

# Using Mixed Methods to Understand and Assess Student Success

Alliance to Advance Liberal Arts Colleges  
STEM Workshop  
Carleton College  
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# Outline of My Remarks

- ◎ Background on the New England Consortium on Assessment and Student Learning
  - Who are we?
- ◎ What Students Tell Us About How They Learn
  - How do students choose a major?
  - How do students become academically engaged?
  - How do forms of engagement vary by major field?
- ◎ Concluding Thoughts
  - About academic engagement
  - About method

# New England Consortium on Assessment and Student Learning

([www.wellesley.edu/NECASL](http://www.wellesley.edu/NECASL))

# New England Consortium on Assessment and Student Learning

- Participating institutions
  - Bates, Bowdoin, Colby, Middlebury, Smith, Trinity and Wellesley Colleges
  - New England Association of Schools and Colleges (NEASC)
- Goals of the project
  - Better understand students' transition from high school to college, and how student become academically and socially engaged
  - Explore student learning in relation to institutional policies and practices
  - Involve faculty and students more directly in assessment
  - Share institutional research findings
  - Improve educational experience of students and faculty

# New England Consortium on Assessment and Student Learning

- ◎ Qualitative collaborations
  - Panel study of the Class of 2010
  - Writing samples
- ◎ Quantitative collaborations
  - Comparative CIRP analysis
  - Sophomore, junior, senior and alumni surveys
  - Grade transcripts

# Panel Study of the Class of 2010

- 36 students at each college (252 → 207)
- Race-stratified random sample (African American, Asian American, Latino/a, International, and domestic white students)
- Equal number of women and men at coed schools
- Three interviews in first year, two in subsequent years of college, one in year following graduation (maximum of 10)
- Student interviewers at six colleges, faculty interviewers at one

# Panel Study of the Class of 2010

- ◎ Interviews attempt to capture immediacy of experience
- ◎ **Academic experiences:** best/worst courses, choice of major, study habits, interactions with faculty, self-assessment of knowledge and skills
- ◎ **Social experiences:** interactions with friends, residential life, extracurricular activities, social life
- ◎ **Personal experiences:** managing time and life, being away from home, balancing competing demands
- ◎ **Aspirations, expectations, and self-reflection:** definitions of success, perceptions of change, hopes and fears, self-identity

# Collaborative Surveys

## © Sophomore Survey (Fall 2007)

- › Advising
- › Academic interests (and disinterests)
- › Academic experiences (e.g., classes, professors)
- › Friendships and co-curricular experiences

## © Junior Survey (Spring 2009)

- › Experiences in the major field
- › Study away



# Collaborative Surveys

## ◎ Senior Survey (Spring 2010)

- Previous summer experience (e.g., internships)
- Work in major field (e.g., perspective, research)
- General assessment of college experience
- Post-graduate plans

## ◎ One-Year-Out Survey (Summer/Fall 2011)

- Post-graduation activities
- Reflections on college experience
- Thoughts/plans for the future

# What Student's Say About How They Learn

Experiences in the Major  
Becoming Academically Engaged  
Field and Group Differences

# Experiences in the Major

Two Narratives:

Grace and Sarah

# First Semester, First Year

**I know it's still a little bit early, and you have a lot of interests that you want to explore, but do you know what you might want to major in yet?**

*I was thinking maybe international relations with a history concentration because that history course (A-) I am taking so far seems really telling, and [if] any of the other history professors are the same and if this class is an indication of how other classes are, then I would love to go into that field or at least take it.*

# Beginning of Second Semester, First Year

**Last fall we talked a little bit about what you were interested in majoring in. I think you said possibly history, and now you're thinking of making sort of a intro-disciplinary major. Is that something you think you'll want to pursue next year, or are you still sort of feeling things out?**

*I'm still kind of feeling things out. It changes. I was doing my resume for my internship, and I remember I changed my prospective major about four times, from English to biology to history to what have you, all these different things. But hopefully between history, English, and maybe biology, because with all the pre-med requirements I might just end up figuring out whichever class I took the most of, whichever subject I took the most classes of, and then just have that as my major.*

# Beginning of Second Semester, First Year

## **Which do you think was your best class?**

*It depends what you mean by best. Because grade wise, I did best in Human Bio (A), but I think learning wise it's a close call between history (A-) and English (B+).*

## **What do you mean by learning wise?**

*I learned a lot in both of the classes on how to think, on how to analyze different things that we read. Human Bio was more of an easy class, and it was more just procedure. There was a list of things you needed to do, so you did them, and you got an A. But the other two classes, while they were more challenging, I didn't do as well grade wise but we interacted a lot more in the class, and it wasn't just memorizing things. It was actually hands-on learning about what I can do to prepare for the future, future classes that would require analyzing documents.*



# First Semester, Sophomore Year

**So when you first came here, did you know that you wanted to be bio?**

No. No. I wanted to be -. What did I want to be? Oh, I wanted to be an English/history double major.

