

The Attributes and Attribute-Consequences of Great College Teachers

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Abstract

A great teacher is one who facilitates a large volume of learning and achieves adulation from the students. To aid teachers aspiring for greatness, this study employs personal interviews and questionnaires to identify the attributes students associate with great teachers, as well as the consequences of those attributes students value. Results suggest that great teachers are dynamic lecturers and clear communicators; these two attributes help students focus in class and understand the material. Students desire to commit to a class, and they find this commitment easier if teachers get to know their students, exhibit a personable personality, and signal their desire for students to learn. Driving these preferences is the students' desire to commit to the class, understand the material, and improve class focus. Teachers who find it difficult to exhibit all of these attributes can instead focus on the attribute-outcomes students desire, and devise their own strategy for achieving these outcomes that is consistent with the class size, class topic, and the teacher's personality.

Keywords: teaching effectiveness, student assessment, teacher attributes, student preferences

Good teachers impart good education. Great teachers groom their students to become leaders. Ordinary teachers direct us along the right path, but great teachers inspire us to seek our own path. They encourage us to discover our talents.

-- Author Unknown

The success of a class is largely determined by the amount of learning that takes place and the students' ability to transfer that learning to other problems. Because it is impossible to measure learning perfectly, indirect measures are often used alongside with direct measures of learning for a holistic appraisal of a teacher's effectiveness. Student perceptions constitute one of these indirect measures. Even though student appraisals are imperfect measures of learning (Rodin and Rodin, 1973), it would be difficult to claim that learning takes place if the student asserts otherwise. In fact, Jones (1981) argues that the only criteria by which models of great

teachers should be judged are (1) the learning that occurs and (2) opinions of parties involved with the teaching. Models of great teachers should be built, at least partially, with the input of students.

The purpose of this study is to characterize student preferences for teachers by employing a preference elicitation tool developed in the marketing literature. Referred to as laddering, this method articulates the attributes students attach to great teachers, the consequences of those attributes that make the attributes important, and the terminal values driving these student preferences. Two applications of laddering are performed. One application conducts personal interviews of 45 undergraduate students majoring in agricultural economics. The second application administers a questionnaire to 135 undergraduates in agricultural economics and 209 engineering undergraduates. The two laddering applications also allow an exploration into how descriptions of great teachers vary across measurement instruments, the students' major, and whether great teachers are described as students' 'favorite' teacher or one who 'best facilitates learning.'

Periodically the paper refers to Appendices A and B. These appendices are available online at <http://asp.okstate.edu/baileynorwood/Misc1/default.aspx?name=teaching>. Also at this website is a video presentation of the present research, as well as other research on teaching and advising the reader might find interesting.

Introduction

College instruction differs from primary and secondary education in that the teacher and student meet for only small periods of time. A large volume of information must be covered in these short lectures, and a large amount of independent studying and practice is presumed to take place independent of the instructor. This presents a conflict. Instructors who consume a large amount of time motivating the material and holding class discussions may find themselves covering an insufficiently small amount of material, and the instructor who covers much material finds little time for making the subject interesting and stimulating class discussion. The lecture must provide students with the intellectual tools to study without supervision, but also provide

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the inspiration and motivation to study independently. When students struggle, it is often unclear whether they struggle with the concepts or the motivation. It is likely that most cases involve a complex mixture of both.

Universities and colleges host a variety of disciplines and scientific knowledge is specialized, making it difficult for scientific experiments to identify specific teaching methods that can be generalized to all classes. The idiosyncratic personalities of instructors limit the extent to which a successful teaching method for one instructor can be extended to others. These considerations make it difficult for strictly scientific methods to help one become a great teacher. Consequently, faculty strives for great teaching largely by reflecting on personal and shared teaching experiences (Kane, et al., 2004; Schindler, 1991; Ward, 1968; Opulente, 1965). Motivated teachers will also seek to reflect upon the experiences of students. This includes students' perceptions of what attributes describe a great teacher. Student perceptions then cause the ambitious instructor to alter their teaching style in accordance with their personality and their course topic.

Student perceptions of the ideal teacher are informative and useful. Although one can envision a number of biases students might hold, empirical evidence suggests these biases may be too small for much concern (Grush and Costin, 1975). Students possess some information that the teacher does not. If college students and teachers agreed on what comprises a great teacher, instructors could simply pursue their own perceptions of ideal teachers and would achieve the respect and approval of students. To some degree, students and teachers do agree on the attributes of excellent teachers (Shikiar, 1976), but they do differ on some points. Both students and teachers concur on the importance of understanding the material and effective communication of the material, but students place a higher weight on stimulating/engaging lectures and the friendliness of teachers. As teachers have aggressively adopted new multimedia technologies, they have overestimated students' desire for these technologies over traditional chalkboard lectures (Boyer, et al., 2009; Miron, 1985; Miron and Sebal, 1978; Yourglic, 1955).

