

The Lecture Checklist: Inexpensively Improving Teaching Performance

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Structured Abstract

BACKGROUND

Educational institutes expect academics to juggle between research, teaching, and service, with an increasing emphasis on research (Barnett, 2005). Hence, it is not surprising that busy professionals find very little time to critically reflect on and improve their teaching. Current ways of sustaining and improving teaching include, possibly in decreasing order of occurrence, hoping for the best, trial and error, making critical reflection a top priority, self-directed literature search for best-practice teaching methods, and seeking formal teacher training.

PURPOSE

In this article, we propose using a simple lecturing checklist for teaching preparation. The lecture checklist is “live”, and customisable to a teacher’s context and may be used for teaching in non-engineering disciplines. The lecture checklist provides a low-cost and effective framework to reflect and address student feedback, as well as for incorporating best-practice methods and teacher-driven innovations. In comparison to more comprehensive resources (Chickering & Gamson, 1987; Hadgraft, 2009), the lecture checklist is a light-weight and highly individualised accessory and is meant to evolve at a pace set by the owner.

DESIGN/METHOD

As evidence, we present details of the evolution of the first author’s teaching practice over 5 years and the in-tandem development of a lecturing checklist for teaching computer systems and software engineering courses at two leading Australasian universities. This lecture checklist matured from containing three items initially, into a 12-item list as the teaching practice was refined following formal teacher training, critical reflection, several peer observations (Cosh, 1999), and formative and summative student feedback.

RESULTS

This evolving checklist contains items with solid theoretical footings and proven to be effective in increasing student engagement (Nystrand & Gamoran, 1991), and has helped boost the lecturer’s teaching performance and has helped in achieving more positive student feedback, both qualitative and quantitative. We anticipate that academics who incorporate this simple framework into their teaching practice can similarly benefit and will be able to improve their teaching by refining their own lecture checklists.

CONCLUSIONS

In summary, the lecture checklist provides a flexible, low-cost, and minimal-effort framework for busy academics for improving their teaching performance. It also provides a simple, single point of reference for all the teaching wisdom a teacher collects from a variety of sources.

KEYWORDS

Student engagement, teaching preparation, teaching best-practice

Introduction

Aristotle said: “*Teaching is the highest form of understanding*”. An effective teacher must understand the content being taught *and* must also deliver it capably. Universities position themselves as premier venues for education, and require sustained levels of effective teaching to remain the preferred choice in a market teeming with innovative options for prospective students (Yuan, Powell, & CETIS, 2013). Students also expect quality teaching (Appleton-Knapp & Krentler, 2006) and academics are well aware of this need (Stronge, Ward, Tucker, & Hindman, 2007). However, while most academics tend to master the content, many have little time to think about let alone improve their ways of delivering content in the lecture room.

This articles focuses on the problem of improving content delivery in the lecture room, an issue faced by even the most determined academic. Many universities incentivise research performance at the expense of teaching, and/or overload academics with very high teaching loads of up to five whole-semester courses a year (Prince, Felder, & Brent, 2007). In addition to being perennially overwhelmed and short of time, many academics do not have effective systems in place for helping them in improving their teaching. Exploring different methods and choosing those that suit us best has become prohibitively expensive in terms of time, effort and risk (Devonport, Biscoomb, & Lane, 2008). In an environment affected by these factors, improving one’s content delivery becomes very challenging.

Figure 1 broadly divides content delivery into three steps. First, we learn ways of delivering content from a plethora of sources. Next, we store some ideas that feel useful in an archive of some sort. We then include a few of the archived ideas into our teaching. Ideally, we continue to frequently iterate through this process and optimise our teaching by discovering new ideas, discarding non-effective strategies, and making adjustments to the useful ones. Unfortunately, existing methods for learning, storing, and applying are time consuming, effort-intensive, and difficult to manage. A summary of existing methods appears in the next section.