**And how did you get from there to biology?**

History didn't quite work out for me last semester. I had to take one of them credit/non and it just wouldn't have been enough room for me to take another history class to make up for the credit/non class....So then English. I realized after taking my first English class with the girl that was going to be my roommate actually, she is an English genius. She's not good at anything else but she loves English. So I realized that I didn't really want to be an English major. I mean I love English. I love reading. I love writing. But I have so many other commitments and different interests that I just can't focus on English itself.

**So then you stumbled upon biology?**

I stumbled upon biology. I'm only actually taking my second biology class (B+) but I just found that it was a lot more interesting to me because there was you know, there was still writing for labs and such, but there was also the science aspect which I hadn't considered before that or be interested in science.

**How did you end up taking a biology class?**

Well I took Human Bio my first semester just because I wasn't sure. I had actually bad experiences with bio in high school, and I just didn't think I would want to be pre-med at all. Then I took Human Bio, and I really liked bio. So I'm taking another bio class this semester, and I really like, I really like it.

# Second Semester, Sophomore Year

**You mentioned that you're a bio major. When did you choose to major in biology?**

*I chose at the end of last semester. When I was thinking about getting a major together and I decided well, out of all the classes that I've taken, I really like bio. I really like my professor. I really liked the intro classes that I'd taken. So I might as well go for it.*

**So what attracted you initially to that field?**

*That [it] was just really a fundamental field. It studies life, and I found it really fascinating. That you know physics you can technically, I mean we love physics. Or no, physics I guess you do need physics. Let's see. Political science. I love political science. I volunteered for the Clinton campaign. You don't technically need it as much. I think there's some fields that you could do with or without. Biology is one of the ones that you have to have to study life. To be able to do surgery you have to know, you have to know and to study life.*



# Second Semester, Sophomore Year

## **So which, which class has been your best class this semester?**

*My best class? Oh, gosh. Two different ways of answering this. One would be I think the one I'm doing best in, grade-wise, would be physics (B+). I didn't think I was doing as well and I was analyzing all the P-sets I turned in and the grades I got back and everything else, and apparently I'm doing very well. Understanding-wise I think I do better in biology class (B-). I understand a lot more because of the way the teacher explains and just since she teaches both the lab and the class there's a lot of overlapping between lab and class. And so we see a lot of concepts that she talks about in class and when we'll perform them in lab and so on and so forth.*

## **How is it when the lab and the lecture don't exactly match up?**

*Like for chemistry (B-) like the lab and lecture are taught by two different people. It's a little more awkward because the lab instructor will try to talk to us about a certain aspect and will say you've learned about this in class and we'll say, no, we actually haven't. We're learning about that next class. Or she'll spend like half an hour in lab explaining the concept and then at the end we'll say, well we actually learned that last week. So there's a lot of time wasted and a lot of energy that could be saved.*

# First Semester, Junior Year

**In what ways is this major a good fit for you?**

*It's a very good fit because I'm really curious about a lot of things, and biology allows me to ask all these different questions and then try to find a way to answer the questions. And it allows me to, you know, have the freedom to get hands-on and find answers by not just doing research and books, but going out in the field and collecting the sample and running tests and seeing.*

# Second Semester, Junior Year

**Now I want to ask you some questions about your major. And you're still bio? Have you had any second thoughts about your major?**

*Well I'm thinking about thesising right now and so it's also made me question a little bit about -. Like considering to be a bio major because most of the people who thesis in bio do it a very strict way or one certain way. They work under a professor. Or the professor has several projects and then they take on more of the projects and they thesis in that project. For me I'm not sure if that's what I want to do. I feel like learning about biology and being a biology major means that you should be innovative and come up with your own projects. But then that's a lot more difficult to do. I don't want to just do pure experimentation. I want to put like , for example, some aspect of history into it. I'm finding that it's a lot more difficult to do so. [The faculty] do not encourage students to go outside of you know the pure bio, pure science realm.*

**How do you feel then that fits within the liberal arts framework?**

*I feel like it takes away from what we think of as liberal arts. Because I always thought that you had no boundaries about you know what innovation you can do. But I feel like restrictions like this really take away from what we define as liberal arts.*

