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# A Rotating Panel Survey to Assess Quality of Hunter College Education

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**A Rotating Panel Survey to Assess the Quality of Hunter College Education**  
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**Hunter College, August 1, 2007**

## **Introduction**

A rotating sample design is proposed to most accurately measure the perceived quality of a Hunter College education. A representative sample of Hunter College students will belong to one of six rotating panels. Students will be contacted during four rotation periods and report their assessment of the two most recent months. It is advantageous to use a rotating panel design as opposed to a fixed panel design in order to guard against the negative effects of a deteriorating response rate. Stratified sampling will help to ensure representation across major departments and academic year of study. Methods for sampling procedures, stratification, understanding net changes, and survey question organization are outlined in this paper.

## **Project Overview**

Surveying a representative sample of Hunter College students will enable the perceived quality of education at Hunter College to be measured. A collected sample is in lieu of surveying the entire student body because it is less expensive and time-consuming (Kish, 18). Essential to the analysis is not only a semester-to-semester understanding of the perceived quality, but also the year-to-year assessment. A rotating panel design allows for both of these estimates to be obtained.

A stratified survey based on academic departments and year of study will ensure fair representation across each major and year of study. Only degree-seeking students will be included in the survey. Limiting the surveying to degree-seeking students guarantees that the sample is representative of a common graduation goal.

Surveying the students throughout the academic year will best reflect overall student opinions. Collecting the student assessments once a semester may bias the results. Spreading the collections throughout the academic year counters this type of bias.

## **Survey Design**

The Hunter College assessment survey requires a stratified sample of Hunter College degree-seeking students necessitating that the list of Hunter College students be updated each academic semester. Although the entire Hunter College student body includes many students who are non-degree seeking, limiting the sample to degree-seeking students ensures that the sample is representative of a common graduation goal. The stratified sample ensures that each major discipline (including *undecided*) and year of collegiate study is accurately represented in the survey. Each and every degree-seeking student

attending Hunter College (both full-time and part-time) will belong to one and only one stratum based on their major and year of collegiate study. Stratified sampling is used to secure population representation (Parten, 226). This improves the representation of the sample by reducing sampling error (Singh, 49). The use of stratification results in an approximate 20% reduction in variance as compared with simple random sampling (Williams, 165).

A stratified sample is created by identifying students via their year of collegiate study, and then grouping them together with other students from the same specified academic department major. A simple random sample is selected from each stratum and assigned weights inversely proportional to their probability of selection (Williams, 164).

This sampling methodology generates a sample representative of the degree-seeking Hunter College student body that substantiates assertions about the entire degree-seeking student population. Therefore, the overall sample should include students from all major departments and from each grade level. The students will be contacted for four rotations and report their assessment for the two most recent months. Under this design, eight months of data is obtained from only four contacts per year, thus reducing surveying costs.

A potential problem is that the resulting data sets represent only the students who were willing to participate in the survey. Students’ systematic refusal to participate may compromise the random nature of the sample. It will be important to determine the non-response rate from the overall population and to distinguish it. It is important to note that panel surveys are sensitive to poor response rates because the refusals damage the results of any gross changes (Kish, 473).

Under this rotation scheme, the academic year is divided up into two-month rotation blocks. At least one month of each block is part of either the fall or the spring semester of the academic year.

Although six panels are selected to participate in the survey, only four panels will be surveyed at a time. The two panels not surveyed “rest” for two rotations and then leave the survey, replaced by a new panel of students. A pictorial description of this organization is as follows:

<b>Aug/Sep (YZ rest)</b>	<b>Oct/Nov (DY rest)</b>	<b>Dec/Jan (CD rest)</b>	<b>Feb/Mar (BC rest)</b>	<b>Apr/May (AB rest)</b>	<b>Jun/Jul (ZA rest)</b>
A	Z	Y	D	C	B
B	A	Z	Y	D	C
C	B	A	Z	Y	D
D	C	B	A	Z	Y

Table 1 – Rotation schedule of six panels

For example, in March sample students in panels D, Y, Z, and A report their current assessment for February and March (spring semester) and Groups B and C are not surveyed. During this time, the students in the current panel C are retired from the survey and new students are placed into the panel. The following April/May rotation, new students in panel C will be surveyed during April/May collection. Similarly, new students in Panel B will be used in the following June/July collection.