In pursuit of these unique student insights, an interesting literature has developed focusing on student descriptions of great teachers. Some studies employ survey techniques, where students are given a list of teacher attributes and are asked to rank the most important attributes. These studies demonstrate the importance of stimulating students' curiosity, preparation of lectures, using a variety of teaching methods, effective communicating, and encouraging independent thinking (Mannan and Traicoff, 1976; Pogue, 1967; Miron, 1985; William and Tomlin, 1996; Onwuegbuzie, et al., 2007). More than simply detailing important attributes, some

studies document the synergies between enthusiastic personalities and competent teaching abilities (Jones, 1989). One of the more interesting studies contains narratives written by 26 students describing their favorite teachers—narratives which illustrate the importance students place on amicable teachers who are anxious to help students learn (Anonymous, 1955).

A separate line of literature exploits the information inherent in teacher-award applications. Some teaching awards require students to both nominate the teacher and provide a written narrative on the teachers' merits. By studying the application narratives, researchers can infer the qualities of the teacher that earned them the student nomination. Students self-select into these samples, and thus are not representative of the student population. The disadvantage of a biased sample is accompanied by a number of advantages though. The student narratives contain more detail than traditional surveys. The students are not constrained by a particular survey design, nor are they restricted to a particular set of attributes and attribute descriptions. The descriptions of excellent teachers are therefore more genuine, which may compensate for the biased sample.

The nomination narratives from one study assert that the ideal teacher is one who (1) treats students and assigns grades fairly (2) is inspiring and stimulating (3) extends students respect as a person (4) commands an impressive knowledge of the material and (5) is enthusiastic about teaching (Goldsmith, et al., 1977). In similar spirit, Hoffman (1963) asks college seniors to think of their favorite teachers and to write reasons for their selections. The most important justification for a favorite teacher is categorized as a kind, respectful, and helpful personality. The second most important attribute relates to the effectiveness of the instructor's presentation and communication of course content. The third most important attribute describes great teachers as possessing an admirable personality and character.

Similar to Hoffman (1963), a more recent study of Chinese students concur with the claim that students' favorite teachers inspire students with both kindness and encouragement, whereas their least favorite teachers give dry lectures that pertain only to examinations. Another study asks students to state in one sentence what describes their best professor; a categorization of the statements reveals that an interest in student success and a variety of teaching methods is the most frequent response. Using a more sophisticated data analysis, Slate et al. (2009) found that when students are given open-ended questions about great teachers, the dominant themes include communication, helping, fun, and the like. Together these students contend that the ideal teacher sincerely cares that the student learns, and that sincerity shows in the variety and engaging classes they hold. Such a claim is further supported by a symposium

sium of students concerning potential improvements to university instruction (Rinn, 1981), and is found among excellent teachers at the community college (Horan, 1991), and the primary school level (Acocella, 2002).

An alternative methodology is to identify excellent teachers and study their teaching techniques. Studies that audio-tape lectures of high and low-rated teachers find that higher-rated instructors are more responsive and interactive with students, incorporate more course discussion, blanket students with criterion-based praise, and encourage students to learn from their errors. In contrast, lower-rated instructors employ more dry lectures, less student involvement, and frequently exhibit confusion in the classroom (Phoenix, 1987). A slightly different research approach identifies teaching award recipients, interviews them about their methods, and then conducts similar interviews with novice teachers to contrast their teaching styles and beliefs about effective teaching. It is clear to the researchers of this approach that exemplary teachers have a sophisticated view of teaching and assessment, and place a higher priority on long-term learning. Award-winning teachers place a high importance on student feedback (Duncan and Precians, 1992). An excellent book by Bain (2004) conducts thorough interviews with excellent teachers, also finding a sophisticated view of learning, assessment, and teaching.

Much work has focused on the attributes of great teachers, but why those attributes are important to the student. The consequence of a teacher possessing a particular attributes is important because it addresses the outcome students seek. Do they want to be entertained or to understand the material better? Understanding attribute-consequences allows teachers who have difficulty manifesting a particular attribute to achieve the same outcome in a manner more amenable to their personality. Using the laddering interview process described below, this study identifies both the attributes and attribute-consequences of great teachers. It goes even further by connecting these two features with the terminal values motivating the students.

In the pursuit of the great teacher, it is also useful to delineate different descriptions of “great.” Through the analysis of questionnaires, this study explores the attributes of great teachers defined as (a) students' favorite teachers and (b) teachers that best facilitate learning. The questionnaire is then extended to answer other questions, such as how perceptions differ across disciplines and how attribute-consequences vary under different definitions of great teachers.

Laddering Application 1: Personal Interviews

Students have preferences for certain teacher-attributes because those attributes lead to consequences the students' desire. The desire for these consequences is driven by the terminal—or,

core—values of the individual. To understand the primary attributes of great teachers, the attribute-consequences, and the terminal values motivating the whole process, a trained interviewer conducts personal interviews with students, where each student is asked to explore and articulate their preferences in their own words. This laddering interview technique was pioneered by marketing researchers who sought to thoroughly understand what consumers seek in retail products, and why. This study closely follows the methods outlined in the marketing and food marketing literature (Kambua, et al., 2006; Makatouni, 2002; Miele and Parisi, 2000; Reynolds and Olson, 2001; Russell, et al., 2004) in regards to both how the interview is conducted and how the results are summarized. The technique is often referred to as means-end-chain analysis, as it seeks to understand the end-goals the consumer is pursuing, and the means (attributes) by which these ends are obtained.