# Second Semester, Junior Year

**And what class would you say has been your best class this semester?**

*My best class this semester? Calculus (A).*

**And why is that?**

*I don't find it as challenging as some of the others. So it's a pleasure to you know go and get the work done. It usually doesn't. I have to focus and get it done -. It takes a bit of work to get it done. But it's not as much as organic chemistry (C), where I need to block out an eight hour period to read through the chapter and do all the problems.*

**Are you judging that based - and either answer is fine - based on the time you have to put into it or the way you feel like it's clicking?**

*A little of both. I don't have to put as much time into it and also because it -. Well it clicks a lot faster. So I don't put as much time into it. But also homework problems are a lot shorter. And the class is more engaging. The professor is more willing -. Is more readily available to answer questions.*

# First Semester, Senior Year

**So which has been your best class this semester and which? Why is it the best if you can decide?**

*Oh, that's hard. Really hard. I think probably my genetics class (B-) has been the best class because it's just so interesting. And somehow X manages to keep everybody engaged even though there's 60 people in the class....I'm actually looking forward to all of them. They're all really fun. You know I really have a lot of fun learning new things in my barbarianism class (B+). I've never taken in the 12th Century, and it's all Medieval Europe. Because my concentration is like in modern Chinese history. So it's so different but I'm learning so much about religion and learning about what Europe was like or the development of Europe. So it's really exciting. And then my vertebrate anatomy class (A-). I'm starting to learn about all the different parts of the body and how different muscles work with different parts. You know functions. And then my genetics class, I'm starting to learn a lot about how mutations come about, and we're kind of almost playing God by mating all these worms and seeing how the outcomes come out and it's really exciting. Because intro bio's been about...these are the ratios and dah, dah, dah....And then in this, because you're actually making the worms and seeing the outcome. Mating the worms and seeing the outcome. It's like, Oh, my gosh. These are actually real.*

# Second Semester, Senior Year

## **So in what ways do you think you think like a biologist?**

*I've become more like a biologist or I think more like a biologist in that I want more scientific proof that something has happened. Like what kind of tests can you show that this has happened? And you know, what are all of the interactions that are involved that have happened. But in a lot of aspects, I still think a lot more like a historian.*

## **How do you think like a historian?**

*I want to know, you know, what has happened in the past. How did that affect the future? And do the implications that are -. Are there any implications from the past that affect the future? That and I think a lot more linearly than -. Well most biologists think more -. Like the bubble map. Like I'm not quite sure what the adjective is. More like an array. They think more in 3-D.*

## **So when do you think you first started to think like a biologist or think like a historian?**

*I've always thought like a historian. I feel like -. But then I've become influenced by the biological way of thinking within the last two years or so. Really when I started working with my professor in doing research and once I started taking more higher level biology classes and having to do more independent research in laboratories.*



# Second Semester, Senior Year

## **Do you feel excited about any of your classes this term?**

*Yes. I love biochemistry (B-). And actually, I like all of my classes a lot. Most definitely biochemistry, and also the history class (A). I'm always really excited when I'm getting ready and preparing for the class, and also going to the class.*

## **So why do you like those classes?**

*Biochemistry, like I said before, I initially didn't think that I would like the class. I was taking it just because it was a pre-med recommendation. And it is really interesting to me how biology and chemistry are really tied together. Because before, usually in chemistry classes, you learn about this molecule and all the different interactions. If you throw acid at it, what happens? If you throw a base at it, what happens? And how this molecule changes. And in my biology classes, you learn about the cell and the different processes that go on. And you know mostly, you're learning about proteins or just like big globular things. And so I never really could tie the two together, because chemistry I'd think well, okay. It's very interesting that this molecule goes through these interactions, but how does that really affect the human body? How does that affect research that's going on? And so biochemistry for me really are tying together the biology that for me is really important. You know, what is going on in your body to the chemistry, that you know. How does this process happen? So it's been really interesting to learn how everything happens and the reasons. The chemical reasons behind what happens. And it's been really, really fun to learn. And the history class, I'm just really excited to go in every day, because the discussions that we have are wonderful. It's a very small class. There are economics majors in my class, and history and political science and a neuroscience major and I'm a biology major, but I'm a history minor. So everybody comes from like a different kind of background. To come together to discuss all the different issues that have gone on in China's history, and also how those issues tie into what is happening today, or within the last couple of years.*

# Second Semester, Senior Year

**So looking back over this past year, what do you think you'll remember most about your senior year ?**

*Well a couple of things. One is being able to come out of genetics (B-) alive. I've never been very good at cellular biology. I've always been more of the ecology type. And so taking genetics for me was a big challenge and I'm just surprised that I came out of it alive. And also, that although I didn't like the class when I was in it, I didn't realize until now how much I learned from this class. Both in terms of you know biological processes and also how to write a bio, a scientific paper. And then the second thing I think I'd remember is probably the uncertainty that I'll have to face about what I'm doing next year. I'm taking a year off before med school, so this has been a long time of well, what am I going to do in this year? And how will that affect whether or not I get into med school. So those are the two big topics that I've been grappling with.*



