

The lecture

BY GRANTWIGGINS

I recently wrote that Understanding by Design is agnostic about any specific method or pedagogy. The bottom-line question has to do with validity: given the goals, what follows? Thus, it makes little sense to say “I never lecture” or “I always do authentic assessments” as if it were a question of ideology or personal taste.

As educators, we should use the methods that best work to achieve our goals. To that end, let’s consider as dispassionately as possible the oldest instructional method in formal education: the lecture. (By “lecture” I mean the typical HS and college class in which a Professor or teacher speaks for most of the period.)

As the etymology of the word suggests, the original lectures were readings. The teacher (or priest) read hand-written speeches in the absence of printed material since the printing press had not yet been invented. The student’s job was to take verbatim notes as a way of both learning the material and capturing the ideas in print. To this day, many formal lectures involving the reading of papers.

What could not be more obvious as efficient pedagogy? The expert knows things the novice doesn’t. So, the expert shares those insights orally. The nagging question, of course is: it may be efficient, but how effective is the lecture? And what, really, is the pedagogical purpose of any lecture? Any hope we have of analyzing and evaluating the pedagogy fairly depends upon looking closely at the “backward design” logic of goals and means.

A deeper look at pedagogical purpose.

Any pedagogical decision about methods is best made by looking at what goals imply (as opposed to what the teacher merely feels comfortable doing). In other words, if the lecture is a means, then toward what end(s)? And given any proposed rationale based on the logic, we would next consider: how effective is the method when contrasted with other methods?

Here are a few commonly-given reasons for lecturing:

- Students need to know core information. Yet, the textbook is too dense and daunting, and it does a poor job of showing the big ideas that connect the facts. So, my lectures are necessary to help students understand what is important and why. (And too often they don’t read or have trouble reading the textbook).
- My goal is for students to see the value of the content, not just know the content. My role as a lecturer is to make students who are naturally disinclined to care about the content to see it as intriguing and important, and only a lecture designed to do so can achieve this effect.

In a recent article in the Chronicle of Higher Education on the value of lectures, Robert Talbert proposed the following purposes for which lectures are well suited:

There are times and places where lecture works quite well, even better than the alternatives.

Here are a few purposes for which I think lecture is well-suited:

- Modeling thought processes. The benefit of hearing an expert learner lecture on a subject is that, if the lecture is clearly given, the audience can gain some insights into what makes the expert an expert. A good lecture does more than convey facts or put problems on the board — it lays bare the cognitive processes that an expert uses to assimilate those facts or think his or her way through those problems.
- Sharing cognitive structures. Lectures provide the important opportunity for the lecturer to share the mental models and internal cognitive frameworks that worked for him/her when he/she was learning the content. For example, when I took Calculus as a high schooler, I learned the Quotient Rule using the little ditty “Ho D Hi minus Hi D Ho over Ho Ho” and I still cannot perform the Quotient Rule by hand without singing that to myself. I share that whenever I teach Calculus and it works with students — and it’s not something they would necessarily have come up with on their own.
- Giving context. Good lecturers know more than just their subject material. They know the context in which that content sits and how the material relates to other things — things that a novice learner might not think about, just because he or she is a novice. Lectures are good places to learn some things from people with a broader set of experiences than you have.
- Telling stories. Stories from popular history or culture or from the professor’s own life are a kind of cognitive structure that help students to relate to the course and see the course content in a different way. For example, students learning logic have trouble with the notion that a conditional (“if-then”) statement is actually considered true if the hypothesis (the “if” part) is false. So I tell a story about promising my kids ice cream if they finish their dinner. If they didn’t finish their dinner but I got them ice cream anyway, it doesn’t make me a liar — so my “conditional statement” was still true. This connects somehow where truth tables don’t.

Yet, 40 years ago, Donald Bligh wrote a seminal text on the use (and abuse) of lectures in education, using research to explore the objective value of lectures in light of proposed purposes. Given different types of educational goals, Bligh noted that all available research – still valid, by the way – reveals that lectures in general suit only one purpose: “The lecture is effective as other methods for transmitting information. Most lectures are not as effective as discussion for promoting thought, developing values or changing attitudes.”