Personal Interviews - Methodology

Data are collected using the “soft-laddering” technique, whereby face-to-face interviews are conducted. The interviews consist of two main sections. First the interviewer asks the student to think about their favorite and least-favorite teachers they have experienced during their tenure at Oklahoma State University. They are asked to consider what the good teachers did that the other teachers did not, including the differences in teacher personalities and their teaching style. The student is then asked to think of three to seven attributes that describe their favorite college teachers. Each attribute is written on a separate index card, and it is on this card that the interviewer will record all the consequences and values emanating from that attribute. After the student has finished listing attributes, they are asked to take the index cards and order the attributes from the most to least important attributes. The interviewer then begins exploring the consequences of these attributes by taking the highest ranked attribute and asking a series of questions of the form: “Why is the attribute <insert attribute> important to you? What are the consequences of a college teacher possessing <insert attribute> that you value?”

After the student provides a consequence, they are asked to name a second consequence resulting from the prior consequence that is important to them. This line of questioning continues, seeking to add consequence on top of consequence. The student will eventually reach a point where they reach a consequence that has no subsequent consequence. At this point, they are asked to identify one or more terminal values, which represent the driving motivation of their answers. Attributes and consequences are concepts easily grasped and described without prompting by the researcher, but most students have no exposure to the concept of terminal values, and

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find articulation of such values daunting. To aid the identification of values students are provided with a list of sixteen specific terminal values taken from Rokeach (1973). These values are listed in Appendix A.

Consider a hypothetical example, where the student states that *dynamic presenter* and *cares students learn* are two attributes of their favorite teachers. If *cares students learn* is the more important attribute, the interviewer will begin conducting a means-end-chain analysis of the attribute. They might find that *cares students learn* has the consequence of *keeps me motivated*, which has its own consequence of *understand material better*, which has a third consequence of *higher salary*. If no more consequences are easily conjured, the student may then state that their terminal values driving the desire for a higher salary are a *comfortable life* and *sense of accomplishment*. The interviewer will then go back to the attribute or one of the initial consequences to explore other consequences. They ask questions such as, "Are there any other consequences of 'cares students learn' that are important to you," or, "Are there any other consequences of 'keeps me motivated' that are important to you." After a thorough means-end-chain analysis of the attribute *cares students learn* is obtained, the researcher then turns to the other attribute, *dynamic presenter*, and follows the same process.

This technique is referred to as *soft-laddering*. The *soft* adjective refers to the fact that students describe their preferences in their own words, and except for the terminal values, no attempt is made by the researcher to encourage the use of specific terminologies. All interviews are performed by a trained interviewer (one of the authors), who follows the same general instructions for each subject, but is allowed freedom in how many attributes to explore in the attribute-consequence-value chain and how to help the interviewee make attribute-consequence-value connections. The interviewer is trained not to put words in the students' mouth, but at the same time an informative interview requires some adaptive interaction between the interviewer and interviewee.

While each interview is interesting and contains unique information, reporting the results of each interview in a single article would make for a tedious read and would fail to highlight the most prominent themes. Consequently, soft-laddering transcripts must be summarized and reported in a more succinct fashion. The conventional method in the marketing and food marketing literature is to group attributes and consequences into similar categories, and then use a Hierarchical Value Map to communicate the most important categories. The authors held numerous meetings where we reviewed the transcript pertaining to each interview (interviews were audio-taped), designed category labels to describe repeating themes, and used these labels to denote attributes

and consequences of the same spirit. These labels are shown in Appendix A, as well as the comments recorded during the interview pertaining to that label.

The interview results can be reported in various formats. For example, a list of the most frequently mentioned attributes can be listed along with the most frequently mentioned consequences associated with those attributes. The identification of consequences is more complex than the attributes, due to the existence of direct and indirect consequences. For example, a student may state *entertaining lectures* as an attribute of great teachers. When asked the consequence of *entertaining lectures*, the student may state *keeps you awake*, and when asked the consequence of *keeps you awake* may state *understand material better*. The consequence *keeps you awake* is a direct consequence because it follows directly from the attribute with no intermediary consequence. Conversely, the consequence *understand material better* is an indirect consequence because the *keeps you awake* attribute is an intermediary variable between the consequence and attribute. Although *understand material better* may be an indirect consequence it is obviously a consequence resulting from *entertaining lectures*. Consequently, the reporting of consequences requires some decision about whether only direct or both direct and indirect consequences are used.

