Would you like your students to...
- Read more of the assigned readings and read them more deeply?
- Attend and contribute to class more frequently, even if they are too shy to speak up?
- Ask more – and better – questions?
- Learn to monitor their own understanding so that they can focus on areas that need work?

Actually, how would you like achieving all of those goals with just one change to your teaching? I began using a new method in my classes a few years ago, and feel as if I stumbled onto a simple, powerful, and almost magical secret that has profoundly changed my students’ learning – and my teaching. When I asked a colleague whether she had tried this method, she replied, “It changes everything!” This note introduces the method and explains why it is so effective.

The method consists of four simple steps – two of which you probably already do in your classes. These are:
1. Ask your students to do the reading before class
2. Ask your students to do the reading thoughtfully
3. Ask your students to respond in writing to two or three prompts about the reading – and to send their thoughts and questions to you well before class
4. Read their thoughts and questions and use them to help shape the upcoming class session (including showing some of them in class).

This method is commonly called “Just-in-Time-Teaching,” although I prefer “Thoughts and Questions,” which puts the emphasis on the students rather than the teacher. Plus, the acronym TQ is much more euphonious than JiTT.¹

**Benefits of Using TQs**

Many benefits emerge from this simple technique. The list below comes from the teacher’s perspective, both my own observations and those of colleagues (for a student perspective, see Afterword). While these benefits accrue in classes of all sizes, they are most apparent in medium and large classes, where it is typically difficult to get to know individual students.

**TQs change the relationship between the professor and students**

1. **Uncovering student confusions and excitement, early and often:** TQs enable the teacher to see which parts of a reading are especially challenging to students and which parts most engaged them. This information comes in *before* class, when it helps most.

2. **Watching students grow:** TQs help the teacher see how a student’s thinking deepens and richens over the course of the semester, as students learn how to examine their own understanding and articulate their thoughts more clearly.

3. **Getting to know students as individuals (at least a bit):** Through TQs, the teacher can begin to know the personalities and interests of many of their students, and learn about them in ways that would not otherwise be possible in a large class, such as 100 or more. This is especially important for quiet students who rarely or never speak up in class.

4. **Acknowledging students’ contributions:** When students see their TQs projected in class, they receive a genuine reward that has nothing to do with grades (especially if the teacher acknowledges their comment with eye contact). Students sit up and start elbowing neighbors, whispering, “*That’s my TQ!*” This acknowledgement seems to resonate deeply with students.

5. **Engaging students:** Students report that TQs spur them to read more frequently and more deeply, which helps them engage with the class.

**TQs create a safe place for students to learn – and feel respected**

6. **Increasing communication between teacher and student:** TQs become a regular channel of communication, and because they are ungraded, TQs allow students to propose new and risky ideas – without any loss of face or threat to their grade. They also enable students to speak their minds in ways they would not risk on an exam or in a paper. They can – and do – occasionally rant and rave, without fearing for their grade.

7. **Getting permission to say “I Do Not Know:”** TQs allow students to say that they do not understand certain topics and to ask for help – and with the TQs projected in class, they see that others also had trouble with the difficult issues, which is deeply reassuring.

8. **Respecting students:** Students feel that the teacher is genuinely interested in their thoughts and questions. With the expectation of a good faith effort (and ungraded TQs), students feel treated like adults and part of a conversation, rather than having work demanded from them.

**Learning to learn/Metacognition**

9. **Learning and improving crucial skills:** The TQ process asks students not only to read the material but to wrestle with it. The ability to hold an internal conversation with an author is essential for being a thoughtful, effective reader.
10. **Improving their question-asking**: Students get a great deal of practice in asking questions with TQs – and their questions typically improve significantly over during the semester.

11. **Directing their own learning**: The students learn to better recognize what they do and do not understand – and they recognize and appreciate that they are helping to shape the direction of the course through their TQs.

After reading the students’ TQs, I walk into class knowing a lot more about what the class as a whole thinks and what individual students think. It makes a huge difference in a course.

