How to Assure Student Preparation and Structure Student-Student Interaction

David W. Concepción

Ball State University, USA

Introduction

In a controlled study, Uri Treisman taught his students to check each others' work as they completed out-of-class assignments in groups.[1] He found that the D to F performance of the students in

[1] Treisman, Uri, 'Studying Students Studying Calculus: A Look At The Lives Of Minority Mathematics Students In College,' *The College Mathematics Journal*, 23/5, 1992, pp.362-372; and Fullilove, R. E. & Treisman, P. U., 'Mathematics Achievement Among African American Undergraduates of the University of California Berkeley: An Evaluation of the Mathematics Workshop Program,' *Journal of Negro Education*, 59/3, 1990, pp.463-478.

these groups fell from 60% to 4%.[2] Importantly, Treisman's course content was not altered, nor did the grading standards change. This study shows that student performance can improve remarkably when teachers structure student interactions so that students engage course material in effective ways.[3] Craig E. Nelson has grouped Treisman's

[2] Treisman's results support the broader finding that performance of discipline specific academic tasks that involve detailed 'How To' instruction inculcate transferable critical thinking skills. See Halpern, D. F., 'Teaching Critical Thinking For Transfer Across Domains: Dispositions, Skills, Structure Training, and Metacognitive Monitoring,' *American Psychologist*, 53, pp.449-455; Halpern, D. F., 'Teaching For Critical Thinking: Helping College Students Develop The Skills And Dispositions Of A Critical Thinker,' *New Directions For Teaching And Learning*, 80, pp.69-74; Williams, Robert L. & Stockdale, Susan L., 'High-Performing Students with Low Critical Thinking Skills,' *JGE: The Journal of General Education*, 52/2, 2003, pp.200-226.

[3] Although less dramatic than Treisman's results, initial data suggest that students in my sections of Introduction to Philosophy classes, where adaptations of Treisman's and Nelson's insights are used, outperform their peers with regard to grades and retention in subsequent semesters.

Fall 2003

Section (No of students)	Concepción's Phil. 100 (76)	Other Phil. 100 (518)	Difference
Academic Outcome (Mean GPA)			
Semester of the Course	2.60	2.66	-.06
1 Semester Out	2.87 (Improvement +.27)	2.67 (Improvement +.01)	+.20
2 Semesters Out	2.89	2.72	+.17
Retention			
Completed 1 Subsequent Semester	95%	89%	+6%
Completed 2 Subsequent Semesters	84%	76%	+ 8%

Without further longitudinal data and controls it is impossible to conclude that my students develop critical thinking skills faster than their peers, but the beginnings of this longitudinal data is suggestive of a trend:

Spring 2004

Section (No of students)	Concepción's Phil. 100 (103)	Other Phil. 100 (381)	Difference
Academic Outcome (Mean GPA)			
Semester of the Course	2.69	2.66	+.03
1 Semester Out	2.81 (Improvement .12)	2.70 (Improvement .04)	+.11
Retention			

insights into three related areas that demand attention from teachers: (1) assure preparation, (2) structure student-student interaction, and (3) provide 'How To' guides.[4] I have addressed 'How To' guides elsewhere and a primer for preparing such guides may be found in the appendix.[5] In this paper, I argue that assignments that structure students' interactions (with the text and each other) with detailed procedures sustain student preparation by minimising miscommunication and conferring intrinsic rewards. I present a Read-Write-Discuss cycle as one example of this type of assignment.