# Experiences in the Major

Sarah's Narrative

# First Semester, First Year

**You mentioned that you wanted to be pre-med. Is there a specific area that you think you want to major in?**

*I don't want to major in a science, I don't think. I want to major in humanities, but just be on the pre-med track. But I don't know where in the humanities. I'm just interested in things like psychology and sociology and humanities type things.*

**So which subjects, you mentioned psychology, sociology, why are you interested in those two things?**

*I just really like studying people. That's partly why I want to become a doctor is because I think people are really interesting. And to be a doctor it's kind of the physical side of people and then to be a psychologist, I don't want to become a psychologist, but to study psychology or social anthropology or something like that would be studying kind of the more mental and emotional sides of people, and I think that would be really cool.*

**Okay, now do you know yet what you think you might want to major in? I know you're just still feeling things out, but-.**

*Yes, I'm still feeling things out. I don't really, I'm trying not to narrow it down yet.*

# Beginning of Second Semester, First Year

**And when we met last fall you also talked about possible majors. Do you feel like that's changed? You said, yeah, that you were thinking humanities, but now you're leaning more towards bio?**

*Yeah, I'm pretty much decided on the bio major. Like I said, because I really like my bio course. And also, I talked with the pre-med advisor a few times, and I looked at pre-med requirements and **I realized it'd be way easier to be a bio major than a humanities major.** And I think that was one of the reasons. And the other one is just that, looking through the course catalog, there were a ton of bio classes I want to take, and just kind of random humanities classes I wanted to take. **Like there wasn't a clear humanities major that I had in mind, so you know, I didn't really need to be a humanities major.***

**So, do you think you're still going to pursue humanities courses?**

*Yeah, and like I said, the ones that I want to take, they're kind of spread out into different majors, so I'll just kind of take different classes that look interesting to me.*

# Beginning of Second Semester, First Year

## **Bio, how's bio?**

*Yeah, I really liked it. I think it was my favorite class (B+). Because I'm going to be a bio major and I think it was partly that class, because I came in thinking I wouldn't be a bio major. Even though I'm pre-med, I was going to be humanities. But I think I like that class and the professor so much that it made me want to be a bio major.*

## **What about the class did you like so much?**

*Well, it wasn't that difficult a class, because it was kind of a review of AP bio that I'd had in junior year, but I just really liked the professor. She was my first year advisor, and she just is a really interesting person, and she tells about her research. And I just really liked it, and it made me want to take more bio courses.*

# End of Second Semester, First Year

**What do you think makes you feel more comfortable around faculty?**

*I really like my professors this semester, and I think that's part of it. I know like for my bio class (A-) I only have six people in my class because we're in like the intensive one or something. So it's a really small class. So like we got to know the professor really well, and she was really supportive in helping us write lab papers and stuff like that. And so and then for my hard class, my chem class (B-), my professor is also really good at like explaining things. So I think it's just I like my professors more this semester.*

WF503R4: It was actually a conversation I had with her last year because she was my First Year Advisor last year. Just because she happened to

Reference 2 - 2.17% Coverage

Q: When you came to Wellesley, did you, you said you wanted to be biology at first. Did you know that when you came to Wellesley?

WF503R4: Well when I came I had this vague idea that I would be -. I knew I was going to pre-med when I first came. Like before I came. But I

# First Semester, Sophomore Year

**So it sounds like you're kind of determined what your major is. So let's just start talking about your major now. What, was it that conversation with X that eventually led you to choose neuro-science?**

*It was actually a conversation I had with her last year because she was my First Year Advisor last year. Just because she happened to be my bio teacher and I knew her more than all my other professors. And so we were talking and she was talking about the neuro-science major and before that it hadn't even occurred to me. So I kind of had it in the back of my head. And then this summer at some point, I was just looking up requirements and it occurred to me that the classes for neuro-science were way more interesting than what I would have to take for bio. And then talking to her this other time just kind of cemented that decision.*

**When you came to [College], you said you wanted to be biology at first. Did you know that when you came to [College]?**

*When I came I had this vague idea that I would be -. I knew I was going to pre-med when I first came. Like before I came. But I had this idea that I was going to be a humanities major but I didn't know specifically at all which humanities I'd want to be. But after a few months I decided that it would be easier for me to be a science major, so that's when I moved to the biology.*