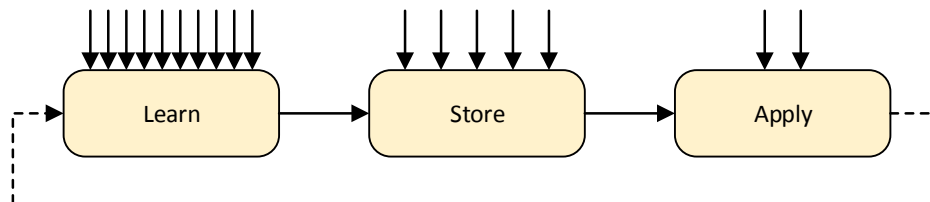


Figure 1: The three stages of content delivery

We propose a simple and elegant tool called a *lecture checklist* to help improve content delivery. The lecture checklist serves as a low-cost, flexible, minimal-effort tool that can grow at a pace specified by the owner. It can be easily customised to an individual’s teaching practice, and can act as a single point of reference for the learning, storing, and applying stages of content delivery shown in Figure 1. We report, as a case study, how the first author created and built a lecture checklist during five years of teaching computer systems and software engineering courses at two prominent Australasian universities. Some benefits reported from the case study include improved student feedback, reduced time for lecture preparation, and ease of adapting to teaching new courses. The lecture checklist, and the case study highlighting its applicability, are the main contributions of this paper.

The rest of this paper is organised as follows. The next section reports related works and identifies the need for the lecture checklist. Subsequent sections then present the lecture checklist framework, the case study, a discussion on the proposed framework, and concluding remarks. A template of the lecture checklist is provided in Appendix A.

Related Works

The learn, store, apply process

Academics get continually bombarded by strategies and tips to improve their teaching. Some ideas may originate from personal beliefs and values, past experiences, or self-reflection (McKernan & McKernan, 2013). We may also solicit feedback, both formative and summative, from students (Leckey & Neill, 2001) or through peer observations (Cosh, 1999). Tips are often exchanged informally in staff rooms. We may seek help from mentors or even formal teacher training (Gibbs & Coffey, 2004). Other formal sources such as seminars (Stice, Felder, Woods, & Rugarcia, 2000), research articles, books, online resources (Hunt, 2007), etc. also offer a wealth of strategies. We might receive contradictory ideas during the learning process. This is normal, as people have different teaching styles and contexts, and what works for one may not work for another (Pajak, 2003).

We store some of the tips and tricks we receive so that we can recall and utilise them when needed. Many times, we use our memories as the storing process as this does not require much effort. However, accessing the right items from memory at the right times is uncertain, especially as most of us find ourselves always short of time. Alternatively, we may store new learnings by making notes on paper or online resources, or other sophisticated methods like mind maps. Making explicit notes requires effort, and accessing them at the right time requires us to be organised so that we can locate and use our notes when needed. Regardless of the storage medium, we tend to store ideas in lists, and store or remember only those ideas that strike to us as most useful.

Applying stored ideas, especially with limited available time, also requires significant discipline and planning. Some strategies might take minimal time to apply, while others may require considerable effort. In addition, not all work, and we must seek to refine our content delivery by removing, adding, and modifying strategies continuously.

What works?

A mountain of research in improving teaching quality awaits the receptive academic. Guidelines vary from easy to apply tips like taking breaks (Wilson & Korn, 2007) and providing additional readings to interested students, to more involved frameworks for deep learning (Entwistle, 2000), and outcome-based teaching (Felder & Brent, 2003). Also, there are many ways to create a more engaging teaching environment, such as open questions, catering to different learning styles (Felder & Silverman, 1988), challenging problems in class (Perrenet, Bouhuijs, & Smits, 2000), etc. A study in signature pedagogies may also help in understanding generic ways to teach in different disciplines (Shulman, 2005). Compiled lists of strategies also appear in the literature or online (Chickering & Gamson, 1987; Hadgraft, 2009). We cannot incorporate all strategies into our teaching every time we deliver a lecture. However, the knowledge of these concepts along with self-reflection can pave the path towards delivering more effective lectures peppered with selected methods to improve teaching and student learning.

The Lecture Checklist

The lecture checklist is much like a to-do list and can apply to any or all of the lectures being delivered by a lecturer in one or more courses. Figure 2 shows the structure of a lecture checklist designed for a single course. The first column lists the strategies available at the disposal of the owner, and the subsequent columns show which of these ideas were applied to individual lectures. A checkmark (✓) in a cell corresponding to a lecture-method pair indicates that the corresponding method was used in that lecture. Conversely, a cross (✗) simply states that the method was not used in that lecture. The list of methods may change as the lecturer makes practice-informed distinctions about what works, what doesn't work, and

how existing methods can be refined. The checklist can be updated as often as possible, such as every new teaching term or even mid-term after processing formative feedback.

