

## **One Minute Paper:**

**INTRODUCTION:** A “one-minute paper” may be defined as a very short, in-class writing activity (taking one-minute or less to complete) in response to an instructor-posed question, which prompts students to reflect on the day’s lesson and provides the instructor with useful feedback. This strategy was originally developed by a Physics professor at the University of California, Berkeley (cited in Davis, Wood, & Wilson, 1983), then popularized by Cross and Angelo (1988) as one of a wide variety of quick “classroom assessment techniques” (CATs)—designed to provide instructors with anonymous feedback on what students are learning in class. For example, students write a one-minute paper in response to such questions as, “What was the most important concept you learned in class today? Or, “What was the ‘muddiest’ or most confusing concept covered in today’s class?”

While the original purpose of the one-minute paper was to assess student learning at the end of a day’s lesson, I have adapted the one-minute paper, shortened its name to “minute paper,” and used it for other purposes. In particular, I use minute papers less as a content-centered, instructional feedback strategy, and more as a student-centered reflection strategy designed to help students discover their own meaning in relation to concepts covered in class, and to build instructor-student rapport. Furthermore, I do not have students write minute papers anonymously and I do not employ them exclusively at the end of class; I give them at other times during the class period as well.

The following sections of this article are devoted to a description of (a) the types of questions I ask as prompts for minute papers, (b) the times during a class period when I use minute papers, and (c) the advantages I have found to be associated with minute papers.

## **QUESTIONS USED AS MINUTE-PAPER PROMPTS**

Over the years, I have used a wide range of questions as prompts for minute papers. Below, I have listed some of my most frequently used minute-paper questions and attempted to categorize them in terms of what cognitive or affective dimension of the student’s learning experience they are designed to prompt.

### **Interest:**

\*Without looking at your notes, what was most memorable or stands out in your mind about today’s class?

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- \*What was the most surprising and/or unexpected idea expressed in today's discussion?
- \*Looking back at your notes, what would you say was the most stimulating idea discussed in today's class?
- \*For you, what interesting questions remain unanswered about today's topic?

**Relevance:**

- \*In your opinion, what was the most useful idea discussed in today's class?
- \*During today's class, what idea(s) struck you as things you could or should put into practice?
- \*What example or illustration cited in today's class could you relate to the most?

**Attitudes/Opinions:**

- \*Would you agree or disagree with this statement: . . .? Why?
- \*What was the most persuasive or convincing argument (or counterargument) that you heard expressed in today's discussion?
- \*Was there a position taken in today's class that you strongly disagreed with, or found to be disturbing and unsettling?
- \*What idea expressed in today's class strongly affected or influenced your personal opinions, viewpoints, or values?

**Analysis:**

- \*What did you perceive to be the major purpose or objective of today's class?
- \*What do you think was the most important point or central concept communicated during today's presentation?

**Conceptual Connections:**

- \*What relationship did you see between today's topic and other topics previously covered in this course?
- \*What was discussed in class today that seemed to connect with what you are learning or have learned in other course(s)?

More recently, I have attempted to define and classify the major forms of higher-level (higher-order) thinking processes that we intend to promote in higher education, and tried to design a set of minute-paper questions to prompt each of these forms of thinking. The higher-level

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thinking categories and their respective question prompts are contained in the appendix that appears at the end of this article. I am now attempting to use this classification system to help me become more intentional and systematic in my selection of thought-provoking questions for minute papers.

### **TIMES DURING THE CLASS PERIOD WHEN MINUTE PAPERS ARE PROMPTED**

There are three times or junctures during the class period when I use minute papers: (a) at the end of class, (b) at the start of class, and (c) in the middle of class.

Most frequently, I use minute papers at the END of a class to have students reflect back and think more deeply about the most important concept discussed in class that day. This provides a meaningful sense of “closure” to the class session and focuses student attention on the major point or issue addressed, thereby increasing the likelihood that they will “consolidate” it into long-term memory. A number of research studies indicate that, if students engage in a short review of material presented to them at the end of a class period, they retain almost twice as much of its factual and conceptual content when tested for it at a later point in time (e.g., two months later) (Menges, 1988).

I also use minute papers at the START of class to activate (“turn on”) ideas and feelings students may already have about the material to be covered in the upcoming class. For example, if the topic is “Stress,” I may ask them: “When you hear the word ‘stress,’ what immediately comes to your mind?” Or, “In 3-4 sentences, tell me what you know about ‘stress’?” This type of anticipatory question serves to activate students’ prior knowledge and beliefs about the topic to be covered, prior to coverage of it, which readies the brain to make connections between the ideas they are about to encounter and the ideas they have already stored in their brain. As an instructor, it also provides me with early feedback about what prior knowledge or misconceptions students have about the topic, so I can attempt to build on their knowledge or dismantle their misconceptions.

