (and solutions) in treatment. This written assignment created multiple opportunities for interns to consider theory-evidence-practice links as applied to a specific case, evaluate the available evidence-based options and make decisions based on client characteristics, thus targeting knowledge, skills and simulated practice.

○ Online training in evidence-based intervention and reflective paper. A web-based individual training course on an evidence-based psychological intervention approach for children and young people was included as part of the assessment, together with a brief reflective paper for interns to critically discuss what they learnt and how they could apply this knowledge in practice. The online training course was accredited and involved a minimum of 10 hours of study, which the interns completed in their own time. The course involved reading, watching videos of clinicians practicing the intervention and pre- and post-completion quizzes. This assessment component provided opportunities for intern-led learning and reflection on how what was learnt could be applied in one own’s clinical practice.
When I “mapped” these proposed assessment methods onto the components of evidence-based practice in professional psychology (see Table 1) they appeared potentially much more useful in targeting the development of knowledge and skills in evidence-based psychological interventions practice that the assessment components introduced the year before.

As part of my revision, I also decreased didactic teaching, increased (and discussed in class) out of class readings and introduced more role play as well as “homework” exercises to mirror therapeutic processes and to encourage self-reflection. I gave interns individual feedback for each assessment component (which I did not do in the previous year) and used the final session to integrate key learning points across all modules.

Anonymous feedback from 100% of the interns in AY 2010/2011 was very positive and higher than in the previous year (see Figure 1). I also specifically asked interns for anonymous written feedback on each of the assessment components. On a scale of 1 to 7 (where 7 is most helpful/ relevant to learning needs), the intern-led workshops and the case report obtained the highest ratings (means of 6.8 and 6.6 respectively), followed by the online intervention training course (mean 5.8). The interns perceived the final exam as being the least helpful (mean 5.2) in relation to meeting their learning needs.

Refining PLC5004 for Subsequent Semesters

In Academic Year 2011/2012 (in which a total of 12 students took the module), I introduced a 48-hour take home exam instead of the final exam, which included a case vignette and a theoretical question particularly relevant to clinical practice. The informal feedback I collected from the class indicated that such an approach to exams was much more relevant to postgraduate clinical interns’ needs, as it “simulated” the realities of clinical work, where typically the clinician has a limited amount of time to do background research in order to gather the best available up-to-date knowledge in relation to a specific client’s presenting concerns. The interns indicated that for such an exam format in which the time allocated is limited, it may be more beneficial to focus on case vignettes and not on theoretical, essay-style, questions. This feedback will be taken into consideration in the next academic year’s revision of the module.

Reflections, Implications and Concluding comments

I designed and revised this module with the aim to train postgraduate clinical psychology interns in key clinical competencies, namely (a) critical thinking, (b) using and translating research into practice, and (c) developing knowledge and skills in evidence-based psychological interventions consistent with the scientist-practitioner model. Based on the feedback received from interns, the revised module seemed to be more interactive, was better at integrating theory, research and practice and most assessment components were rated as very helpful and relevant to their learning needs.

I found that reviewing the existing literature and contacting experienced teachers in the field was invaluable in my learning and development as a teacher; it also helped me to think in a more structured, systematic and goal-oriented way about how I plan and assess the module I am teaching. “Mapping” what I knew was important in my field onto what I was aiming to teach, carrying out self-assessment and obtaining formal as well as informal feedback from the interns really helped me to re-evaluate and revise my own assessment and teaching methods.

Endnote

1. As it is a compulsory component of the Masters in Psychology (Clinical) programme, enrolment for PLC5004 depends on the intake for the programmes each year and not on student preference.

continued on the next page ...
Acknowledgements

I am grateful to Prof. Catherine M. Lee from the University of Ottawa for sharing her teaching experience and expertise with me. I am also very grateful to all postgraduate clinical psychology interns in academic years 2009/2010, 2010/2011 and 2011/2012 for their open, supportive and constructive feedback on the module and its assessment components.