Hierarchical Value Maps (HVM) are created to summarize the interviews, which are flow diagrams illustrating the most important attributes (at the bottom), arrows pointing to their subsequent consequences (and consequences of the consequences), and (at the top, signifying their importance in determining everything below) finally the terminal values. Attributes share many direct and indirect consequences, and the number of times a consequence is mentioned signifies its importance. The HVM's are designed to describe the details communicated in the personal interview. Unless the HVM's are parsed to reveal only the most important attributes and attribute-consequence-value connections, the arrows will more resemble a cacophony of lines than a succinct description of the interviews. Parsing is typically performed by reducing the number of attributes to a manageable number, counting the number of times a consequence is mentioned (directly or indirectly), and reporting only those consequences mentioned a certain number of times--this number being referred as a *cutoff* point. The researcher then experiments with higher and lower cutoff points, choosing the value that best describes the details of the interview without exhausting the reader with details. The cutoff point is then a subjective decision, one that is determined in both the scientific and the aesthetic spirit.

Personal Interviews – Participants and Results

The interviews are conducted using students

majoring in agricultural economics or agribusiness (hereafter, agricultural economics) in the College of Agricultural Sciences and Natural Resources (CASNR) at Oklahoma State University. Recruitment is limited to this discipline because we possess the contact information allowing us to selectively target certain students, with the goal of ensuring all genders, class distinctions, and GPAs are represented. As the descriptive statistics in Table 1 show, the sample is represented equally by males and females and possesses similar ratios for students of different class distinction and [reported] grades. Recruitment was initially performed through e-mail invitations by the trained interviewer, who was also a student in the department. The low response rate required the interviewer to contact students directly in class, through personal e-mails or phone calls, or at student organizational events. This more personal invitation, along with a ten-dollar-cash compensation, proved effective, allowing us to reach our targeted sample size in a few months.

percentage of times they are mentioned) are (1) dynamic lecturer—58% (2) personable—49% (3) clear communicator—36% (4) gets to know students—36% and (5) cares students learn—36%. A great teacher is thus one who cares enough that students learn the material that they show a personal interest in the student and a commitment to providing interesting lectures that clearly communicate the material concepts. This is perhaps not surprising, so this ideal teacher can perhaps be further described by mentioning the attributes that did not make the top-five list: challenging, hands out grades often, knowledgeable, organized, respectful, and real-world experience. One could imagine ways in which some of these attributes overlap. It may be hard to imagine a teacher that is a clear communicator but disorganized, or one that is personable but not respectful. To help the reader understand why these attributes are separated, the online appendix provides a list of verbatim comments by the student which are grouped under various categories. To illustrate, the

online appendix shows that the comment, “good attitude towards students” is listed under the personable attribute and the comments, “trusts the class and treats them maturely” and “not politically biased, respects others’ opinion” is grouped under the respectful attribute. These judgments are often difficult to make and it is possible a different research team would have made different decisions. Consequently, the appendix is provided as a layer of transparency to the research methodology.

To describe the most prominent attributes and attribute-consequence connections across the interviews, Figure 1 provides a Hierarchal Value Map (HVM) where consequences are only shown if they directly follow from an attribute—meaning there is no intermediary consequence – a minimum of three times. Figure 2 is another HVM, that differs in that it allows both direct and indirect links, and only shows such links that occur a minimum of seven times. These figures suggest the following concept of students’ favorite teachers, which is taken largely from Figure 2. Teachers who provide dynamic lectures and communicate clearly help students focus on and better understand the material, which translates into higher grades, better career opportunities, and higher salaries – ultimately leading to life happiness and a sense of accomplishment. Instructors who get to know the students, exhibit a personable demeanor,

Table 1. Demographic Profile of Students Participating in Interviews and Questionnaires

	Agricultural Economics Students in Personal Interview	Agricultural Economics Students Taking Questionnaire	Engineering Students Taking Questionnaire
Gender			
Male	48.89%	59.26%	78.47%
Female	51.11%	40.74%	21.53%
Class Distinctions			
Freshman	22.22%	0.0%	0.0%
Sophomore	15.56%	14.81%	11.00%
Junior	37.78%	51.85%	27.75%
Senior	24.44%	33.33%	61.24%
Reported GPA			
4.00-3.50	44.44%	33.58%	31.40%
3.49-3.00	31.11%	29.10%	46.38%
2.99-2.50	20.00%	29.85%	19.81%
2.49-2.00	2.22%	6.72%	2.42%
1.99 and less	2.22%	0.75%	0.0%
Average Age	20.38 years	21.07 years	21.69 years
Sample Size	45	135	209

The interviewer follows a consistent script to begin the process, where the purpose and format of the interview is described. Students are told their participation is voluntary and they may exit the interview at any time and still receive their ten dollar payment (no student did). They are encouraged to provide truthful answers that reflect their personal preferences, and not to be influenced by a desire to provide answers that are socially desirable, but not consistent with their preferences.