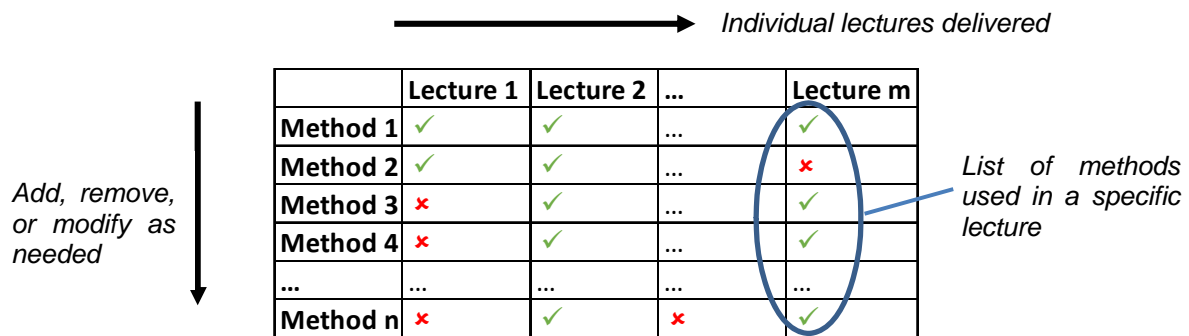


Figure 2. The structure of a lecture checklist

The lecture checklist is designed for the university lecturer, but can also be used by others for special presentations like one-off guest lectures, tutorials, or even other non-teaching domains like corporate presentations.

An initial checklist can be built from the owner’s mental archive of teaching strategies and then refined as new distinctions are made. We may drop items if they do not prove effective or take too much time. Others may be refined, while new strategies maybe added to the list. When used before a lecture, the lecture checklist can help with preparation and delivery, and for organising and editing course materials like lecture notes. The owner may select a subset of methods for use during the upcoming lecture, discarding those that are not useful or cannot be included due to limited time. If the lecturer feels that a certain method which is not on the list may be useful, they can immediately modify the checklist. The checklist may also come in handy when a lecturer inherits a new course and needs to customise materials to suit their teaching style and preferences.

Some points on the checklist may take minimal time to implement, like adding a slide describing the learning outcomes relating to a lecture. Others such as integration of the lecture with the whole course may take longer. The checklist can assist even after the lecture, to reflect on how effectively the planned methods and activities were used and to make note of any new feedback. The checklist itself may be changed, when time permits, to incorporate new distinctions or changes. Changes typically happen at the start of new courses where the configuration of learning environments (lecture rooms and laboratories), student numbers, cohort demographics, etc. can differ drastically from previous iterations of the same course.

A lecturer can maintain a single checklist for all courses that they teach, or might prefer to create customised checklists for every course they teach. The extent to which such customisation occurs depends on available time.

Case study

We now provide a case study describing the evolution of the first author’s teaching practice, and the development of a corresponding lecturing checklist. The lecturer, RS, taught courses in computer systems and software engineering courses during the period 2009-10 and 2012-2014. His teaching involvement from 2009-2013 was as a fixed-term staff member (post-doctoral fellow) at a leading Australasian university. During this time, he was allocated a variety of different courses to teach, many of which he had never taught before. In addition, there was no guarantee of his continuing involvement in any of the allocated courses. Since early 2014, he was employed as a permanent staff member at another leading Australasian university. We divide this five year period into four distinct phases, as follows.

Phase 1 – Self-guided informal training (2009): Thrust into full time teaching straight after completing his PhD, RS looked around for ways to teach better, mainly to lower his anxiety

over teaching unfamiliar courses. He had served as a course tutor and had done part-time lecturing before 2009, based on which he developed a small checklist that he used for his lectures. The methods on this initial checklist are shown in Table 1 below.