References


Are We Assessing Our Students Too Continuously?

Dr Peter Alan Todd and Dr Darren Yeo
Department of Biological Sciences

Introduction

As NUS students go through their undergraduate years, it sometimes seems as if they spend their time rushing through one assignment after another. It was this observation that prompted us to seek some quantitative feedback on Continuous Assessment (CA) from the students we teach, in this case Life Science students. Two classes, LSM4261 “Marine Biology” (56 students) and LSM3254 “Ecology of Aquatic Environments” (65 students), were surveyed in Semester 1 AY2010/2011 using hardcopy questionnaires that were returned anonymously. The students were given dedicated time to independently complete the questionnaires in class. The classes were non-overlapping, i.e. no student took both modules simultaneously. The total number of respondents was 105 (overall response rate of 87%), of which 85.7% were Life Sciences Majors specialising in Biology (or Environmental Biology, as the specialisation has been recently renamed). In order to confirm some data collected from the surveys and to gather other kinds of information which may have been missed, we also interviewed selected groups of students after the surveys were conducted.

Workload from CAs

Previous studies have demonstrated that high CA workloads per se do not equal high levels of stress as perceived by students, as there are other contributing factors (Kember & Leung, 2006). For instance, there exists a positive relationship between students’ evaluations of teaching (SETs) and “good workload” (that which is perceived to be valuable for education) and a negative relationship with “bad workload” (everything else that is not classified as “good”) (Marsh, 2001). Nevertheless, Zajacova et al. (2005, pp. 687) found that “writing term papers” and “having more tests in the same week” were ranked by students as the top two most stressful university tasks out of a list of 27.

We hypothesised that more CAs would take up more of the students’ time (per % of the overall mark) and therefore be unpopular. For example, a single CA worth 50% of the overall mark may take 10 hours, or 12 minutes per 1%, whereas five separate CAs worth 10% each might take 3 hours per assignment, or 18 minutes per 1%. This premise was based on our observations while teaching that NUS students often expend a lot of time and effort (be it in terms of preparatory work, actual project work, studying for tests, etc.) to plough through their various CAs, regardless of their weightage. We asked our classes whether they felt this was the case. In the survey, students were asked the following question:

• “In general, I take more time in total to complete many [4 to 6] small CAs than a few [1 to 3] larger CAs.” What is your response to this statement?

Their mean response was 3.67 (standard deviation=0.95) on a 5-point Likert scale, indicating they agreed with this statement, but not very strongly (with 3 being “neutral” and 4 being “agree slightly”).
Numbers of CAs

We also tried to determine how many CAs students would ideally like by asking the following questions in the survey:

- “Assuming that the CA component of a module is worth 60% of the module mark, what ‘spread’ of CAs would you prefer?”

Students could choose from five options for this question. Out of the 105 respondents, none wanted a single CA to carry all 60% of the marks. In fact, the great majority (>90%) preferred two, three or four CAs in a module—the number of CAs which are commonly given for modules in Environmental Biology (Figure 1). Hence, this preference may just reflect what the students are used to; but it may also be possible that they are hedging their bets. Subsequent interviews with class members suggest the latter as many said they did not want to place all their eggs in one basket, i.e. having the whole CA component of the module be dependent on the grades of just one CA.

When we asked what was the least and most number of CAs the students had been given in a single module in that semester, the results surprised us. The number of CAs ranged from 0 to 13! The high number was apparently due to small tests being given in every class. The mean number for the question “this semester, what is the greatest number of CAs you have in a single module?” was 4.3 while the mean for the question which asked for the least number of CAs was 1.8. The median of these two figures is 2.5; if we multiply this by 4 modules (the usual number read by students per semester) we get 10 CAs in a 13-week semester, or slightly less than one CA per week. This is perhaps not a huge number, but only if the CAs are well spread out. However, this is not usually the case since project report/presentation deadlines are often in the later part of the semester and mid-term quizzes are, well, in the middle of the term!