Two reasons why students do not prepare properly

Teachers have relatively little control over some causes of student under-preparedness. Many students do not have the time to study as much as we, or they, might like because they must work for wages and few teachers have the financial wherewithal to grant scholarships. However, there are some causes of student under-preparedness over which teachers have significant influence. If we can understand the causes of student under-preparedness over which we have control, then we can address them and increase the quality and quantity of

Completed 1 Subsequent Semester	86%	80%	+6%

[4] Nelson, Craig E., 'On the Persistence of Unicorns: The Tradeoff Between Content and Critical Thinking Revisited,' in Pescosolido, B. A. & Aminzade, R., *The Social Worlds of Higher Education: Handbook for Teaching in a New Century* (Pine Forge Press, 1999), pp.168-184; Nelson, Craig E., 'Tools For Tampering With Teaching's Taboos,' in Campbell, Wm. E. & Smith, Karl A., *New Paradigms for College Teaching* (Interaction Book Company, 1997), pp.51-71; Nelson, Craig E., 'Student Diversity Requires Different Approaches To College Teaching, Even in Math and Science,' *American Behavioral Scientist*, 40/2, Nov./Dec. 1996, pp.165-175; Nelson, Craig E., 'Critical Thinking and Collaborative Learning,' in Bosworth, K. & Hamilton, S. J., *Collaborative learning: Underlying Processes and Effective Techniques: New Directions for Teaching and Learning, No. 59* (Jossey-Bass, 1994), pp.45-58.
[5] Concepción, David W., 'Reading Philosophy With Background Knowledge and Metacognition,' *Teaching Philosophy*, 27/4, Dec. 2004, pp.351-368.

student preparedness. In this section, I identify two related causes of student under-preparedness worthy of the attention of teachers; student misunderstanding of what is expected and a concomitant disconnection between student effort and grade-related performance.

Nelson observes that many students come to university with years of experience that create and sustain three beliefs: teachers value a regurgitation of facts; extensive studying is for nerds or people in need of remediation; and working together is cheating.[6] The work assigned by many philosophy instructors, particularly those who see skill development as a primary goal, may frustrate students with the beliefs Nelson describes. Unlike what some students expect, we are primarily concerned with quality of oral and written analysis. We view the mastery of material as a necessary prerequisite for superior argumentation, not an end in itself to be tested with multiple-choice examinations. Even what we mean by studying texts may differ from what students anticipate. We want students to take notes while reading, summarise content in their own words, and evaluate passages toward the end of deploying their knowledge of the text in argumentation. Further, insofar as reflecting upon one's values and beliefs is assisted by dialogical communication, we are also likely to encourage students to work together and argue with each other. In sum, many philosophy professors defy student expectations by requiring students to work more collaboratively and toward more complicated end products than many students appreciate. The result of this disparity between our goals for our students and their expectations is that even some otherwise hard-working students come to class under-prepared because what they have been trained to count as preparedness is not the preparedness that we want.

Students may also misinterpret our descriptions of quality work. For example, when philosophers ask students to support their conclusion with an argument, we often want students to rebut some small number of criticisms of an initially plausible, textually informed position. But there are many ways to support a conclusion. Some students believe that they have supported a conclusion when they have provided an autobiography that traces the origins of their belief. Other students believe that they have supported a conclusion when they identify a small number of facts that establish the provisional credence

---

[6] Nelson, Craig E., 'Student Diversity Requires Different Approaches To College Teaching, Even in Math and Science,' op. cit..

of the idea. Students with these understandings of 'support a conclusion' may be confused and disappointed when they receive poor marks. The problem in such cases is not that such students did not support their argument. Rather, the difficulty is that they did not support it in the manner required by their philosophy professor; a manner that requires the development and rebutting of relevant criticisms.

Similarly, many students are liable to misunderstand the modelling we do in class. Kerry Walters found that some of his students concluded from his Socratic teaching method that philosophy is a meaningless game.[7] Students misinterpreted the questioning Walters pursued as a cover up for the fact that there are no answers or data in philosophy. If there are no answers, some students conclude, then the teacher must just be playing a trivial philosophy game. Competitive students may want to learn how to win this game. But ultimately, even competitive students may mistakenly conclude that philosophy is unimportant.