Table 1. An initial lecture checklist

Understand all materials	Keep to time (50 minutes)	Provide readings
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While this initial checklist was very small and centred more on helping RS feel confident in delivering his lecture (points 1 and 2), it also focussed on improving student learning (point 3). Of course, RS did not make these distinctions until much later in his journey.

Phase 2 – First exploration of teaching best-practice (2010): In early 2010, RS was asked to attend a 3-day course for teacher training at his university. He also attended a few teaching workshops out of his own interest. These courses helped him gain knowledge about student-centred learning (O’Neill & McMahon, 2005), different learning styles (Fleming & Baume, 2006) and how to cater to them, different teaching methods (in contrast to the conventional didactic lecture), and how students perceive lecturers and university learning in general. In 2010, he also requested a peer observation of his teaching by an experienced teacher trainer, who was able to give him specific tips on how to improve his content delivery. RS combined his learnings with summative student feedback from 2009 to create an enriched lecture checklist, containing the items shown in Table 2 below.

Table 2. Phase 2 lecture checklist

Provide overview	Summarise previous lecture	Ask questions	Provide readings
Take a break	Enable lecture recordings	In-class problems	

Phase 3 – Formal training in academic practice (2012-2013): Encouraged by his growing confidence, and conscious of a one year break from teaching, RS sought formal training in academic practice. This avenue allowed him to “dig” deep and understand student learning and uncover methods to improve different aspects of teaching, including course delivery. He also requested several peer observations during this period. His lecture checklist also evolved to mirror this maturity, and contained more strategies, as shown in Table 3 below. Many items inherited from previous checklists were significantly refined. For example, the questions he asked his students, under the “ask questions” item, evolved from asking students to simply define concepts introduced in the lecture to asking students to apply and combine several concepts.

Table 3. Phase 3 checklist

Align with course objectives	Activate previous knowledge	Use document camera for interactive teaching	Apply what is learnt
Provide overview	Summarise previous lecture	Ask questions	Provide readings
Take a break	Enable lecture recordings	Homework	In-class problems
Refer to exam questions	Include audio visuals		

Phase 4 – Continuous improvement and adapting to change (2014 onwards): In 2014, RS moved to a new university as a permanent staff member. He was given new courses to teach and worked under different policies, lecture format (2 hour lectures instead of 1 hour lectures), teaching load (from 2-3 courses to 4 courses a year), and facilities (no lecture recording facilities, more sophisticated online platform for interacting with students). The uncertainty brought about by these factors and the newness of the courses was resolved to a great extent by using a modified lecture checklist. Table 4 below shows the items on the modified checklist. Note that some items such as the use of a document camera and lecture recordings were removed as these facilities were not available in RS’s new workplace. Other items on the checklist were refined to suit the new courses.

Table 4. Phase 4 checklist

List course objectives	Activate previous knowledge	Case study	Apply what is learnt
Provide overview	Summarise previous lecture	Homework	Provide readings
Take a break	Refer to exam questions	Include audio visuals	In-class problems

Benefits of the lecture checklist

The lecture checklist supported RS’s teaching practice like a backbone supports the human body. Many measurable improvements were observed. Summative student feedback improved from 81% (2009-10) to above 95% (2012-14), as shown in Figure 3. In addition, student grades improved in the courses RS taught, as compared to the previous iterations of the same courses. For example, all 110 students that RS taught in semester 1, 2014 passed (except for three that did not appear for examinations), as compared to over 15 students failing in the previous year. In addition, RS also won two faculty-level teaching awards in 2012 and 2013. The first award was based on student votes of their favourite teachers, while the second award followed a formal evaluation of a teaching portfolio.

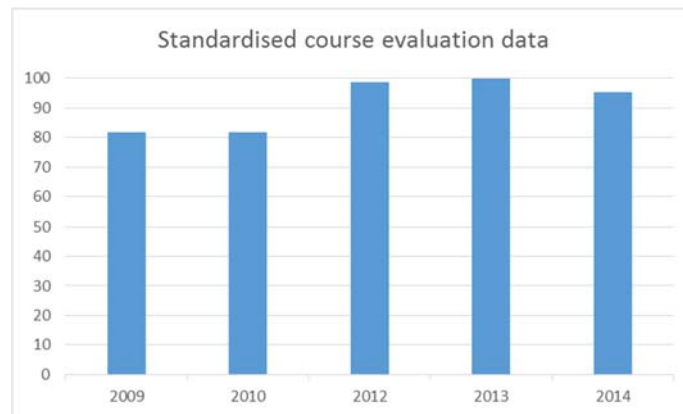


Figure 3. Standardised course evaluation data averages from 2009-14. The y-axis measures the percentage of students who agreed or strongly agreed with the statement “Overall, the lecturer was an effective teacher” across all courses taught in a year