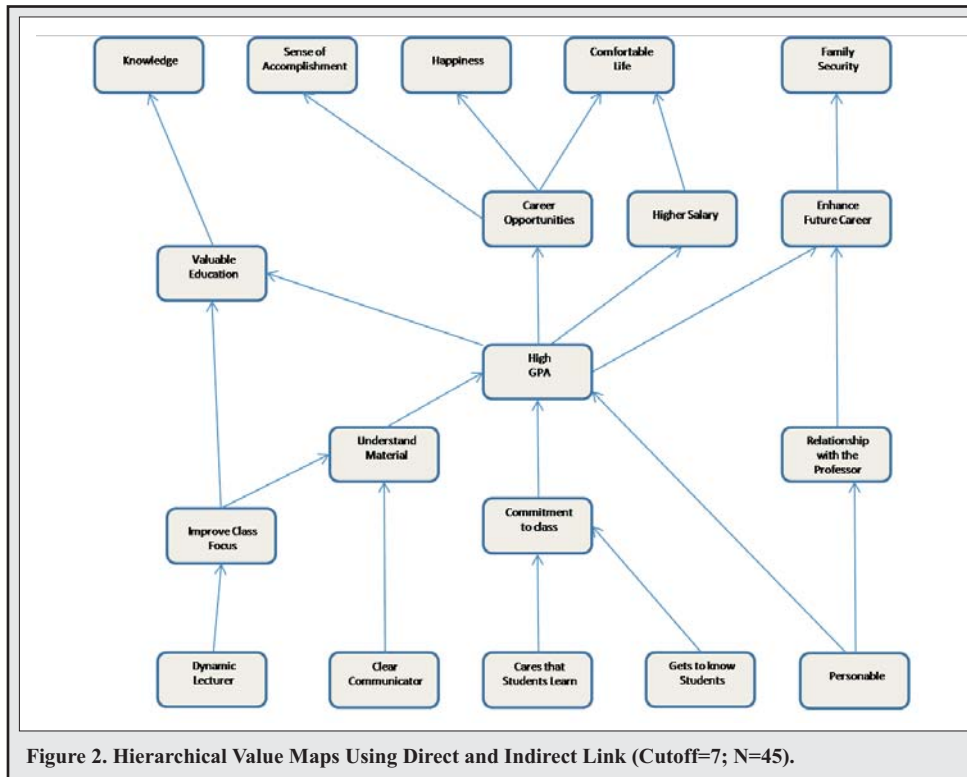
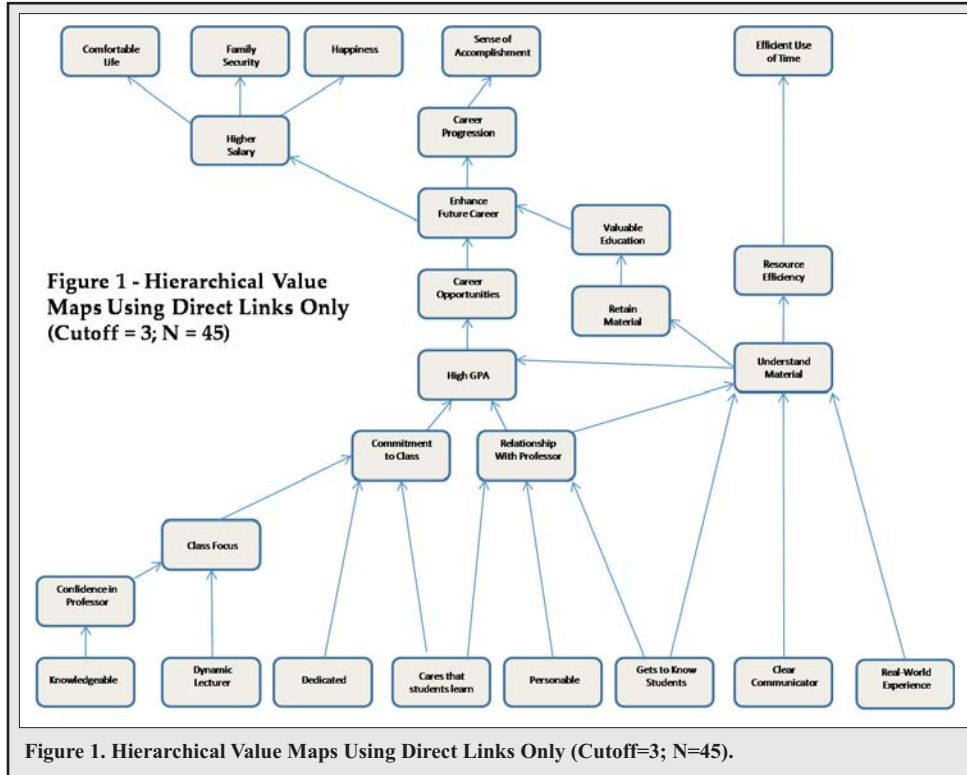
The interview conversations are categorized to reflect fifteen different attributes of students’ favorite teachers and 24 consequences. Recall the list of 16 values is provided for the student to choose among, and hence require no categorizations. The most frequently mentioned attributes (and the

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and extend a personal commitment to learning motivate the students commit to class, which leads to higher grades and, as before, has the consequence of better career opportunities and higher salaries.

A personable instructor also nourishes student-teacher relationships which (bypassing higher grades, somewhat) improves career opportunities.

This is not surprising within the agricultural economics major, where professors are sometimes directly responsible for job interviews. In addition to improving career opportunities and salaries, higher grades and improved class focus encourage a valuable education and knowledge, with knowledge being one of the terminal values alongside happiness and sense of accomplishment.