We also explored the relationship between the weightage of the CA assignment and how long students wanted to work on it. We hypothesised that students might want earlier hand-in dates than what they are often given, especially for CA assignments worth only 10 or 20% of the module’s CA component. Unsurprisingly, the more the CA is worth the more time students would want to complete it (Figure 2). However, it is still interesting to note from the survey results in Figure 2 how many students prefer earlier hand-in dates for smaller assignments. Submission deadlines are often clustered towards the end of the semester and even though students could get a head start and work on their assignments as soon as they are set, they are not always the best time managers (Misra & McKean, 2000)!

![Figure 1. Students surveyed (n=105) generally preferred to have two to four CAs.](image-url)
Assessing Student Learning

Weightage of CAs

Based on the survey results, we can see that CAs are popular among students; while some would like their assessment to be 100% CA, very few want it to be all based on the final exam (Figure 3). More than 70% of the survey’s respondents wanted a balance of 40% to 60% CA vis-à-vis the exam. Subsequent interviews with the students indicated that a heavier CA weightage than this would result in more stress during the semester, whereas greater exam weightage would lead to more exam stress. As many students have lots of practice at taking exams during their pre-university education, they do not feel especially intimidated by them. Some even professed during the interviews that they did not mind taking exams as they did not want to waste all those years building up their “exam smarts”.

Figure 2. The students surveyed (n=105) would like to hand in CA assignments that are only worth 10 or 20% early in the semester. Correspondingly, they want more time for more heavily weighted CA assignments.

Figure 3. The majority of the students surveyed (n=105) preferred an approximately equal balance between CA and exam.
Assessing Student Learning

Types of CAs

The students were also asked to rank eight types of CAs based on the question “What type of CA do you like best?” (see Table 1). The list provided was far from exhaustive. Furthermore, many of the students may not have encountered all of these types of assignments or tests. However, one or two points stand out. For instance, in-class quizzes are popular and individual presentations are not!

Based on the survey results, it seems that CAs can be grouped into two very broad categories: 1) those that are completed in class, such as scheduled quizzes with short questions or multiple choice questions (MCQs), as well as short reports handed in at the end of practicals; and 2) assignments where most of the work is done outside class time (independent study hours), such as take-home essays and group presentations. According to the survey, “MCQ/short question in class quiz (with prior warning)” was the most popular type of CA from the eight choices we provided. The students we spoke to said they felt that in-class quizzes took up less of their time and helped them to keep abreast with the material being taught. But they also felt that these quizzes did not test much beyond the memorising of facts. Even though the Open University in the UK suggests six to seven word CA essay (Chambers, 1992), “Essay” was the second most popular choice of the types of CAs we listed. Undoubtedly essays require more time for marking, but it seems they come under “good workload” (Marsh, 2001) and are popular because they facilitate deeper learning.

Unsurprisingly, the least popular CAs were those that are not worth as many marks (say 5%) but take up a lot of time. Multiple CAs that involve group work seem to be particularly taxing due to the logistics of getting individuals together to meet and to work on these tasks. Students also gave rather scathing feedback about “participatory” type of CAs, such as those based on attendance or on how often they contributed to a discussion forum. Nonetheless, students clearly find CAs important; they are a popular discussion topic and they will even make module choice decisions based on its CA load and type.

Conclusion

Based on the results of this survey, having two to four CAs in the form of scheduled in-class quizzes as well as take-home essays with a more or less even spread of 40 to 60% of the overall module mark appears to be the approach preferred by students. This seems to be a reasonable and workable balance. Staggering submission dates would also help students manage their time (and make marking easier)!

Table 1. Eight types of CA ranked in order of what students surveyed “liked best”.