A related lesson many students learn through bitter experience is that sometimes a significant increase in effort on their part may have little or no influence on the grades they receive. For students who gauge success, and often self-worth, in terms of grades, this disconnection can be especially stultifying. Most students must triage their time because they are extremely busy. Students will decide to devote their energies to tasks that are likely to garner the greatest rewards. Students give low priority to assignments when they perceive little connection between their effort and a desired grade. Such students will appear unmotivated to some teachers. However, the problem is not that these students have some sort of character flaw (e.g. laziness). Rather, the problem is that these students draw a reasonable but false conclusion based on their experience. They reason that if one instance of hard work does not get the desired result, then no instance of hard work is likely to get the desired result. Of course, the problem is not hard work, but that they were working on the wrong things or in the wrong way. The right conclusion for students to draw is that they should change how, or what, they work on. For many students, there is nothing in their experience to lead them to this conclusion.

---

[7] Walters, Kerry, 'On Bullshitting and Brainstorming,' *Teaching Philosophy*, 11, Dec. 1988, pp.301-313.

Although there are others, these two contributors to student under-preparedness suggest a common intervention. If teachers inadvertently support student under-preparedness by allowing students' misunderstandings of teachers' expectations to continue, and student effort drops off when teachers fail to show students how to work on the right things or in the right way, teachers should be excruciatingly explicit regarding our expectations and show students how to work in ways that are maximally beneficial. Especially for assignments early in a term, we should provide very precise statements of expectations and step-by-step instructions that focus student energies on the right things. By helping students adapt to, and appreciate the merits of, what are new demands to them, we help maintain a tighter connection between effort and grade-related performance and thereby encourage sustained effort. In short, to support preparation we must structure student activities.

Describing, modelling and structuring

To avoid a possible misunderstanding regarding what I am advocating, it is important to distinguish between describing successful end products, modelling behaviour, and encouraging preparation by structuring students' activities. We may describe a successful paper as organised, well-argued, textually informed, etc. We model behaviour when we provide written examples or enact in class what we want students to do. We structure student activities when we provide procedures for them to follow. Telling students to support an argument is distinct from supporting an argument before them, and both are distinct from showing students how to support an argument. Not all professors who describe successful end products and model desirable behaviour structure students' activities. I am arguing for the importance of structuring student practice.

Consider an analogy from music. Students interested in learning to play the piano are unlikely to return to a teacher who spends every 'lesson' playing a piece of music for the student. It is also unlikely that a student will remain motivated if, instead of letting the would-be pianist play, the teacher lectures about the features of a Schubert sonata and the masterful playing of a long dead impresario.

A potential pianist is likely to be particularly discouraged by a teacher who, without providing any guidance, tells the student to play like a near master and then gives the student poor marks for the attempt. Alternatively, students will enthusiastically return to, and learn from, piano teachers who show the student how to find the best fingering for a particularly complex musical phrase or how to strike the keys in just the right way to evoke certain emotions. Although necessary, describing and modelling only go so far. To give students the best chance for success, we need to structure student practice and allow students to 'play' for themselves to support a motivating connection between effort and increasingly masterful performance.

'Spoon-feeding' and intrinsic rewards

In teacher development seminars I have led, colleagues have objected that too much structuring of student practice amounts to spoon-feeding, which is assumed to be a bad thing. When 'spoon-feeding' means 'give students only easy, small tasks that require little effort' or 'do much of the work for students' it surely is problematic. However, when 'spoon-feeding' means 'show students how to do new tasks that are so demanding that they are likely to be unsuccessful without guidance' it is meritorious. If structuring student practice is 'spoon-feeding' I affirm the propriety of some 'spoon-feeding.' If 'spoon-feeding' is always problematic, I deny that structuring student practice is always 'spoon-feeding.' If we want students to perform very specific skills we should show them precisely how to perform them and allow for repeated practice.

Further, we encourage continued effort when we allow our students to feel the value of their appropriately focused studying. Exhortation only goes so far. Traditional sticks and carrots such as reading quizzes and credit for short writing assignments connect outside-of-class work to in-class events. But quizzes and credit appeal primarily to the pragmatic concerns of students. When teachers connect out-of-class work to intrinsically rewarding in-class activities we contribute to a deeper motivation. When students express their ideas regarding a reading, evaluate each others ideas, and become more complex thinkers by arguing with each other, they live the

relevance of their work and they tend to find classroom experiences enjoyable and enriching. This suggests that teachers should strive to create circumstances where students will feel the relevance of, and the intrinsic rewards associated with, their out-of-class efforts. Making student out-of-class work the focus of in-class activities is one way to establish such a connection.