In addition to the tangible benefits listed above, RS found that the checklist provided many intangible benefits that indirectly support student learning. The checklist allowed him to feel in control, and acted as a reminder to use best-practice teaching methods. It helped him better organise and prepare for his teaching while spending progressively less time preparing. Most importantly, he now has a system in which any feedback, tip, or suggestion can be incorporated and tested with minimum delay, helping in fine-tuning his teaching practice.

Discussion

The lecture checklist provides some obvious benefits. It helps in saving time, and can work in situations with different time constraints. It is designed for helping busy academics manage their growing teaching practices with minimal effort. We provide a sample lecture checklist in Appendix A that lists some useful content delivery methods. Those interested can start using this checklist and adapt it at their own pace. The lecture checklist is very flexible and can be used for different contexts, such as online delivery or for different class sizes. While it has been used primarily for teaching engineering courses so far, it may find use in other disciplines, or non-teaching contexts like planning for research articles as well as for non-academic purposes. The lecture checklist can be used by individuals or groups, to prepare for individual lectures, or even complete courses or programmes. In a team environment, the lecture checklist can ensure consistent content delivery. It also acts as a single point of reference and records the growing wisdom of a reflective academic practice.

The checklist also has limitations. Firstly, the owner must want to use it. It is very easy to just go through the motions and mechanically tick all items, but the real test is to observe how effectively each method is being used via self-reflection or student feedback. Some people might feel limited by the choices provided by the lecture checklist. This might result in a stagnating teaching practice, rather than one that grows with time. We envision the use of the lecture checklist as a tool to create options rather than constraints for a teacher, giving them a collection of arrows in their quiver to teach more effectively. This can only happen when the owner is willing to let the checklist evolve. The lecture checklist is intended to provide structure to teaching, but not a short-cut for success. Success in teaching involves many different elements, and assuming that this tool will solve all problems is unreasonable. As mentioned previously, each strategy in the checklist can have different modalities. A teacher could, for instance, simply add trivial questions to ensure that they can check the “in-class problems” cell for a lecture. However, these quick hacks may in fact put students off rather than engage them.

We show the effectiveness of the lecturing checklist with anecdotal evidence from a single case study. The initial improvement in teaching performance shown in Figure 3 must be compared to the expected standard improvement of a young academic in his/her first years of teaching. The fact that the first author received a teaching award may be correlated with their use of the checklist, but not caused by the use of the checklist. The proposed solution may not work for everyone, and the level of success achieved by individuals may be different. A wider study is needed to quantify the benefits offered by the lecturing checklist.

Conclusions

We presented a simple lecture checklist that allows university lecturers to collect effective content delivery strategies into a single point of reference, and then consciously use this knowledge during lecture preparation and delivery. The first author’s teaching practice served as a case study showing a lecture checklist evolves with time and experience, and can help achieve measurable and intangible benefits. The generic framework requires minimal time and effort, and is customisable for a variety of contexts, including non-teaching contexts. The evidence presented is admittedly anecdotal, as it is based on a single case study. Therefore, future directions include studying the benefits and limitations of the tool in a wider audience to quantify its effectiveness.

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Appendix A: Lecture Checklist Template

Table 5. Template of lecture checklist (modify as needed)

Lecture 10												
Lecture 9												
Lecture 8												
Lecture 7												
Lecture 6												
Lecture 5												
Lecture 4												
Lecture 3												
Lecture 2												
Lecture 1												
	Provide an overview	Discuss previous lecture/issues	Check existing and related knowledge (questions, discussions)	Use real-life case studies, examples	Take a break every 20-25 minutes	Test understanding using questions	Problems, discussions or role-plays in class	Audio-visuals	Cater to different learning styles	Homework	Readings	

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