### Notes on how to use TQs

Several faculty members across Brandeis University have begun using TQs in subjects such as advanced Philosophy, non-majors Astronomy, Environmental Studies, and graduate courses in Biology, Business, and Social Policy. While each professor uses TQs differently, here are several guidelines my colleagues and I find useful.

#### Recommendations of how to use TQs

- Typically 4-5 especially fruitful student comments get projected onscreen as discussion-starters during each class session. These may propose intriguing directions for discussion or raise conceptual problems or confusions that several students encountered; also, two opposing views shown together are great for launching a discussion. Student comments get projected anonymously, although the teacher knows who submits each response.
- TQs are **not graded** on quality; if a student submits a certain number of thoughtful, good faith effort TQs during the semester, she gets full credit for 8-10% of her final grade. Many students choose to submit more TQs than the requirement.
- Encourage students to submit both questions and thoughts; their questions frequently prove especially valuable.
- Students submit their TQs via a Google form or other online system. Whatever form the submissions take, it is really helpful to get all of the students’ TQs for a given class session automatically loaded into a single downloadable spreadsheet.²
- In medium and large classes (40+ students) students write a TQ roughly every other class (they submit 10 TQs for the semester in courses that meet twice per week). This keeps the volume manageable for both teacher and student.
- Students submit their TQs several hours to a day or more in advance, to give the teacher time to read and make use of their ideas. In a class of about 30-40, you might set the

---

² I will create a set of instructions for creating a Google form. Note that TQs are really not about the technology; one could instead ask students to submit their TQs on paper the day before class – although the electronic version is much simpler in practice.
deadline the night before class; in classes of 80 or more, the deadline might be 36 hours before class.

- For classes that meet twice a week, half of the students submit for the early day (e.g., the “Tuesday” group) and the other half for the later day (the “Thursday” group). If a student misses a due date, she can just submit on the next date (i.e., not her regular turn).
- In really large classes (say 150+), you may want to read just a sample of the TQs rather than all of them – but this typically gives a good sense of what issues are present.
- A TA can review the TQs before the teacher sees them, highlighting common confusions and interests, plus especially insightful comments (this helps with quick turnaround!).
- Late in the semester you may give students the option of sharing their TQs with the rest of the class; students often start responding to others’ comments in their own TQs.
- You need not give individual written feedback on TQs, although if one is especially intriguing (or worrying), you can reach out to the student.
- When discussing a very sensitive topic, students may submit their work completely anonymously, so that they can speak their mind without censoring their comments.

Different types of TQs

- **General purpose open-ended questions**: These allow the student to examine the reading with an open mind. You might ask, *What did you find most confusing or challenging in the reading?* and *What did you find most interesting?* These yield surprisingly rich responses, as students soon grow comfortable with these questions and use them as starting points for all kinds of issues. These are my most frequently used questions.
- **Open-ended questions tailored to specific issues in the reading**: These can be quite powerful, and many professors gravitate toward using these initially. However, such questions may constrain students’ thinking and focus them on just one or a few topics. Here are examples from my Animal Behavior class:
  - *What special methods did the authors use to study group decision-making in honeybees?*
  - *Which aspects of the study designs seemed most elegant to you?*
  - *Please write a paragraph or two describing an example of the Prisoner’s Dilemma that you have observed over the past few weeks. You should write about something going on in real life where you can see the outlines of the game (e.g., interactions between two people, or a person and an animal).*
- **Multiple choice questions**: These are easy for the professor to apprehend quickly and, if crafted well, can be effective at uncovering students’ misconceptions. That said, they do not create most of the relationship-building benefits of TQs, and I rarely use them.
Sample TQ

Here is a TQ on “what was confusing in the readings” from a student in her first semester of college in an upper-level Ecology class. Note how she is not merely “doing the reading” – she asks numerous questions and tries out possible responses throughout her TQ.