Periodically, I will also ask for a minute paper DURING the class period, especially right after discussion of a key point. This serves to trigger student reflection on that point before another point is introduced, and it also serves to interrupt or “punctuate” class with an exercise that has students act on and do something in response to the ideas they are hearing. I believe that this mid-class interruption of discourse with an action task keeps students more alert and more mentally active during class, and intercepts the natural attention “drift” that takes place after they have been receiving (hearing) information for an extended period of time. Research

indicates that student attention and comprehension are strengthened by short pauses that encourage mental activity in the middle of class presentations—for example “Tear out half a sheet of paper and write your reaction to the presentation thus far” (Bligh, 2000).

## **ADVANTAGES OF THE MINUTE PAPER**

I have found that minute papers have multiple advantages, some of which I anticipated in advance and others that I discovered serendipitously while in the process of implementing them. These anticipated and unanticipated advantages are listed below.

1. Minute papers can provide a “conceptual bridge” between successive class periods. For instance, at the beginning of class, a quick review of student responses to a minute paper answered at the end of a previous class can provide an effective segue between successive class sessions.
2. Minute papers can improve the quality of class discussion by having students write briefly about a concept or issue before they begin discussing it. I have found that this gives the more reflective students a chance to gather their thoughts prior to verbalizing them, and benefits students who are more fearful of public speaking by giving them a script to fall back on (or build on) and use as a support structure for communicating their ideas orally.
3. Minute papers are an effective way of involving all students in class simultaneously. It ensures equal participation of each and every class member, including anyone who may be too shy or fearful to participate orally. It sends a message of high expectations—namely, each and every student is expected to participate and has something important to contribute—no matter what their cultural background or prior level of academic preparedness. To further ensure equal opportunity for participation, I sometimes ask for a minute paper in response to the following question: “During our class (or small-group) discussion today, what thoughts came to your mind that you did not get the opportunity to share verbally?”
4. Minute papers can be used to stimulate and facilitate discussion of diversity. Sometimes, I’ll look for thematic or distinguishing patterns in the minute-paper responses of students of different age, gender, ethnic background, or national citizenship. I’ll report these patterns to the whole class at the start of the next session, and ask the class how they might interpret or explain the differences (and similarities) in the responses of various groups.

5. Minute papers can promote class attendance and attentiveness. I award points for completed minute papers that count toward students' final course grade, and I do not allow students to make-up missed minute papers. I do allow students two "free" or "forgiven" minute papers for the term, so if they are absent on two days when minute papers are assigned, they will not lose those points. I adopt this forgiving policy simply because students are people, and people can get sick (physically and mentally) and have responsibilities (personal and familial) that sometimes compete with their scholastic commitments. Students who are in class for all minute papers are allowed to "bank" extra credit for the two "free" minute papers that they were entitled to, but did not use.

I have found that students are more likely to come to class if they know they are going to gain points, even if those points are not awarded every single class period. I do not assign minute papers in every class period; so, in effect, they function as a type of "pop quiz" that can be given in any class at any time. For readers familiar with Skinnerian principles of behavioral reinforcement, periodically assigning minute papers in this manner serves to reward students on a "variable schedule of reinforcement," which is known to produce high response rates—in this case, high attendance rates.

Furthermore, students are rewarded for actually doing something in class, rather than merely "showing up." Thus, students are rewarded for their involvement, and since attendance is a precondition or prerequisite for this involvement, they are also indirectly rewarded for coming to class. In contrast, most class-attendance policies do not positively reinforce student attendance; instead, they use negative reinforcement by penalizing students for missing class—i.e., points are taken away (subtracted).

In addition to promoting student attendance and involvement, minute papers can also be used to increase the likelihood that students will remain in class for the full duration of the class period. One faculty colleague of mine began using minute papers at the end of his biology labs, and this practice had an immediate impact on reducing the number of students who left before his 3-hour laboratory period ended. Another colleague has used minute papers at the very start of class to encourage punctuality and discourage tardiness. If the student is not in class at the time the question is asked, they cannot answer it and gain the points associated with it.

6. Minute papers are a more efficient way to promote writing-across-the curriculum than the traditional term paper. A minute paper is a shorter, more focused, writing-to-learn assignment that promotes greater reflection and deeper thinking in the classroom than the writing which takes place when students engage in rote recording of lecture notes.