# Second Semester, Sophomore Year

**So are you satisfied with your decision or do you have any lingering uncertainty?**

*I've very satisfied with it. I'm also really glad that I picked up the women's studies minor, because I like that it makes sure that I won't have all science classes. I think that rounds out things really nicely. So I'm very happy with my choices.*

**And it looks so far that your women's studies and your science classes have had a decent amount of overlap?**

*Yeah. Like within the women's studies minor you pick a concentration of three classes, and the concentration I've chosen is health. Like healthcare, medicine. So a lot of the classes that I'm taking in women's studies will kind of overlap with medicine.*



# First Semester, Junior Year

## **When asked to comment about her major and minor choices:**

*I didn't come in with just one interest. It wasn't like, oh neuro science is my one passion. I really did develop an interest in learning more about kind of the public health sides of things that aren't covered in neuro science. So I think it's a really nice way to kind of get credit for having different interests. Even if I hadn't minored in women's studies I'm sure I would have still taken classes. **But I think it's also nice just to have like proof. Like when I'm applying for things. To have it on my resume that I was that. So I think it comes across as more well balanced.** Which I know that med schools like to see. And I think that if you have like the science part and then kind of like the liberal arts part. It just makes you seem like more of a well-rounded candidate.*

## **Do you think it helps your academic performance if you feel really comfortable with a professor?**

*For me it's always awkward for me to approach a professor and ask for help. Even if it's just on a minor thing. Sometimes if I don't know them very well I'll just put it off or I'll be -. It will be embarrassing or for whatever reason I just won't do it. But I feel like it's helped me to know these professors pretty well. Because I really can explain like when I'm having a big problem with something or when I need serious help. Whereas if I hadn't known them as well I might have never talked to them about it. And I would just kind of pretend that it wasn't an issue and just dealt with it.*



# First Semester, Junior Year

**So which has been your best class so far this semester?**

*I guess I would say neuro (A-), although I'm going to get my first mid term back tomorrow, so we'll see about that. Overall I would say that's probably my best class.*

**And how do you define best in this case?**

*Best in that it's a class that I'm very interested in and that I feel like I'm doing fairly well in.*

**So when you think back to since you came to [College], in what class do you think you've learned the most?**

*Just overall? In terms of like practical knowledge, probably the sports medicine course (A-) I took last semester. Yeah.*

# First Semester, Senior Year

**So which has been your best class or classes this semester?**

*This semester probably neuro (A-).*

**Why? Can you explain that a little bit?**

*So the kind of -. Like the way of learning is something that I'm good at. It's like memorizing systems and how they work. And I'm good at things like that. Like the way that I'm not good at chemistry. I feel like it's just a different kind of mode of learning between like biology and chemistry. And so I really like the bio stuff. And you know it's just something that I'm interested in and so that makes it easier for me to learn.*

*You know I just think it's something I'm already more skilled at and that I have more of an interest in and so I'm more motivated to learn it. So I think that's why it's my best one.*

# First Semester, Senior Year

*I just really like endocrinology. It's something that's really complicated. But -. I mean it's complicated enough that I've never really took the time to understand it really well. But I wish that I knew it well because it's such an important body system. And also the lab is just really -. It's amazing. Like we -. We anesthetized rats two weeks ago and removed their ovaries. And so we actually got to see like live surgery on them. And for me that was like, Oh my God. I'm so excited. Because usually like if you do anything you do like a dissection. And it's not quite the same. So for me it was really exciting to be like oh yeah. I just ovariectomized mice or rats. You know. Anyway so the lab is really cool because you're actually kind of doing hands on work like that. It's not just looking at slides . So I'm really glad I picked that class.*

# Second Semester, Senior Year

**So looking back over this past year what do you think you'll remember most about your senior year at Wellesley?**

*I think I'll remember this semester specifically because this one has been really different than all my other semesters in that I'm only taking three classes and one of them is the independent study. And the funny thing about that independent study is that I actually haven't had to do anything like at all. Because the way that it works with like the mice -. We do experiments on mice. And we breed the mice ourselves. Like we breed the genotypes of like the parents and then we breed the parents to create like the off-spring that we want to do the experiments on. So the way that the breeding is working right now is that like I don't have any animals to test. So like there's literally nothing I can do for my independent study for about another like three weeks. So like this whole time it's been like I've only been taking two classes. So that's been really nice. Like I wish that I had taken fewer classes before because before I've always been like oh well I can take four, I'll take four. Like even if I didn't have to. Because I think just from AP's and lab sciences I had enough credits where I probably could have taken three for a lot more semesters than I did. So now I'm realizing how nice that is. Because really right now I'm doing the independent study which is like very little work. Although it will be by the end of the semester. But right now it isn't. And I'm taking biochemistry (B+). Which I worried would be like the death of me but is actually turning out to really well. I think I really like it. And it's one of those classes where you wish you had taken it earlier. Because I feel like I could have done a lot more biochemistry and I would have really enjoyed it.*