On p.191, there is a quick example of stable equilibrium without oscillation showing a predator whose density decreases as its prey’s density increases. What are possible causes of this? Does equilibrium suit the environment’s available resources, and a large predator population is selected against?
Why don’t predators have hump-shaped isoclines too? The orange/yellow diagram on p.193 (Fig. 11.14b). There must be a point where, even if there is enough prey to go around, there are too many predators (like the book said, territorial behavior and breeding spaces, etc., are limiting factors).
What might explain the hypotheses that generalist predators tend to cause stability and specialists tend to cause instability? Is it about more/less influence over one specific species’ population?

Sample anonymous comments from students on TQs

- The process of filling out the [TQs] and then discussing them in class was SO valuable to both my learning and class experience. It was a great way to see how people really felt about the readings and the topics we were learning about, and to know that my classmates were really thinking about the material encouraged me to push myself to think about the course in other ways than I previously had.

- The class felt more like a discussion section for a big lecture than a 72 person class! I felt like students were having conversations with one another and with the professor through the use of [TQs].

- I don’t think I’ve ever kept up with class readings as much as I did with TQ’s because you have to read at least a little of the chapter to even BS those.

- I really enjoyed being able to hear my peers’ questions about the readings through the TQs. It helped me think of new ways to approach readings and how to ask questions. Then, having these questions incorporated into the class lecture answered the questions I may have personally held, but felt too embarrassed to ask myself.

- I’ve really enjoyed doing TQs, even though I miss some now and then I think overall they have helped me engage with my reading more and encouraged me to think more critically inside class and outside class.

I frequently feel humbled by the quality and honesty of my students’ thoughts in their TQs. At times I find myself thinking that I cannot possibly do justice to all the ideas they share with me – but TQs clearly help my students (and me) learn much more. Please feel free to tell me about your experiences if you try this method.
Afterword: On TQs
By Hannah King, a former Brandeis Undergraduate (used with permission)

The benefit of using TQs in the classroom is immense. Using TQs last semester in my Ecology course opened my eyes to what is so often lacking in other classes: namely, a dialogue inclusive of all its students.

Because I’m naturally quite shy, throughout my undergraduate career I’ve struggled to participate and speak up in class, and so even in those classes whose subject matter I most loved and understood, my participation grade would be lacking and my thoughts left unsaid. But with TQs, my input is a part of the discussion regardless of whether I work up the nerve enough to speak in class that day, and because of this, I am inevitably much more engaged. I appreciate so much the way in which TQs make possible a classroom structured around every student’s input—his or her understanding or lack thereof, his or her interests and inquiries—because it means that what is being taught is reflective of it. In this way I believe I benefitted immensely from TQs last semester because—along with all those of my classmates—my thoughts were heard.

It seems to me that TQs also foster relationships between professors and students that might otherwise never get the chance to develop. Because TQs make explicit and tangible what confuses students as well as what topics most interest them, every student—and not just those who can regularly attend office hours or often speak in class—is able to communicate personally with the professor. It’s a win-win situation. For example, last semester, even though I wasn’t able to attend office hours and was, mostly, too shy to speak in class, my professor knew that I was very engaged with the material as well as with what portions of it I most needed help. Knowing this as a student is very reassuring and encouraging.

Further, that I had to submit a homework TQ regularly helped to keep me engaged, as well. Thus TQs foster a student’s engagement because there is less of a gap between student and professor, and therefore student and subject. Perhaps most importantly, the process of writing TQs helped me become more self-aware of myself as a student. I realized how often I tend to slack-off in other classes because I know I can catch up before the next exam or paper, which, even if doesn’t affect my grade, inevitably lessens my day-to-day participation and engagement. I also became more self-aware of what materials and concepts I understood and which I didn’t. So yes, TQs aid the professor in knowing where a student’s at, but, perhaps even more vitally, TQs show the student him or herself where he or she is at, which in turn encourages a sense of responsibility for one’s education. In this way, in a daily sense I was faced with my understanding or lack thereof and was asked to articulate it. Thus this self-awareness comes in part because of the way in which TQs help students formulate questions. Last semester, I learned what an effective question is, and how best to ask it—and therefore I learned also what questions I need to ask of the material and myself in order to learn most effectively and efficiently. It seems more to me than ever now that questions have to precede their answers—that to understand a complex topic, it is vital to first be able to acknowledge and articulate the questions that precede it and are inherent to it.