It is our opinion that Figure 2 provides a more salient and logical conceptual model of preferences for teachers than Figure 1. Readers should not take these results to imply that all instructors should strive to match the description in Figure 2 exactly. While clear communication should be present throughout any class, not everyone has the personality or teach topics amenable to dynamic lectures. It is also difficult to get to know students in classes with large enrollments. When possession of some teacher attributes is difficult, instructors can instead find creative strategies for achieving the same consequences. For example, students desire teachers who get to know students because it helps them commit to the class. Instructors of large classes can then place greater emphasis on communicating their desire for students to learn, which also encourages class-commitment.

Laddering Application 2: In-Person Questionnaires

Questionnaires are developed to delve further into student preferences in ways personal interviews cannot. The method of using a paper-and-pencil questionnaire with defined categories of attributes and consequences is known as "hard-laddering." It is similar to the "soft-laddering" method used in the interviews, however, instead of asking students to

state attributes and consequences in their own words, students are provided a list of attributes and consequences to choose among—the list is constructed based off the personal interviews. While there is currently less research on “hard-laddering,” studies have begun to compare the two forms of laddering techniques to determine if the form used affects responses; no tenable conclusion has yet to be found (Phillips and Reynolds, 1998; Russell et al., 2004).

In reality, there is probably no such thing as the “true preferences for teacher,” but a number of truths that depend on how preferences are elicited. The questionnaires used here have the disadvantage of forcing students to utilize pre-determined attributes and consequences; they have the advantage of allowing one to discover more precisely how preferences change across discipline and descriptions of great teachers.

The attributes and consequences used in the questionnaire are borrowed from the responses given by interviewed students. The 24 consequences inferred from the interview responses are consolidated to 15 to manage the cognitive burden placed on the student. Some of the consequence-categories are combined, while seven others that are seldom mentioned in the interviews are removed. The reader can compare the consequences listed in Appendix A for the personal interviews with the questionnaire provided in Appendix B to better understand how consequences between the two research methods are treated.

In-Person Questionnaires – Methodology

The questionnaire is administered using a gray background with white response categories throughout. The questionnaire consists of four main sections, and a sample copy is provided in Appendix B. The first section contains a question asking students to choose the four most important attributes that their favorite teachers exhibit. This is followed by a question asking them to state which of those four is in fact the most important, and what four consequences from the list of 15 represents why that attribute is indeed the most important. The next section is formatted in the same manner, except that it asks students about the teachers that are best at facilitating learning, or in other words, teachers from which the students learn the most. In order to account for any form of bias based on the order of questions, half of the surveys pose the favorite-teacher question first, while the other half asks first about teachers who best facilitate learning. Also, for both of these sections mail merge is used to randomize the order in which the attributes and consequences are listed—to avoid anchoring or ordering bias. Each version of the questionnaire is distributed equally among all students in the sample, thus there is no need to control for the questionnaire format. The remainder of the questionnaire contains attitudinal and demographic questions.

In-Person Questionnaires – Participants and Results

Respondents for the questionnaire are students who are currently enrolled in either engineering or agricultural economics courses. Instructors are notified of the research project through e-mails, and are asked if they would be willing to provide 15 to 20 minutes of their class time to let their students participate in the research. A positive response was received from both majors.

Students are informed at the time of completing the questionnaire that participation is voluntary and will not affect their grade in the course. Also, all questionnaire responses are obtained anonymously—subjects are identified by identification number only. Table 1 provides descriptive statistics of the sample, illustrating that only sophomores, juniors, or seniors complete the questionnaire. The disproportionate number of males compared to females in engineering classes is reflective of the actual gender profile of engineering majors, not an artifact of how the sample is obtained. To ensure results reflect differences in major and not demographics, the responses of the engineering students are adjusted to reflect their predicted responses if their demographic profile exactly match the agricultural economics students, in terms of class status and gender. However, the results change only slightly after this adjustment. Five students are dropped from the analysis because they were either a graduate student or because they failed to answer all of the questions.

Questionnaire responses are first parsed by major to determine how preferences for teachers vary across the two majors. When describing their favorite teacher (see Table 2) the two majors differ little in their most preferred attributes. The favorite teachers of agricultural economics students are those who possess the following attributes: (1) *cares that students learn* (2) *personable* (3) *clear communicator* and (4) *possess real-world experience*. Engineering students concurred on the three most important attributes, but replaced *possess real-world experience* with *knowledgeable* for their fourth most important attribute. Table 2 provides shading to differentiate the four most important attributes, but this masks the true similarity of importance among some attributes. Standard errors are not provided in Table 2 because the percentages are correlated with each other. Determining whether one percentage is statistically different from another is performed using nonparametric bootstraps, where new simulated versions of Table 2 are created by randomly sampling the original sample with replacement. This nonparametric bootstrap suggests that the percentages for *real-world experience* between majors (in columns 2 and 3 of Table 2) are not statistically distinguishable, though the percentages for *knowledge* are statistically different. Thus, the shading is provided more to help navigate the reader than to

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distinguish between statistically different percentages.