# Academic Engagement is...

## ◎ Derived from Varied Sources

### > Curriculum

- Digging Deep
- Exploring Broadly
- Being Challenged/Taking Risks

### > Connections

- Curriculum and Self
- Curriculum and “Real World”

### > Relationships

- Faculty
- Peers

# Academic Engagement

Quantitative Analyses

# This academic year, approximately how often have you...

	never	once or twice a semester	once a month	twice a month	once a week or more	N
felt excited by a class?	1%	8%	9%	25%	56%	1284
felt bored in a class?	1%	7%	9%	23%	60%	1280
participated in a class discussion?	1%	2%	4%	8%	85%	1278
completed assigned reading before class?	2%	4%	5%	12%	77%	1272
stayed up all night to finish an assignment or study for an exam?	35%	24%	12%	17%	12%	1276
handed in work with which you were pleased?	1%	5%	12%	38%	45%	1274
handed in work with which you were not pleased?	7%	28%	24%	32%	9%	1266
seriously reconsidered your position on a topic after assessing arguments made by others?	9%	27%	25%	27%	12%	1280

# Percentage reporting the following occurring twice a month or more by academic major:

	hands-on projects	student presentations	students collaborating on group projects	students participating in informal study groups	community or service learning	N
Visual and Performing Arts	55%	42%	37%	38%	14%	125
Foreign Languages	31%	41%	40%	33%	12%	113
English	23%	31%	25%	26%	8%	115
Philosophy and Religion	20%	36%	33%	44%	20%	45
History	19%	32%	27%	38%	14%	77
Cultural Studies	21%	40%	38%	42%	16%	110
Economics	30%	28%	47%	59%	15%	195
Political Science/International Relations	20%	33%	38%	34%	13%	164
Psychology	41%	21%	44%	42%	17%	117
Other Social Sciences	33%	27%	29%	31%	19%	86
<b>Biological Sciences</b>	<b>67%</b>	<b>49%</b>	<b>49%</b>	<b>58%</b>	16%	136
<b>Physical Sciences</b>	<b>66%</b>	<b>43%</b>	<b>45%</b>	<b>74%</b>	18%	94
<b>Mathematics and Computer Science</b>	41%	33%	48%	63%	14%	95



# Creating Scales for the Dimensions

## Academic Engagement Factor Loadings

	<u>Academi</u>	<u>Social</u>	<u>Coping</u>	<u>Career</u>
<b>This major is an important part of my personal identity.</b>	<b>0.646</b>	0.041	0.058	-0.072
<b>The subject matter is exciting.</b>	<b>0.64</b>	-0.044	-0.08	-0.172
<b>I routinely notice situations in which this major's methods apply.</b>	<b>0.59</b>	-0.049	0.009	0.09
<b>I see connections between major coursework and coursework outside it.</b>	<b>0.555</b>	-0.101	0.115	-0.141
<b>How often do you discuss your major with faculty members?</b>	<b>0.545</b>	-0.057	-0.052	0.036
<b>The department/program includes faculty with whom I'd like to work</b>	<b>0.518</b>	-0.125	-0.114	-0.08
<b>The major suits my particular skills and talents.</b>	<b>0.502</b>	-0.062	-0.095	-0.041
<b>How often do you discuss your major with friends or family?</b>	<b>0.472</b>	-0.071	0.117	-0.024
<b>I have learned to think differently since I started studying in this major.</b>	<b>0.469</b>	-0.075	-0.015	-0.001
<b>The field is interdisciplinary.</b>	<b>0.462</b>	0.015	0.149	-0.075
<b>The field offers exciting research, internship, or fieldwork opportunities.</b>	<b>0.462</b>	0.009	-0.122	0.293
<b>How often do you discuss your major with students in other majors?</b>	<b>0.453</b>	-0.134	0.157	-0.043
<b>How often do you discuss your major with other students in the</b>	<b>0.452</b>	-0.163	0.027	0.123
<b>The major leads to work that helps people.</b>	<b>0.429</b>	0.052	-0.077	0.196
I anticipate a career in an area related to this major	0.359	0.148	-0.07	0.242
This academic year how often have you felt excited by a class?	0.343	-0.244	-0.137	-0.148
I wanted an interdisciplinary field.	0.333	0.028	0.224	0.085
I thought it would lead to interesting careers.	0.303	0.064	-0.02	0.562
I had a course with a great professor from that department.	0.295	-0.152	0.024	0.114
The major will position me well for a good job.	0.271	0.052	-0.186	0.506
This academic year how often have you participated in a class discussion?	0.235	-0.153	-0.172	-0.267
I had been interested in this field for a long time.	0.211	0.055	-0.024	0.015
<i>Bolded items form a scale with alpha = .816.</i>				