February/March Collection	
D Panel surveyed for first time	
Y Panel surveyed for the second time	
Z Panel surveyed for the third time	
A Panel surveyed for the fourth and last time	
B Panel has already been surveyed four times and is resting	
C Panel has already been surveyed four times and is retired from the survey	<p>Students in Panel C have already reported for four rotation panels and are retired from the survey</p> <p>New students are incorporated into Panel C for the April/May collection</p>

Table 2 – Rotation schedule of six panels

Each month a new panel of students, or one-sixth of the total sample, is introduced. Thus for a particular collection date, one panel is being interviewed for the first time, one panel for the second time, one for the third time, and one panel for the fourth and final time.

This rotating panel form is a hybrid of a panel design and a repeated cross-sectional design (Nieuwenbroek, 195). The students do not remain in the survey longer than four rotations. Again, after four rotations, the students in the panel leave the survey and fresh students are incorporated into the survey. The sample overlap fraction between two consecutive waves equals  $p = 1 - \frac{1}{k}$ . Here,  $k = 4$ . Therefore the overlap from one month to the next is  $\frac{3}{4}$ , or 75%. The following table shows the proportions of overlap between any four consecutive rotation cycles.

Interval (In Rotation Cycles)	Percent of Sample in Common Between Two Rotation Cycles
1	75%
2	50%
3	25%
4	0

Table 3 – Proportions of overlap between any four consecutive rotation cycles

The most efficient, cost effective method for administering the survey is in an electronic format. Completing the survey online would guard against low response rate and cut down on mailing and sorting costs.

In order to register for classes, all Hunter College students must log-on electronically via the internet. All students must register using the internet. Therefore, it can be assumed that if all Hunter College students have access to a computer in order to register for classes, then all Hunter College students would have access to a computer to complete an online survey. Completed interviews can be electronically transmitted to a central processor where the responses can be edited for consistency and any necessary imputations can be made.

### Conceptual Framework

The need for a rotating panel design in this project is to ensure that the opinions of the Hunter College student population are measured across time.

N.J. Nieuwenbroek outlined two methods for describing the net change between any two measurements in *Precision of net change in a rotating panel survey*. Nieuwenbroek’s work is replicated here and applied to the Hunter College assessment model.

A fixed population is considered so that any net change reflects changes in characteristics of the population. For estimating net change between any arbitrary occasions  $t = 1$  and  $t = 2$ .

<b>Rotation 1</b>	<b>Rotation 2</b>	<b>Rotation 3</b>	<b>Rotation 4</b>	<b>Rotation 5</b>	<b>Rotation 6</b>
<i>t=1</i>	<i>t=2</i>	<i>t=3</i>	<i>t=4</i>	<i>t=5</i>	<i>t=6</i>
A	Z	Y	D	C	B
B	A	Z	Y	D	C
C	B	A	Z	Y	D
D	C	B	A	Z	Y
<b>(YZ rest)</b>	<b>(DY rest)</b>	<b>(CD rest)</b>	<b>(BC rest)</b>	<b>(AB rest)</b>	<b>(ZA rest)</b>

Table 4 – Rotation schedule of six panels

Consider two rotations,  $t=1$  and  $t=2$ . The students interviewed on these occasions are either interviewed only once at  $t=1$  or  $t=2$ , or are interviewed both occasions,  $t=1$  and  $t=2$ .