In conclusion, it seems to me that TQs open the lid on learning in the sense that they greatly lessen the obstacles standing between learning and understanding. Because of this, it is my hope that more teachers and professors will utilize TQs in the future.
A brief tutorial on how to create Google forms

The next few pages show how to initially create a Google form from within a Brandeis Google application (e.g., email or calendar). Look for the red arrows, which show you what to click on each page.

Following that, is a clear description from Laptop magazine on the details of how to create your form.

Enjoy!
Find the 3 x 3 array of boxes (Google apps) and click it.
Click the **Drive** symbol.
Click the New button.

Then click More.

Then click Google forms.
The next page begins detailed instructions from Laptop magazine.
How to Create a Survey Using Google Forms

By Henry T. Casey | April 8, 2016 08:33 pm

Google Forms gives users an easy way to create a survey that contains as many questions as they need to ask, in a variety styles. From planning an event to getting anonymous answers to tough questions, there are a ton of useful things you can do with Google Forms.
From multiple choice questions to a linear scale, Google Forms gives you a handful of options for asking questions. You can also decorate your survey to fit its theme and opt to make certain questions mandatory.

While Google Forms surveys are typically sent and answered via email, you can also have people fill in answers on a web page, embed the questionnaire on a site and share it via social media. Here are our step-by-step instructions for how to create a survey with Google Forms.

1. Navigate to https://docs.google.com/forms/ and click Blank. Google Forms has a number of pre-made templates to choose from, and you can view them all by clicking More.
2. **Name your survey.** You can also add a description. If you want to name the Google Form for your own reference, click Untitled form in the top left corner to edit.

3. **Tap on Untitled Question and write a question.**

4. **Click Multiple choice.**
5. **Select an option for how the question will be answered.** For all options except for Short answer, Paragraph, Date and Time, you'll have to write in options for answers.

- **Short answer and Paragraph** give recipients a blank field to fill in.
- **Multiple choice** lets users select one answer from a series of options, while **Checkboxes** allows users to select multiple answers.
- **Dropdown** gives recipients a field to click that reveals a menu they will select an answer from.
- **Linear scale** allows users to answer by selecting a rating from a range such as 1 to 5.
- **Date and Time** allow recipients to select a date or time.
6. **Click the side menu icons to add to your survey.**

- **The Plus button** adds another question.
- **The Tt button** lets you add a section title and description.
- **The Photo and Video buttons** allow you to illustrate your survey.
- **The two rectangles icon** allows you to break your survey up by sections.
7. **Click the Required switch to make a question mandatory.** Click the duplicate or trash icons to clone or erase the question.

8. **Repeat steps 3 through 7 as necessary.**

9. **Click the Palette icon** to change your survey's color or add a photo to the header.

10. **Click the Eye icon** to preview your survey.

11. **Click the Gear icon** to access survey settings.
12. Click Send.

13. **Enter recipients.** Check off "Include form in email" if you want your respondents to answer questions from their email client. Not all clients support this. Outlook, for example, will make you click a button to open the survey in a browser.
14. **Fill in a subject line and message.** People typically need a little coaxing to answer a survey.

   **Subject**
   
   Dinner Planning Survey!

   **Message**
   
   Hey there, I’m thinking of hosting a dinner party after work, but I’d like to know what you’d want to eat!

15. **Click Send.** If you want to share the survey via a hyperlink, it can be found by clicking the link icon. To get code for embedding the survey on a website click the <> icon. You can also share the survey via social media with the Google+, Facebook and Twitter buttons.
Now that your survey is sent, your audience will have to answer. To see what your recipients said, click on Responses.
How to Create a Survey Using Google Forms

How to Add a Word to Your Google Docs Dictionary
How to Track Changes in Google Docs
How to Convert Word Docs to Google Docs

AUTHOR BIO

Henry T. Casey,
After graduating from Bard College a B.A. in Literature, Henry T. Casey worked in publishing and product development at Rizzoli and The Metropolitan Museum of Art,