# Creating Scales for the Dimensions

## Social Engagement Factor Loadings

	Academi	<b>Social</b>	Coping	Career
<b>Found people with whom you can hang out and have a good time</b>	-0.102	<b>-0.822</b>	0.019	0.056
<b>Found a group where you feel you belong</b>	-0.109	<b>-0.822</b>	0.024	0.103
<b>Been able to develop and maintain close friendships</b>	-0.016	<b>-0.782</b>	0.033	0.029
<b>Found people with whom you can discuss personal issues</b>	-0.001	<b>-0.744</b>	0.057	0.003
<b>found people with whom you can discuss intellectual issues</b>	0.12	<b>-0.682</b>	0.057	0.014
<b>How comfortable are you with the social climate of this college?</b>	-0.051	<b>-0.545</b>	-0.009	0.022
<b>Felt that being at this college helped you build self-confidence</b>	0.128	<b>-0.523</b>	-0.227	0.067
<b>Felt out of place or that you just did not fit in on campus</b>	0.109	<b>0.511</b>	0.194	-0.099
Found fun social activities that do not involve alcohol	0.083	-0.392	-0.11	-0.028
How comfortable are you with the intellectual climate of this college?	0.093	-0.299	-0.013	-0.061
Since entering this college, successfully managed stress	-0.061	-0.249	-0.698	0.01
This academic year how often have you felt excited by a class?	0.343	-0.244	-0.137	-0.148
<i>Bolded items form a scale with alpha = .833.</i>				

# Creating Scales for the Dimensions

## Coping Factor Loadings

	Academi	Social	<u>Coping</u>	Career
<b>Kept on top of your commitments without compromising your health</b>	-0.08	-0.163	<b>-0.775</b>	0.022
<b>Gotten enough sleep to feel rested in the morning</b>	-0.075	-0.016	<b>-0.751</b>	-0.055
<b>Successfully managed stress</b>	-0.061	-0.249	<b>-0.698</b>	0.01
<b>Managed your time successfully</b>	0.123	-0.06	<b>-0.666</b>	-0.001
<b>Stayed up all night to finish an assignment or study for an exam</b>	0.043	0.061	<b>0.586</b>	0.156
<b>Since entering this college, felt overwhelmed by all you had to do?</b>	0.104	-0.019	<b>0.557</b>	-0.014
<b>Handed in work with which you were not pleased?</b>	-0.096	-0.018	<b>0.404</b>	0.061
Handed in work with which you were pleased?	0.174	-0.053	-0.361	0.119
Completed assigned reading before class?	0.185	-0.048	-0.253	-0.227
Felt that being at this college has helped you build your confidence	0.128	-0.523	-0.227	0.067
I wanted an interdisciplinary field.	0.333	0.028	0.224	0.085
<i>Bolded items form a scale with alpha = .795.</i>				

# Creating Scales for the Dimensions

## Career Focus Factor Loadings

	<u>Academi</u>	<u>Social</u>	<u>Coping</u>	<u>Career</u>
<b>I wanted a field with clear right and wrong answers.</b>	-0.112	0.079	-0.035	<b>0.679</b>
<b>I thought [the major] would lead to lucrative careers.</b>	-0.021	0.053	-0.002	<b>0.673</b>
<b>Questions in this field have clear right and wrong answers.</b>	-0.102	0.05	-0.149	<b>0.625</b>
<b>Family members recommended [the major].</b>	-0.095	-0.113	0.095	<b>0.564</b>
<b>I thought [the major] would lead to interesting careers.</b>	0.303	0.064	-0.02	<b>0.562</b>
<b>The major will position me well for a good job.</b>	0.271	0.052	-0.186	<b>0.506</b>
<b>Friends recommended[the major]</b>	-0.056	-0.157	0.103	<b>0.487</b>
I was getting good grades in courses in that area.	0.052	-0.088	0.004	0.378
A professor encouraged me to major in the field.	0.181	-0.127	0.146	0.355
The field offers exciting research, internship, or fieldwork opportunities.	0.462	0.009	-0.122	0.293
discussion?	0.235	-0.153	-0.172	-0.267
I anticipate a career in an area related to this major.	0.359	0.148	-0.07	0.242
How often have you completed assigned reading before class?	0.185	-0.048	-0.253	-0.227
I found the introductory course(s) interesting.	0.192	-0.084	-0.013	0.215
<i>Bolded items form a scale with alpha = .745.</i>				

# Creating Scales for the Dimensions

## Rescaling Items to % Positive

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In order to measure the four dimensions we needed to combine responses that were based on different metrics: some questions had three levels of response, some four, and some five. In order to make the responses more comparable, we converted them all to 100-point scales by assigning the lowest score 0 and the highest score 100, spacing the intermediate scores evenly, and reversing the scale when needed to align it in the appropriate direction. The following examples should clarify our approach.