<table>
<thead>
<tr>
<th>Rank</th>
<th>CA type</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>MCQ/short question in class quiz (with prior warning)</td>
</tr>
<tr>
<td>2</td>
<td>Essay</td>
</tr>
<tr>
<td>3</td>
<td>Poster (technical or otherwise)</td>
</tr>
<tr>
<td>4</td>
<td>Group presentation</td>
</tr>
<tr>
<td>5</td>
<td>Critique/review of published work</td>
</tr>
<tr>
<td>6</td>
<td>Paper style (Intro’, Methods, Results, Discussion)</td>
</tr>
<tr>
<td>7</td>
<td>MCQ/short question in class quiz (without prior warning)</td>
</tr>
<tr>
<td>8</td>
<td>Individual presentation</td>
</tr>
</tbody>
</table>
As noted by Kember (2004),

“It is possible to inspire students to work long hours towards high quality learning outcomes if attention is paid to teaching approaches, assessment and curriculum design in the broadest sense.” (pp. 165)

The key would seem to be to make CAs relevant and useful, so that students can see clearly how the assignments and tests are valuable to their education. Finally, it is worth noting that the students who participated in the survey were mostly Life Sciences majors. It would be interesting to conduct a similar survey with students of other disciplines to see whether there are differences in study culture, especially attitudes towards continuous assessment.

References

About the Authors

Dr Peter Alan Todd currently teaches LSM3254 “Ecology of Aquatic Environments” and LSM4261 “Marine Biology”. He believes that the best way to engage students is by making learning relevant and fun. To accomplish this, he uses the most recent and exciting research findings plus field-trips, in-class activities and small-group work.

Dr Darren Yeo currently teaches LSM3254 “Ecology of Aquatic Environments”, LSM4264 “Freshwater Biology”, LSM4266 “Topics in Aquatic Biodiversity”, and BL5230 “Invasion Biology”. Besides imparting specific knowledge in these areas, he also believes in the importance of inculcating in students a broader awareness and understanding of the subject. Much of this is done through the sharing/examination of real life experiences and especially local examples, which students can relate better to.
Tensions in Graduate Education

Dr Saif A. Khan, Associate Professor Lakshminarayanan Samavedham and Professor Farooq Shamsuzzaman
Department of Chemical and Biomolecular Engineering

“What I would like to do, however, is to reveal a positive unconscious of knowledge: a level that eludes the consciousness of the scientist and yet is part of scientific discourse.”

(Foucault, 1966)

In attempting an ‘archaeology’ of knowledge, Foucault (1966) in his seminal text The Order of Things: An Archeology of the Human Sciences brings to light the possibility that scientists, as subjects responsible for scientific discourse, might be unconsciously determined in their situation, their function, and their perceptive capacity by conditions that dominate and even overwhelm them.

In a similar vein, we contend that graduate education is analogous to a complex edifice, internally composed of elements (the student, the educator and the institution) that are in ceaseless interaction and also hold the structure together. In this essay, we wish to bring to light the critical interactions that underlie graduate education, and which, to stretch the structural analogy further, we conveniently term ‘tensions’. In doing so, we hope to provoke critical reflection as educators, on our aims, methods and inadequacies in upholding the edifice of graduate education.

Tension 1: Lack of agreed outcomes for graduate education and the absence of clear motives on the part of students

While there are some broadly agreed outcomes for undergraduate education, there appears to be little or no agreement when it comes to the expected outcomes for graduate education. The outcomes are largely determined by the thesis supervisor and there are often wide variations in the value systems among them. This is compounded by the fact that many students choose to come to graduate school without an appreciation of what a graduate education entails and may see graduate school solely as a stepping stone to a better future. The result of such an unwholesome mix is often a source of tension among colleagues as well as between the student and the supervisor.