On the other hand, when Bligh wrote there was no Internet. Even teachers who embrace lecturing and regard it as an important pedagogy have to admit that times have changed technologically. Since the lecture was invented in the era before the existence of the printing press – never mind the Internet – what is the role of the lecture in the modern era? Does it have great value? Or does it hang on by habit?

And indeed, Bligh’s highlighted purpose for lecturing – sharing information – is viewed negatively by Talbert because of modern resources:

Notice that what I don’t include in this list is the one thing that lectures seem most commonly used for: information transfer. In fact lectures, while effective at “covering material”, are terrible for information transfer from the student’s point of view. There are serious problems with retention and recall of information given in a lecture even if the lecture is rhetorically solid — and this is to say nothing about the disconnect between the length of the average lecture and the average human being’s attention span. Resorting to a lecture because I

need to “cover material” is just an admission that I didn’t design my course well. If that’s all the lecture is for, put it online so students can at least pause and rewind. [emphasis added]

Backward Design.

So, we need to use the logic of backward design to critically explore the issue of the appropriateness of lecturing. The logical question is: What is the best use of time in class and out of class, given our goals and given the availability of modern educational resources beyond the words of the lecturer?

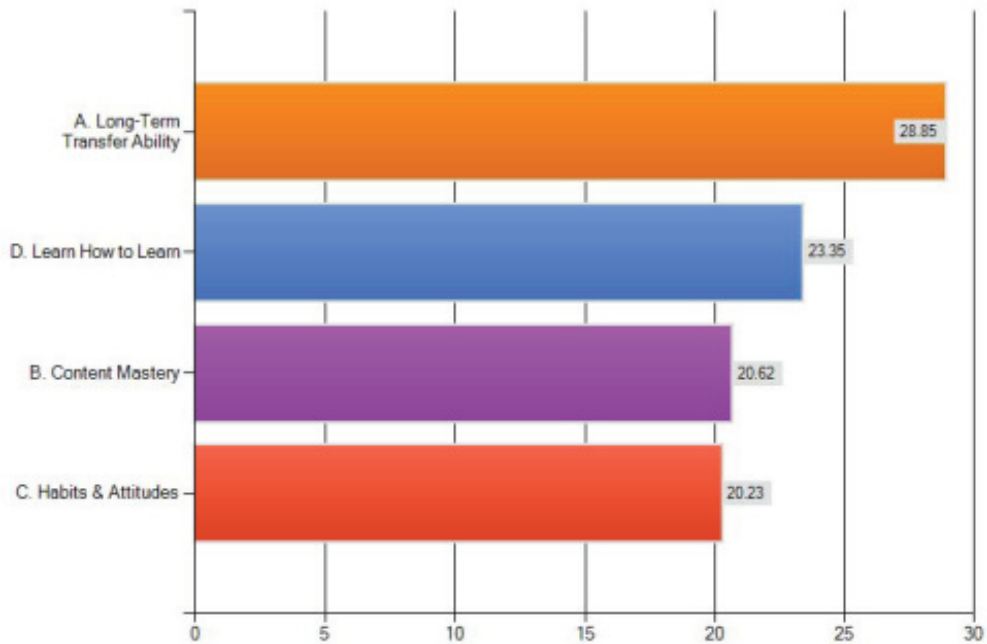
The general question forces a careful consideration of other specific issues:

- What are our learning goals, and what are the different types of goals? In other words, what kinds of achievement do we seek in our courses?
- IF... THEN. Given our goals, what logically follows for teacher methods and student activity, in and out of class?
- What is the best use of limited class time, in a world of easily-accessible information?
- If pure lecturing for lengthy uninterrupted periods of time does not seem logically appropriate, given the previous answers, when, for how long, and on what should teachers lecture?

(For this inquiry, I leave aside the issue of economics in higher education. Clearly, many large colleges and universities count on the lecture as a cost-effective delivery system, a point I will come back to in the follow-up post. Colleges can ill afford on financial grounds to turn to more small classes – even if they wish to do so. In K-12, however, the classes in which teachers lecture are no larger than classes where teachers do not lecture. In other words, to lecture or not is only a pedagogical decision, not an economic decision, in schools. And that is more helpful for the inquiry, since we can consider the value of lecturing in education without getting bogged down in ancillary matters that easily muddle the debate.)