The last two columns in Table 2 describe teachers who are adept at facilitating learning. For both majors, *cares that students learn, knowledgeable, and clear communicators* are among the most important attributes. The attribute *personable* remains within the top four attributes among agricultural economics students, and *organized* makes its first appearance within the top four attributes for engineering students. Again, however, statistical tests demonstrate the percentages for *organized* and *personable* are not statistically different between majors

Table 2. Percent of Times Attribute Is Selected among Top Four Attributes Describing Students' Favorite College Teachers and Teachers Who Best Facilitate Learning (using questionnaire)

Attributes of Students' Favorite College Teachers	Agricultural Economics Students (N = 135)	Engineering Students (Adjusted, N = 209)	Agricultural Economics Students (N = 135)	Engineering Students (Adjusted, N = 209)
	Great Teachers Defined As Students' Favorite Teachers		Great Teachers Defined As Those That Best Facilitate Learning	
Hands Out Grades Often	4.25% ^a	3.00% ^b	2.50%	2.00%
Challenging	2.00%	3.50%	3.25%	3.75%
Have Clear Expectations	5.25%	7.00%	6.75%	7.75%
Respectful	7.50%	5.25%	4.00%	3.25%
Involve Students in the Class	4.75%	5.00%	7.00%	6.25%
Organized	7.50%	6.75%	7.50%	9.50%
Possess Real-World Experience	8.75% ^b	5.75%	8.25%	6.75%
Connects Class Activities	2.50%	2.75%	4.25%	3.75%
Dedicated	4.75%	4.75%	4.00%	6.00%
Knowledgeable	6.75%	8.00%	10.75%	11.25%
Cares that Students Learn	11.75%	14.25%	10.50%	13.50%
Clear Communicators	9.75%	11.00%	9.75%	12.00%
Gets to Know Students	8.25%	5.50%	7.00%	3.25%
Personable	11.75%	12.25%	9.00%	5.00%
Dynamic Lecturers	4.25%	5.75%	5.25%	5.75%

^aThe percentages are calculated as the number of times an attribute is chosen as a top-four attribute, divided by the number of subjects completing the questionnaire, divided by four. Standard errors are not provided because the correlations between the percentages make the standard errors invalid.

^bThe percentages for engineering students are adjusted to reflect the predicted responses if their demographic profile (gender and class distinction) match the profile of the agricultural economics students. This is achieved by calculating the percent of students and the percentage of students selecting each attribute in each gender/class distinction, and for each major. To weight the engineering students' responses, the percent of times an attribute is chosen for each gender/class distinction for engineers is multiplied by the percent of students in each gender/class distinction combination for the agricultural economics students.

^cAll percentages shaded and/or of larger values are indeed the largest percentages, as determined by nonparametric bootstraps. That is, these percentages are not simply the product of chance. However, a percentage shaded may be statistically indistinguishable from a non-shaded percentage.

It is interesting that *dynamic lecturer*, the most important attribute in the personal interview, is relegated to a lesser role in the questionnaires. This could be attributed to differences in the elicitation instrument, or it could signify that our term “dynamic lecturer” is poorly chosen to describe certain teacher characteristics. Or, perhaps we made a mistake in separating *dynamic lecturer* and *involve students in class*. These are questions that remain unanswered. Although it is natural to concentrate on the most important attributes, understanding the lesser important characteristics of great teachers is

equally informative. The low importance placed on *challenging* may be disheartening to teachers who believe this is a quintessential characteristic of great teachers, but the reader is reminded that students do not have a monopoly on defining great teachers.

The unique contribution of this study is the focus on why students prefer teachers with certain attributes. What is it about those attributes that the students value? This answer also depends on whether it is obtained through structure questionnaires or more loosely-structured interviews. Table 3 compares the top-four attributes and attribute-consequences for agricultural economics students in

the personal interviews and questionnaires. The desire for *class focus, understand the material, and develop a relationship with the professor* is robust across research methodologies. In fact, *understand material* is an important consequence of every top-four attribute in both the questionnaires and interviews. The consequence *improve class focus* arises for all top-five attributes in the questionnaires but for only one attribute in the personal interviews. It is not surprising that *high GPA* is prevalent in the interviews but not the questionnaires, as the questionnaires allow only one consequence following an attribute, whereas the interviews allow a sequence of consequences. Achieving a high GPA is more likely to result from understanding the material and focusing in class—acting as an indirect consequence of an attribute—as opposed to attributes directly. Despite these differences, the general theme in Table 3 is that

students want teachers who help them understand the material and commit to and focus in class. This helps them achieve high grades and enhance their future career.