Often, personal intellectual growth for the thesis supervisor, who is at a different stage in his/her career, may be misaligned with the goal of student intellectual growth, especially when students enter graduate school without having clear objectives and intellectual (or other) aspirations. This misalignment can create tension; the student-supervisor interaction is often not reciprocal in the long term, especially when it comes to exchanging ideas. We believe that one of the metrics for a ‘successful’ graduate education is this very “reciprocity of idea-exchange” between student and supervisor. The relaxation of this tension is a goal that can be used to formulate a consistent, overarching graduate educational philosophy, which we frame here in the form a set of (perhaps provocative) statements and questions posed by a supervisor to a potential student:

“I am investigating these important problems which will benefit society. These ideas have the ability to move the research area forward. Right now I will move faster than you, because I have had more time to do this. You will have to catch up, and I will help you by holding your hand for a part of the way ahead. It will be worth it. If this isn’t your cup of tea, you have the choice of leaving at the outset, or even after trying for a while. But do not expect me, at any stage, to spoon-feed you a degree.”
Would it make sense then to develop a flexible (to handle domain-to-domain variations, experimental/theoretical/fieldwork peculiarities etc.) but rigorous quality assurance system to ensure that a minimum set of objective indicators related to the intellectual growth of the graduate student has been achieved? If so, these indicators must be very broad in scope and not confined to simply counting the number of publications one has chalked up in a certain class of journals. The indicators must help us to unambiguously verify that the graduate student has created an identity for himself/herself as a scholar. The “reciprocity of idea-exchange” mentioned above could be one of the objective measures to decide if the “scholar” has indeed arrived! As a learning community, we should be able to come up with several such generic indicators that can be applied across disciplines and the type of research one is involved in.

**Tension 2: Performance expectations that ignore some important self-evident truths**

In addition, the practice of benchmarking our academic performance against top-tiered western educational institutions and the increasing “grant-publication-impact-visibility” based faculty appraisal are sources of tension that are directly linked with the research perception and expectations of the students in our graduate programmes. We are being compared and asked to compete with other universities without satisfying an essential pre-condition that the ‘raw materials’ are comparable. In such an environment, new ideas become a burden since many students are often ill-prepared and lack the outlook and experience to gradually take over ownership of the idea being investigated. The “joy of learning” one expects from the graduate students is not a common experience, as noted above with our comments on idea-exchange reciprocity. As a result, faculty members are either fearful of venturing into ideas with significant unknowns or get burnt out from the overload of having to do the thinking for their students. Students’ expectations of their supervisors often become frustratingly close to what they would expect of a private tutor. Such a position is neither healthy nor sustainable.

Therefore, in addition to formulating a guiding philosophy as noted above, we propose subjecting research students to a set of intensive graduate modules in their first semester as a means of conditioning them to the intellectual challenges and expectations they should expect in a graduate school of our standing. This would require a shift in the way we look at graduate course work and a willingness to depart from conventional pedagogy. However, first of all, we must change the present practice of combining the research students with course-based graduate students in our graduate classes. The graduate education is already being spread

**A Note About the Authors**

This article is a result of the authors’ “adda” (chat) in the shades of University Hall after their early morning cricket outings on weekends.
very thin by trying to educate every segment of the higher education market in the same class on the pretext of resource optimisation. The course-based students bring extreme heterogeneity to the mix in terms of their levels of preparation, motivation, and needs for the future. For such a mix, designing expected outcomes and teaching methods that make the class meaningful for everyone, and choosing the level of sophistication the teacher should aim at, will impose undesirable compromises to the proposed idea.

We have perhaps done a disservice to ourselves and some of the students by completely mixing up various graduate student streams. It is perhaps time that we started teaching and assessing the different graduate streams separately (e.g. aiming for different learning outcomes) or differently (e.g. using technology as a complementary to classroom interactions). These changes are not suggested to create a class differential but only as possible ways to “grow” well-educated scholars out of all our graduate programmes.

Concluding reflections

Facing the situations highlighted above often puts a faculty member in a reflective mode that precipitates the following question: what does being an academic really mean? Such internal intellectual tension is not necessarily a bad thing; it can grow into a positive force for change at both personal and institutional levels. However, these tensions must be recognised as valid and managed, and not aggravated by imposing expectations that are inconsistent with ground realities.

Reference