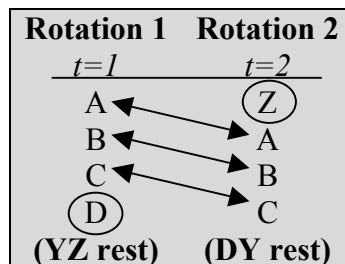


Table 5 – The matched and unmatched groups of  $t=1$  and  $t=2$

Students who report data on both occasions are considered *matched*. Matched respondents give information for  $t = 1$  and  $t = 2$ . Mathematically, this is written  $n_{1m} =$

$n_{2m}$  (subscript  $m$  for matched). Students who report data only on the first occasion, but not the second, are known as *unmatched*. Unmatched students who report data only for  $t = 1$  but not  $t = 2$  are mathematically written as  $n_{1u}$  (subscripts  $u$  for unmatched and 1 for reporting data only at  $t = 1$ ). Similarly, students who report data only on the second occasion, but not the first, are also known as *unmatched*. Unmatched students who report data only for  $t = 2$  but not  $t = 1$  are mathematically written as  $n_{2u}$  (subscripts  $u$  for unmatched and 2 for reporting data only at  $t = 2$ ).

The population totals for  $y$  on  $t = 1$  and  $t = 2$  are  $Y_1$  and  $Y_2$ . Let  $\bar{y}_{1u}$  be the mean of the  $n_{1u}$  respondents for variable  $y$ . Let  $\bar{y}_{2u}$  be the mean of the  $n_{2u}$  respondents for variable  $y$ . Let  $\bar{y}_{1m}$  and  $\bar{y}_{2m}$  be the mean of  $n_{1m}$  and  $n_{2m}$  respondents for variable  $y$ .

Net change is an unbiased estimator defined as the difference between the direct estimators for  $Y_1$  and  $Y_2$ :  $D = Y_2 - Y_1$ . It follows that:

$$\hat{D} = N \left( \frac{n_{2u}\bar{y}_{2u} + n_{2m}\bar{y}_{2m}}{n_{2u} + n_{2m}} - \frac{n_{1u}\bar{y}_{1u} + n_{1m}\bar{y}_{1m}}{n_{1u} + n_{1m}} \right)$$

The conditional variance given a fixed number of respondents:

$$Var \left( \hat{D} \mid \begin{matrix} n_{1u}, n_{1m} \\ n_{2u}, n_{2m} \end{matrix} \right) = N^2 \left[ \frac{S_1^2}{(n_{1u} + n_{1m})} + \frac{S_2^2}{(n_{2u} + n_{2m})} - \frac{2\rho n_{1m} S_1 S_2}{(n_{1u} + n_{1m})(n_{2u} + n_{2m})} \right],$$

where  $S_1^2$  and  $S_2^2$  are the element variances on  $t = 1$  and  $t = 2$ , and  $\rho$  is the correlation coefficient between the occasions.

As indicated by Nieuwenbroek in his work, the group sizes are not fixed but are instead random variables. In the following, the group sizes used to compute the conditional variances are replaced by the corresponding expected values.

To determine these expected group sizes, let  $r_j$  denote the probability of response for any student that belongs to the  $j$  rotation group, where  $j = 2, 3, \dots, k$ , given that the student has responded at all of the  $j - 1$  preceding waves.

$$\begin{aligned}
E(n_{1u}) &= n' = n(1-p) \prod_{i=1}^k r_i + n(1-p) \sum_{j=2}^k \left( \prod_{i=1}^{j-1} r_i - \prod_{i=1}^j r_i \right) = n(1-p)r_1 \\
r &= \frac{n(1-p) \sum_{j=2}^k \left( \prod_{i=1}^j r_i \right)}{npr_1} = \frac{(1-p) \sum_{j=2}^k \left( \prod_{i=2}^j r_i \right)}{p} \\
E(n_{1m}) &= n'' = E(n_{2m}) = n(1-p) \sum_{j=2}^k \left( \prod_{i=1}^j r_i \right) = npr_1 r
\end{aligned}$$