An example: a read-discuss-write cycle

I have argued thus far that students sustain the motivation to regularly prepare for class when (1) they are shown how to perform increasingly complex tasks, and thus do not experience a disconnection between effort and grade-related performance that is often associated with students acting on misplaced assumptions, (2) they are allowed to practice, rather than forced to listen to teachers describe the performances of others, and (3) they experience the intrinsic rewards of learning. In this section, I offer as an example a Read-Discuss-Write cycle that aims to achieve these three goals. Since the focus of this paper is preparation and the structuring of student interaction, I do not undertake a detailed discussion of the writing portion of this assignment cycle here. A primer for developing learning activities such as this Read-Discuss-Write cycle is provided in the appendix.

Early in a semester, I provide students with the following handout describing a three-step procedure for them to follow.

What to do individually before class

(1) Read the assigned text (See 'How to Read Philosophy'[8] in the course packet for helpful hints).
(2) Bring two copies (one to turn in at the beginning of class, one for you to keep) of a piece of paper containing the following:

---

[8] The handout is published as the appendix to Concepción, David W., 'Reading Philosophy With Background Knowledge and Metacognition,' op. cit..

(A) A factual question (e.g. What is the author's view on topic X?) you want answered, or think that others will need answered, before a critical discussion of questions that do not have straight-forward answers can take place.
(B) A question for a critical discussion inspired by the text.
(C) A one or two sentence (no longer!) quote that is related to the question you want to discuss.

What to do in a group in class

(1) Answer each other's factual questions. Ask the instructor for assistance if you get stuck, but do so only as a last resort.
(2) Identify one (select, combine, or write a new) discussion question that seems to get at an important theme in the text.
(3) Discuss that important question, beginning with 'complete turn taking'.[9]
(In 'complete turn taking' each person in the group says what they will about the issue without interruption. Other group members may want to take notes. When that person has said what s/he wants, s/he ends with an explicit 'I'm finished.' Once everyone has taken a 'complete' turn, continue the discussion as it naturally flows.)
(4) Develop a report of your group's activities for the class (see i-v).

(Note to students: Don't rush to report writing. Let your conversation run its course. Not every group must present to the class every time.)

(i) As a group, write an accurate, brief, and complete statement of the argument from the text that was the focus of your group discussion.
(ii)Describe the author's justification for his/her central thesis regarding that argument.
(iii)Develop and evaluate criticisms of the author's argument/justification.
(iv) Precisely identify the issues upon which members of your group disagree. Prepare a question for the class to answer that will aid in resolving that disagreement. Be prepared to refer to passages in the text that are likely to be relevant during this discussion.

---

[9] I borrow the idea of 'complete turn taking' from Nelson, Craig E., 'Tools For Tampering With Teaching's Taboos,' op. cit., pp.58-59.

(v) Report to the class (see a-d):

(a) Write, in *modus ponens* form, the author's argument on the board.

(b) Write, and explain orally, your reason(s) for thinking the author's argument is (un)persuasive.

(c) Lead the class in a discussion of the question you think needs further reflection to fully solve the issue.

(d) Every member of the group must talk during your presentation.

What to do individually after class

Write a one page, single-space, 12-point font reaction paper defending your view regarding the topic of your group discussion or presentation. (See 'How To' instructions regarding paper writing in the course packet.)

Variations

To accommodate the different abilities and backgrounds of students it is necessary to be flexible when using this cycle. In introductory classes, relatively few presentations (sometimes none at all) are actually given and even then only late in the semester. Many less experienced students struggle to answer factual questions regarding the text. Others find it difficult to generate plausible criticisms to views stated by classmates in complete turn taking. Some groups of students need a considerable amount of time to accurately reduce a central argument, or a group consensus, into *modes ponens* form. In short, with less experienced students few presentations are actually given because all of the available class time is devoted to practicing the skills needed to generate a presentation. In such cases, I solicit comments from individual students during class-wide discussion.