Students receive full credit (usually five points) for the minute paper, no matter what they write, because the question does not ask for correct or incorrect answers; instead, it solicits their personal perceptions and experiences. The only thing I insist on for students to receive full credit is that they write complete sentences. Before their first minute paper, I point out that one purpose of this exercise is to develop their writing skills, because writing and thinking are strongly interrelated. When I read their papers, I correct spelling and grammatical errors, but do not subtract points for such mistakes. I will, however, subtract points if students do not attempt to use complete sentences. I do not subtract points on their first “offense;” instead, I point out that what they should do next time. A “repeat offender” is reminded one more time about not using complete sentences, and is warned that full credit will not be awarded for a third offense. This practice has effectively encouraged students to put effort into their in-class writing, without causing them to feel unduly threatened or unfairly penalized in the process.

7. Minute papers can function as an ongoing learning log or learning journal for the course. I have students complete successive minute papers on the same piece(s) of paper, so by the end of the term, they have a consecutive series of entries that approximates a learning log or journal. This also allows students to conveniently view their previous responses, along with my responses to them, which can sometimes help students see connections across course concepts and help them prepare for exams.

8. Minute papers can be used to personally validate students. It is not uncommon to find an example or experience cited in a student’s minute paper that powerfully illustrates a point I intend to make in class. I’ll jot down that student’s response on a post-it sticker and quote the student when I get to that point in class. (Naturally, I select quotes that are poignant and powerful, but not personal.). Students are often touched by this practice, because it validates their contribution, and more importantly, validates them as individuals. Sometimes, when I get a particularly eloquent or insightful response from a student, I include the student’s quote and name on an overhead transparency and project it at the start of class. This has turned out to be a particularly potent way to validate students; I’ve noticed that they often seem to be visibly flattered by being publicly recognized, and seeing their name and words “published” in print and showcased on screen.

9. Minute papers can help instructors identify course concepts that are most important or significant by encouraging them to step back and ask, “What is the most important idea or message that I want students to think about before they leave class today?” Minute papers have encouraged me to think more carefully about how to prioritize course content and to identify “core” concepts that I want students to examine deeply.

10. Minute papers can help the instructor learn student names if students are asked to come up to the front of the room individually to turn in their minute papers at the end of class session, and if students are called by name to come up individually and retrieve their papers at the start of the next class session. I use minute papers more frequently at the beginning of the term, not only to get students in the habit of regularly coming to class, but also to help me learn their names more rapidly. At the start of the term, I intentionally assign minute papers at the very end of class and allow students to leave when they finish writing. Individual students invariably finish their papers at different rates, so they do not all exit the room at the same time. When each student comes up to hand-in his or her minute paper, it give me the opportunity to view each student's face and name (on the minute paper) simultaneously, which expedites my learning of student names. Moreover, at the start of the following class session, I call students by name to come up individually to pick up their minute papers from me, which further strengthens my memory of their names faces and faces.

11. Minute papers serve to build instructor-student rapport. When students get their minute papers back, they see that I have responded personally to them. I always address the student by name in my written response, and I sign my name at the end of my comments, so that the communication approximates or simulates that of a personal letter. This enables me to build instructor-student rapport, particularly because the minute paper solicits student responses that involve students' personal perceptions or experiences. Such responses are conducive to my providing a personal response in return, rather than responding with evaluative comments on the validity of their answer or why they received a particular grade. For instance, recently I was discussing the concept of defense mechanisms, and I gave a minute paper at the end of class that asked students if they had ever witnessed or experienced any of the defense mechanisms discussed in class today. Many of the responses involved sharing their personal experiences or those of close family members, and I responded by expressing my appreciation of their willingness to share this information with me and, in a number of cases, I wrote back and shared a similar experience of my own. In some cases, I write back with a short question about their shared experience, asking them to elaborate a bit on it when they submit their next minute paper. I have found that minute papers allow me to communicate with students on a more personal, humanistic basis, which improves the warmth and depth of the learning experience for both parties. (On several occasions over the years, students have used the minute paper to convey a "call for help," which enabled me to connect them with a relevant support service or support person.)

## **CONCLUSION**

Use of minute papers does not have to be a time-consuming or labor-intensive practice. For instance, they do not have to be used in every class session to be effective. I have been able to reap the benefits associated with minute papers by using them in about 30-40% of the class meetings for a given course. Also, your written remarks in response to students' minute papers do not have to be extensive. On average, I spend about one minute responding to each student, and if I am pressed for time, I provide short responses to half the class (e.g., students with last names from A-M) and provide more extensive responses to the other half of class (last names from N-Z). On the next minute paper, I reverse the process and provide more extensive responses to the half of students who received shorter responses on the previous minute paper.

In short, I have found the minute paper to be a very efficient and versatile instructional strategy, whose multiple advantages traverse cognitive, affective, and social dimensions of the teaching-learning process.

## REFERENCES

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