Additionally, Nieuwenbroek points out that the quantity  $r$  is the mean conditional response fraction. The conditional response fraction is the expected number of respondents in the overlap divided by the expected number of respondents that would have been in the overlap if the response rate did not diminish. Assuming  $S_1 = S_2 = S$  to simplify the algebra, the large sample variances of  $\hat{D}$  is given by:

$$\text{Var}(\hat{D}) \approx \frac{2N^2 S^2 [n' + n''(1-\rho)]}{(n' + n'')^2} \approx \frac{2N^2 S^2 [(1-p) + pr(1-\rho)]}{nr_1(1-p + pr)^2}$$

The net change can also be estimated via two independent estimators. The first estimator  $\hat{D}'$  is the estimator for  $D$ , derived from the unmatched students reporting data. The second estimator  $\hat{D}''$  is the estimator derived from the matched students who report data on both occasions.

From these estimators a combined estimator  $\hat{D}_\theta$  can be made by weighting the independent estimator  $\hat{D}'$  by  $(1-\theta)$  and weighting  $\hat{D}''$  by  $\theta$ . Therefore, we have:

$$\begin{aligned}
\hat{D}_\theta &= N[(1-\theta)(\bar{y}_{2u} - \bar{y}_{1u}) + \theta(\bar{y}_{2m} - \bar{y}_{1m})] \\
\text{Var}(\hat{D}_\theta) &\approx 2N^2 S^2 \left[ \frac{(1-\theta)^2}{n'} + \frac{\theta^2(1-\rho)}{n''} \right] \approx \frac{2N^2 S^2}{nr_1} \left[ \frac{(1-\theta)^2}{1-p} + \frac{\theta^2(1-\rho)}{pr} \right]
\end{aligned}$$

When the weights  $(1-\theta)$  and  $\theta$  are proportional to the expected number of respondents,  $\text{Var}(\hat{D})$  is calculated. It is often advantageous to minimize this variance. The variance of  $\hat{D}_\theta$  is minimized to  $\text{Var}(\hat{D}_{\theta, \min})$  when the optimum weight  $\theta = \theta_{opt}$  is used.  $\theta_{opt}$  and  $\text{Var}(\hat{D}_{\theta, \min})$  are determined as follows:

$$\theta_{opt} = \frac{n''}{n'(1-\rho) + n''} = \frac{pr}{pr + (1-p)(1-\rho)}$$

$$Var(\hat{D}_{min}) \approx \frac{2N^2S^2(1-\rho)}{n'(1-\rho) + n''} \approx \frac{2N^2S^2(1-\rho)}{nr[pr + (1-p)(1-\rho)]}$$

Again, when  $\rho = 0$ , the minimum variance is attained for weights proportional to the expected number of respondents. Since the value of  $\rho$  differs from variable to variable, optimum weights cannot be uniquely defined.

### Example Survey Questions

It is important to carefully consider the types of survey questions to be used to measure the quality of education. Therefore, as constructed by Ball State University, the types of questions are considered by genres. These genres are described in this paper and example questions are posed.

#### *Demographics and Academic Characteristics*

This section of the survey focuses on the demographics and academic characteristics of the survey respondents and compares them to the characteristics of all of the degree-seeking Hunter College students. The demographics and academic characteristics should include the following:

<b>Gender</b>
Female
Male
<b>Race/Ethnicity</b>
African American
American Indian
Asian/Pacific
Caucasian
Hispanic
Other
Unknown
<b>Age</b>
25 or more years old
22 to 24 years old
20 to 21 years old
19 years old or less
<b>Grade Point Average</b>
3.50 – 4.00
3.00 – 3.49
2.50 – 2.99
2.00 – 2.49
0.01 – 1.99
No grades at Hunter College yet
<b>Semesters Completed at Hunter College</b>
0 semesters



1 - 2 semesters
3 - 4 semesters
5 – 6 semesters
7 or more semesters
<b>Credit Hours Enrolled in this Semester</b>
1 – 5 hours
6 – 11 hours
12 – 15 hours
15 or more hours