In some courses it is useful to have students include a potential quiz question on the sheet they turn in. Teachers can create quizzes from these submissions. To write a quiz question students must distinguish central from peripheral material. By comparing their

possible questions with others, students can obtain information regarding whether they are reading the text carefully enough to come up with a good question.

In junior-senior seminars, after one or two iterations in class, students may perform the 'in class' discussion and presentation preparation prior to class. This could be difficult in teaching and learning contexts where all students do not live within close and easy proximity to campus. However, when possible, moving this intensive preparation outside of class frees up class time so that almost every group can give a presentation every time we engage the cycle.

Conclusion

The Read-Discuss-Write assignment cycle described here structures learning activities, 'spoon-feeds' in the best sense of the term, and connects out-of-class activity to intrinsically rewarding in-class experiences to sustain student motivation. It is amenable to variation, reduces the likelihood that students will act on misplaced assumptions, and allows for repeated practice. Empirical evidence (see notes 1 through 3) suggests that this type of instructional cycle engenders transferable critical thinking skills.[10]

APPENDIX

A Primer for Developing Useful 'How To' Guides

Three questions need answering:
What have I assumed students know about how to do the discipline specific tasks I assign?
How do I perform these tasks?
How can I show students how to best approximate what I do?

---

[10] I am grateful to Stephen Schulman and Melinda Messineo for helpful comments that led to improvements in this paper. The errors that remain are, of course, my responsibility alone.

Exercise

(1) Write a list of the skills necessary for students to do well in your class (be as specific as possible). Keep in mind this is a skill or activity you want them to perform, not a content you want them to master.

(2) Focusing on one skill at a time, picture yourself performing the skill.

(3) In excruciating detail, describe what you are doing in a readable fashion that is otherwise analogous to the type of instructions you might find in a model airplane kit. NOTICE: You are not describing the features of a successful end product; you are describing a procedure or the activities involved in generating a successful end product.

(5) Mind the Gap: What did you not write down or explain in your instructions because you assumed 'everybody knows that'? Be on the lookout for things that are extremely familiar to you but that in truth should not be obvious to a first semester university student. Distinguish your background knowledge from your students' background knowledge. For example, many students do not know that a rich understanding of a text often requires one to reread the material several times. List heretofore unstated activities that a person should perform to do well on your assignments.

(6) Only when we are aware that we are not performing a skill particularly well will we ask for help or slow down to achieve greater success. Show students how to effectively monitor whether they are performing the skill well. Again, picture yourself performing the skill. How do you know when you are doing it well? In excruciating detail, write instructions for determining if you are performing the skill well in a readable fashion that is otherwise analogous to the type of instructions you might find in a model airplane kit.

A Primer For Connecting Transformational Goals To Learning Activities

(1) Identify three learning objectives or student transformations that are your highest priority in a given term/course.

(Think as broadly as possible here. You have human beings in your charge, how do you want to influence them? For example, making progress along Perry's matrix of cognitive and ethical development might be your most important transformative goal.)[11]

(2) Identify three activities you encourage students to perform fairly frequently.

(Traditional examples include, reading primary texts and listening to lectures. Consider non-traditional activities.)

(3) What is the relationship between the student transformations that are your highest priority and the activities your students frequently perform? Is the relationship to your liking?

(4) Imagine a new activity that seems to encourage a transformation you value but that many of your students have not achieved with your previous pedagogy.

(5) Attempt your newly identified activity with a spirit of adventure. Often initial implementations of new pedagogy need refinement. Abandon some attempts altogether. Celebrate successes.

---

[11] Perry Jr., William G., *Forms Of Intellectual and Ethical Development In The College Years: A Scheme* (Holt, Rinehart, and Winston, 1970), especially pp.79-80. Perry describes student development through four stages: Dualism, Multiplicity, Relativism, and Commitment.