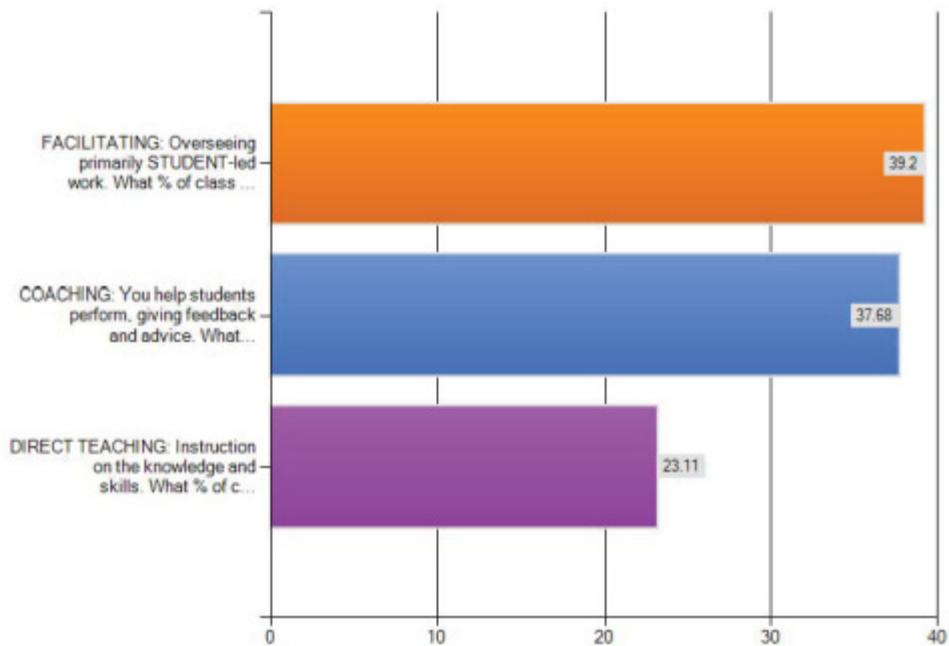
For a number of years we have offered a survey that enables teachers to analyze and reflect on their goals and their implications. Here are the different goal types and the percentages given by over a thousand HS and college users of the survey (To see all 30 sub-goals and the rest of the survey download the pdf here – AE Course Goal Survey 2014):

Having looked back over your course goal survey answers, consider the matter broadly again: just consider the 4 Categories once more. What percentage would you now assign to the importance of each category, given your answers within the categories? Your total across the 4 should add up to 100%. (But resist the temptation to just say 25% each. What do your choices for all 30 ratings suggest?)



Clearly, the survey results suggest that lectures should not be a dominant pedagogy in the typical course since the goals of skill development, habits of mind, and transfer of learning cannot be achieved well through lectures. Indeed, here is what the respondents said when asked about the pedagogy that ideally supports their goals:

In the previous question you were asked to consider what your current actual use of class time is in terms of the 3 roles. But what is the IDEAL use of limited class time given how the various goals you identified as Essential or Very Important in the previous question?



Might we say, then, that as a rule of thumb, the results suggest that a teacher should not lecture more than 25% of the time in any course with complex learning goals of the type mentioned?

Self-deception and the lecturer.

Well we might say so, but making our analysis far more difficult is an essential psychological struggle related to teaching in general and lecturing specifically:

1. The lecturer is prone to self-deception in judging the value and efficacy of the lecture. The habit of lecturing runs so deep in secondary (and college) education that the lecturer may not be aware of rationalizing this habit at all costs when they argue for the benefits of lectures.
2. The lecturer is prone to egocentrism and confirmation bias about the value of lectures. We all recall great lectures; we easily forget how rare they were. And we think that our own education is the model to advance – even if modern educational research casts doubt on many of the practices we encountered as students. “If it worked for me, it will work for them!” This is especially egocentric if most lectures we encountered were in college and yet we now teach much younger students.