Conclusion

Although there are many valid definitions of a great teacher, all definitions should be partially informed by student preferences for teachers. However much one may abhor the idea of teaching being a popularity contest, in some facets, popularity

Table 3. Top Five Attributes and Their Related Consequences for Favorite Teachers from Personal Interview and Questionnaire (Agricultural Economics Students Only; N=135)

Top Five Attributes From Personal Interview	Top Four Consequences of Left Attribute	Top Five Attributes From Questionnaire	Top Four Consequences of Left Attribute
Dynamic Lecturer (58%)^a	Understand Material	Personable (47%)	Improve Class Focus
	Improve Class Focus		Commitment To Class
	Retain Material		Understand Material
	Valuable Education		Relationship With Professor
Personable (49%)	High GPA	Cares Students Learn (47%)	Understand Material
	Relationship With Professor		Retain Material
	Career Opportunities		Improve Class Focus
	Understand Material		Valuable Education
Clear Communicator (36%)	Understand Material	Clear Communicator (39%)	Understand Material
	High GPA		Retain Material
	Enhance Future Career		Commitment To Class
	Higher Salary		Improve Class Focus
Gets To Know Students (36%)	Relationship With Professor	Real-World Experience (35%)	Understand Material
	Commitment To Class		Confidence In Professor
	Understand Material		Improve Class Focus
	Enhance Future Career		Relationship With Professor
Cares Students Learn (36%)	High GPA	Gets To Know Students (33%)	Improve Class Focus
	Commitment To Class		Commitment To Class
	Understand Material		Confidence In Professor
	Enhance Future Career		Understand Material

^a Number in parenthesis indicates the percent of times the attribute is chosen among top four attributes in personal interviews or questionnaires. The consequences pertaining to each attribute in the personal interviews refer to both direct and indirect consequences, whereas the questionnaires contain only direct consequences. For this reason, percentages referring to the frequency of the consequences are not provided, as comparisons of the consequences across the interviews and questionnaires could be misleading.

to be a great teacher. Moreover, the similarity of desired consequences for teacher-attributes suggests that ambitious teachers may focus on the goals of improving class focus, understanding of the material, and commitment to the class in whatever fashion is best suited for their personality and class.

For teachers who are struggling to acquire the approval of their students, this study points to a few suggestions which are—fortunately—relatively easy to execute. Getting to know students personally, demonstrating a concern for student learning, and exhibiting personable character traits are simple notions that do not require an overhaul of a course structure, nor do they require a change in teaching style. Yet, these simple notions are among the most important characteristics when students describe great teachers.

should be sought not for popularity itself, but as a medium to inspire and encourage students. Indeed, students themselves assert they prefer a teacher who cares that they learn, gets to know students, and is personable; such teachers help students achieve their goals of focusing in class, understanding the material, and developing a personal relationship with the teacher. These are but intermediary goals which help students enhance their grades, improve their careers, and increase their salary—ultimately achieving happiness, financial success, and a sense of accomplishment. Though it may not be surprising that students also prefer teachers who communicate well and provide dynamic lectures, the strong evidence supporting this notion may help instructors commit to clarity and variety in the classroom.

Measured student preferences for teachers in this study are largely similar across major, how great teachers are defined, and how preferences are measured. This should not be interpreted to imply that all teachers must act and instruct the same way for students to consider them great teachers. The attributes of great teachers are defined rather vaguely, so that instructors of myriad personalities, class sizes, and class topics can achieve greatness in different manners. It is not required for teachers to obtain all the important attributes of a great teacher

Instructors of large classes should not bemoan the importance students place on getting to know the students. Discovering creative ways of connecting to students in a large class demonstrate more powerfully the instructor's desire for personal connections. One of the authors teaches a large class and begins each lecture with a Know Your Classmates activity, where one student is singled out (based on a student information sheet completed by the student) for discussion. The student's career interest is discussed and used to show how the impending lecture can be used in their desired occupation. This activity demonstrates a desire to know the students, and by demonstrating the usefulness of the course content it relays a sincere concern for student learning and gives them the motivation to commit to the class—recall that committing to the class is a consequence of getting to know students, which helps compensate for the inability to personally know each student in a large class. Know Your Classmates is a surprisingly popular activity, one that students promptly note if the instructor fails to do at the start of class.

Although becoming a dynamic lecturer may be difficult for some personalities, one can instead focus on the consequences of dynamic lecturers that students value: understanding and retaining the material and focusing in class. The fact that dynamic lecturer is

The Attributes

far less important in the questionnaire than the personal interview suggests an instructor who faces significant personal challenges in acquiring a “dynamic” trait may still become a great teacher through other means.

Acquiring the approval and respect of the class—one might even add, admiration—should not be thought of as a conflict to class learning. It is clear from the students that learning is a consequence of a caring, dynamic, and articulate teacher that students strongly desire. A set of attitudinal questions within the questionnaire supports this notion. A large majority of the agricultural economics and engineering students claim that their favorite teachers are also the teachers that impart the most learning. Students reject the notion that teachers must decide between having fun or learning in class, and state that they learn the most from their most entertaining teachers.

The most encouraging result from this study is that, among the various outcomes students seek in a class, learning the material is among the highest. To a large extent, students and teachers share the same goal. Learning can be measured, and the intricate assessment programs being developed at most universities and colleges seek to gauge and enhance learning. A teacher who achieves high levels of learning is no doubt a great teacher, but we assert that instructors should go one step further, and also seek the label of greatness from the students. Hopefully, this study will aide in this noble pursuit.

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