*Attitudes about Hunter College and Academic Plans*

This section of the survey focuses on the opinions of Hunter College respondents and their plans to return to Hunter College the following academic semester. The attitudes about Hunter College and academic plans section should include the following:

<b>What is your general attitude toward Hunter College?</b>
Very positive
Positive
Negative
Very Negative
<b>Would you recommend Hunter College to someone who wants to attend college?</b>
Yes
No
I don't know
<b>At this time, are you planning to return to Hunter College next semester?</b>
Yes
No
I don't know
<b>At this time, do you think you will have the financial means to enroll next semester?</b>
Yes
No
I don't know
<b>Are you planning to finish your degree at Hunter College?</b>
Yes
No
I don't know

*Choice of Academic Major*

This section of the survey focuses on the respondents' experiences with their academic major. The choice of academic major section should include the following:

<b>Have you decided what your major is (or will likely be)?</b>
Yes
No
<b>Have you officially declared this major with Hunter College?</b>

Yes
No
<b>How many credit hours have you taken in your major?</b>
0 – 5 hours
6 – 11 hours
12 – 15 hours
15 – 20 hours
20 – 25 hours
More than 25 hours
<b>Which of the following experiences have you already participated in?</b>
Volunteer work related to your major
Part-time/summer job related to your major
Student organization related to your major
Laboratory/research experience in your major field
Other activities related to your major
Internship/cooperative education in your major field
<b>My choice of major was (will likely be) influenced by ...</b>
classes I have taken at Hunter College
friends who are majoring or working in the field
a professor who influenced or encouraged me
career counseling or assessment
help from my advisor
<b>How certain are you about your major?</b>
Very certain
Somewhat certain
Somewhat uncertain
Very uncertain
<b>Is this the same major that you had in mind when you started college?</b>
Yes
No
I don't know
<b>How satisfied are you with your opportunities to interact with other students in your major?</b>
Very satisfied
Satisfied
Unsatisfied
Very unsatisfied
<b>How satisfied are you with your opportunities to interact with faculty in your major?</b>
Very satisfied
Satisfied
Unsatisfied
Very unsatisfied
<b>How satisfied are you with the advising by your major Department?</b>
Very satisfied
Satisfied
Unsatisfied
Very unsatisfied
<b>How satisfied are you with the field study opportunities in your major?</b>
Very satisfied

Satisfied
Unsatisfied
Very unsatisfied

*Academic Experiences*

This section of the survey attempts to record the overall rating of each surveyed student’s academic experiences at Hunter College. Respondents will be asked about their academic experiences. The academic experience section should include the following:

<b>Overall, how would you rate your satisfaction with academic experiences at Hunter College?</b>
Very high
High
Undecided
Low
Very low
<b>Overall, how satisfied are you with the quality of instruction in your courses?</b>
Very high
High
Undecided
Low
Very low
<b>Overall, how satisfied are you with the opportunities to interact with faculty outside of the class?</b>
Very high
High
Undecided
Low
Very low
<b>Overall, how satisfied are you with the opportunities to interact with your academic advisor?</b>
Very high
High
Undecided
Low
Very low
<b>Overall, how satisfied are you with faculty concern about your academic success?</b>
Very high
High
Undecided
Low
Very low
<b>Which of the following experiences have you already participated in?</b>
Summer school classes
Programs or career counseling for students who are undecided about their major
Collaborative research with faculty
Tutoring other students in your academic major

*Involvement and Activities*

This section contains information about campus involvement. The involvement and activities section should include the following:

<b>Overall, how would you rate your satisfaction with student activities at Hunter College this semester?</b>
Very high
High
Undecided
Low
Very low
<b>How involved have you been in campus programs, activities, and organizations this semester?</b>
Heavily
Moderately
Slightly
Not at all
<b>This past semester, I attended or participated in:</b>
Informal discussions with other students
Recreational computer use (chat rooms, games, web, etc.)
Student groups, organizations, or clubs
Activities related to my major or career interest
Student shows (plays, concerts, art shows)
Study groups or sessions outside of class
Informal discussions with faculty
Events sponsored by student organizations
Campus lectures (other than class lectures)
Community/campus service
Cultural, ethnic, or international events

*Hunter College Services*

In this section students are asked about their awareness, use, and satisfaction with various student activities. The Hunter College services section should include the following:

<b>Overall, how would you rate your satisfaction with student activities at Hunter College this semester?</b>
Very high
High
Undecided
Low
Very low
<b>How involved have you been in campus programs, activities, and organizations this semester?</b>
Heavily
Moderately
Slightly
Not at all
<b>This past semester, I attended or participated in:</b>

Informal discussions with other students
Recreational computer use (chat rooms, games, web, etc.)
Student groups, organizations, or clubs
Activities related to my major or career interest
Student shows (plays, concerts, art shows)
Study groups or sessions outside of class
Informal discussions with faculty
Events sponsored by student organizations
Campus lectures (other than class lectures)
Community/campus service
Cultural, ethnic, or international events

*Knowledge, Use and Satisfaction with Hunter College Services*

This section attempts to record the awareness, use and satisfaction with various student services available to Hunter College students. The knowledge, use and satisfaction with Hunter College services section should include:

<b>How would you rate the service you received at the college computer labs this semester?</b>
I did not know about this service
I knew about this service, but did not use it
I used this service and was satisfied with it
I used this service but was not satisfied with it
<b>How would you rate the service you received at the Hunter College library?</b>
I did not know about this service
I knew about this service, but did not use it
I used this service and was satisfied with it
I used this service but was not satisfied with it
<b>How would you rate the service you received at one of the Hunter College tutoring centers?</b>
I did not know about this service
I knew about this service, but did not use it
I used this service and was satisfied with it
I used this service but was not satisfied with it
<b>How would you rate the service you received at the physical activity facility?</b>
I did not know about this service
I knew about this service, but did not use it
I used this service and was satisfied with it
I used this service but was not satisfied with it
<b>How would you rate the service you received at the career center?</b>
I did not know about this service
I knew about this service, but did not use it
I used this service and was satisfied with it
I used this service but was not satisfied with it

### *Study Behaviors and Use of Time*

This section contains information about study behaviors and class attendance. This section also attempts to outline how many hours a week students spend studying, relaxing and socializing, working at jobs, and participating in student activities. The study behaviors and use of time section should include the following:

<b>This semester, how often did you use computer technology for class assignments?</b>
Always
Most of the time
Sometimes
Rarely
Never
<b>This semester, how often did you fit facts and ideas together?</b>
Always
Most of the time
Sometimes
Rarely
Never
<b>This semester, how often did you spend time preparing for class?</b>
Always
Most of the time
Sometimes
Rarely
Never
<b>This semester, how often did you identify key points of class or assignments?</b>
Always
Most of the time
Sometimes
Rarely
Never
<b>This semester, how often did you participate in class discussions?</b>
Always
Most of the time
Sometimes
Rarely
Never
<b>This semester, how often did you study alone?</b>
Always
Most of the time
Sometimes
Rarely
Never
<b>This semester, how often did you study with other students?</b>
Always
Most of the time
Sometimes
Rarely
Never

<b>During the previous week of classes, about how many times did you miss a class section?</b>
More than 5
4 or 5
2 or 3
1
None
<b>During this semester, about how often have you missed class sections?</b>
More than 5
4 or 5
2 or 3
1
<b>How many hours per week do you typically study outside of the classroom?</b>
0 hours
1-5 hours
6-10 hours
11-15 hours
16-20 hours
21 or more hours
<b>How many hours per week do you typically relax and socialize?</b>
0 hours
1-5 hours
6-10 hours
11-15 hours
16-20 hours
21 or more hours
<b>How many hours per week do you typically work at jobs?</b>
0 hours
1-5 hours
6-10 hours
11-15 hours
16-20 hours
21 or more hours
<b>How many hours per week do you typically participate in student activities?</b>
0 hours
1-5 hours
6-10 hours
11-15 hours
16-20 hours
21 or more hours