Why is the lecturer prone to self-deception? The structure invites it: the longer I speak, the less I know how my words are being taken and processed by the learner. And the clearer I am in my own mind about what I am saying and why, the more I may be blind to how unclear, confusing, or unhelpful the lecture is to a novice.

Put bluntly, the only question that matters is: was the lecture effective at causing the goals identified? And without ongoing feedback, the lecturer is the last person we would ask for a definitive answer.

Here is Talbert again on the self-deception of thinking of “inspiring” lectures as educational:

Notice also that I do not count whether a lecture is inspiring or not. No doubt many lectures are inspiring, but being inspired and being taught are not the same thing, and just having one’s thoughts provoked doesn’t mean that one has interacted with the lecturer in any real way. I am inspired by many of the TED talks and sermons I hear, but it doesn’t mean I have learned anything. I had a pastor once who was unfailingly inspirational — and I couldn’t remember a single bit of what he preached on, nor could I give even a coherent outline of the sermon, within two hours of church being over.

Here is Bligh reminding us of the data on “promotion of thought” via lecture, and its implications:

Table 2.3. The number of experimental comparisons of lectures with other methods where promotion of thought is the criterion

Teaching Method	Lectures less effective	No significant Difference	Lectures more effective
Discussion	29	1	2
Reading & Independent study	1	3	1
Enquiry	5	1	1
Other methods	12	17	0

In effect what is being said here is that if students are to learn to think, they must be placed in situations where they have to do so. The situations in which they are obliged to think are those in which they have to answer questions because questions demand an active mental response. Although it could be modified to do so, the traditional expository lecture does not demand this. (Taplin, 1969, Dunn, 1969, Elton, 1970 - see Parts 3 and 4). The best way to learn to solve problems is to be given problems that have to be solved. The best way to 'awaken critical skills' is to practice using the canons of criticism. The best way to develop powers of analysis is to keep analyzing situations and data. If this thesis seems obvious common sense, it should be remembered that some people place faith in their lectures to stimulate thought and expect thinking skills to be absorbed, like some mystical vapours, from an academic atmosphere. Psychologists are likely to wince at the imprecision of such a notion; and learning to think is not an absorption process.

This is also why the so-called one-minute essay became popular in many college courses as a way to ensure that Professors receive at least the minimal needed feedback about effectiveness. (And it helps to cause greater achievement, too.)

In fact, the lecture-dominated course runs completely counter to what we know about the importance of formative assessment, high-level questioning and discussion, differentiation, and attention to metacognition – all at the highest levels of effect size in Hattie's research. It is therefore not ideological to claim that the lecture starts out with two strikes against it as an instructional approach:

- It is the most undifferentiated and unresponsive approach to teaching that is possible. The lecture is premised on the idea that each and every student will (or should) profit from one message, spoken one way, at one pace, using one method.
- It assumes that understanding occurs through mere listening and reflecting quietly rather than through questioning, discussing and trying to use the learning. (i.e. it reflects its ancient heritage of a pre-modern world where learning was purely intellectual and meditative).
- Athletics, the arts, and professional training in business, law, medicine and engineering provide important and more modern educational counter-examples. If the goal is to help learners make meaning of and transfer content in the future, then they have to be coached in how to do so. Coaches lecture, of course. But for far briefer periods and not for most of the course. Indeed, watching good coaches coach is to see new ways of considering our essential question: what's the best use of class time? When should we lecture, for how long, and on what subjects – if our goal is deft performance with knowledge and understanding?
- Excessive lecturing is boring and off-putting to HS students. This is from the HS Study of Student Engagement: "Over four years of HSSSE survey administrations, student responses have been very consistent regarding boredom. In a pool of 275,925 students

who responded to this question from 2006 to 2009, 65% reported being bored at least every day in class in high school... Thirty-four percent of students said that a primary source of their boredom was 'No interaction with teacher.'" Our own survey data also confirms these percentages. And in constructed response questions, students in our survey report that their most disliked teaching technique by far is teacher lecturing verbatim from Powerpoints. Over 12% of 6000 + middle and high school students identified this as the least effective form of instruction.

Source: <http://grantwiggins.wordpress.com/2014/02/03/the-lecture/>