*Personal Reflections and Progress*

Respondents are asked to reflect on their past semester and report on the progress they made. The personal reflections and progress section should include the following:

<b>During this past semester, I have been able to make decisions.</b>
Strongly agree
Agree
Undecided
Disagree
Strongly disagree
<b>During this past semester, I have been able to clarify personal values.</b>
Strongly agree
Agree
Undecided
Disagree
Strongly disagree
<b>During this past semester, I have been able to evaluate my own interests, talents and goals.</b>
Strongly agree
Agree
Undecided
Disagree
Strongly disagree
<b>During this past semester, I have been able to manage my time and activities.</b>
Strongly agree
Agree
Undecided
Disagree
Strongly disagree
<b>During this past semester, I have been able to interact with diverse groups of people.</b>
Strongly agree
Agree
Undecided
Disagree
Strongly disagree
<b>During this past semester, I have been able to maintain physical health and well-being.</b>
Strongly agree
Agree
Undecided
Disagree
Strongly disagree
<b>During this past semester, I have been able to resolve conflicts in a positive way.</b>
Strongly agree
Agree
Undecided
Disagree
Strongly disagree
<b>During this past semester, I have been able to stay motivated.</b>
Strongly agree
Agree



Undecided
Disagree
Strongly disagree
<b>During this past semester, I have been able to ask others for help.</b>
Strongly agree
Agree
Undecided
Disagree
Strongly disagree
<b>During this past semester, I have been able to manage stress.</b>
Strongly agree
Agree
Undecided
Disagree
Strongly disagree
<b>How well have your education experiences at Hunter College helped your personal growth?</b>
Very well
Satisfactorily
Poorly
<b>How well have your education experiences at Hunter College helped your intellectual growth?</b>
Very well
Satisfactorily
Poorly
<b>How well have your education experiences at Hunter College helped your career preparation?</b>
Very well
Satisfactorily
Poorly
<b>How well have your education experiences at Hunter College helped your preparation for further education?</b>
Very well
Satisfactorily
Poorly
<b>How well have your education experiences at Hunter College helped your critical thinking skills?</b>
Very well
Satisfactorily
Poorly
<b>How well have your education experiences at Hunter College helped your creative thinking skills?</b>
Very well
Satisfactorily
Poorly
<b>How well have your education experiences at Hunter College helped your listening skills?</b>
Very well
Satisfactorily
Poorly
<b>How well have your education experiences at Hunter College helped your analyzing and evaluating skills?</b>

Very well
Satisfactorily
Poorly
<b>How well have your education experiences at Hunter College helped your problem-solving skills?</b>
Very well
Satisfactorily
Poorly
<b>How well have your education experiences at Hunter College helped your speaking skills?</b>
Very well
Satisfactorily
Poorly
<b>How well have your education experiences at Hunter College helped your writing skills?</b>
Very well
Satisfactorily
Poorly
<b>How well have your education experiences at Hunter College helped your math skills?</b>
Very well
Satisfactorily
Poorly
<b>How well have your education experiences at Hunter College helped your reading skills?</b>
Very well
Satisfactorily
Poorly

## Conclusions

A rotating sample design is outlined in this paper in order to assess the perceived quality of a Hunter College education. An electronic survey format is recommended in order to cut costs and to expedite sorting and analysis. The electronic survey could be easily administered six times a year to accommodate each wave rotation of the survey. Using Nieuwenbroek's work to describe any net changes that occur between rotations would facilitate understanding changes in attitudes or assessments. Finally, dividing the survey into sections allows for the questions to target specific descriptors and qualities of student life and education.

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