### For Academic Engagement:

*The subject matter of [this major] is exciting.*

- |                    |        |
|--------------------|--------|
| 1. not at all true | = 0%   |
| 2. somewhat true   | = 50%  |
| 3. very true       | = 100% |

### For Social Engagement:

*Since entering this college, have you been able to develop and maintain close friendships with other students on campus?*

- |                   |        |
|-------------------|--------|
| 1. not really     | = 0%   |
| 2. only somewhat  | = 33%  |
| 3. generally yes  | = 67%  |
| 4. definitely yes | = 100% |

### For Coping:

*How often have you stayed up all night to finish an assignment or study for an exam?*

- |                             |        |
|-----------------------------|--------|
| 1. never                    | = 100% |
| 2. once or twice a semester | = 75%  |
| 3. once a month             | = 50%  |
| 4. twice a month            | = 25%  |
| 5. once a week or more      | = 0%   |

# Correlations among the Scales

## Pearson Correlation

	Academic Engagement	Social Engagement	Coping	Career Focus
Academic Engagement	-	.270	.158	.199
Social Engagement	.270	-	.276	.082
Coping	.158	.276	-	.000
Career Focus	.199	.082	.000	-
<i>Overall evaluation of educational experience</i>	.352	.544	.314	.056
<i>Would still attend if could start over</i>	.274	.559	.285	.063

# Group Differences

## Differences by Academic Major

	Academically engaged	Socially engaged	Coping well	Career Focus	N
Visual and Performing Arts	71%	74%	57%	28%	125
Foreign Languages	66%	78%	64%	29%	113
English	68%	75%	60%	25%	115
Philosophy and Religion	67%	74%	59%	29%	45
History	66%	78%	62%	22%	77
Cultural Studies	73%	79%	58%	29%	110
Economics	65%	75%	60%	<b>51%</b>	195
Political Science/International Relations	70%	77%	61%	37%	164
Psychology	71%	75%	57%	32%	117
Other Social Sciences	73%	74%	57%	25%	86
<b>Biological Sciences</b>	71%	74%	59%	<b>43%</b>	136
<b>Physical Sciences</b>	74%	78%	63%	<b>46%</b>	94
<b>Mathematics and Computer Science</b>	67%	72%	59%	<b>48%</b>	95
Total	69%	75%	59%	36%	1174

# Group Differences

## Differences by Major in Seeking Clear Right/Wrong Answers

		N
Visual and Performing Arts	13%	125
Foreign Languages	15%	113
English	10%	115
Philosophy and Religion	19%	45
History	12%	77
Cultural Studies	9%	110
Economics	41%	195
Political Science/International Relations	17%	164
Psychology	18%	117
Other Social Sciences	10%	86
<b>Biological Sciences</b>	<b>35%</b>	136
<b>Physical Sciences</b>	<b>44%</b>	94
<b>Mathematics and Computer Science</b>	<b>51%</b>	95
Total	24%	1174



# Group Differences

## Differences by College and Gender

		Academic Engagement	Social Engagement	Coping	Career Focus	N
Coed 1	Women	77%	80%	61%	38%	77
	Men	68%	79%	69%	37%	54
Coed 2	Women	70%	81%	63%	32%	146
	Men	67%	77%	64%	42%	155
Coed 3	Women	72%	79%	61%	36%	69
	Men	69%	79%	67%	41%	47
Coed 4	Women	69%	74%	57%	29%	154
	Men	67%	74%	59%	36%	128
Coed 5	Women	70%	73%	58%	37%	83
	Men	70%	71%	57%	40%	83
Women's 1	Women	70%	72%	56%	39%	210
Women's 2	Women	71%	74%	57%	36%	286

# Group Differences

## Differences by Ethnicity, First-Generation, and Varsity Athletics

	Academic Engagement	Social Engagement	Coping	Career Focus	N
African-American	64%	70%	55%	39%	55
Asian-American	69%	69%	58%	43%	64
Hispanic	67%	72%	53%	33%	55
White	71%	77%	60%	37%	910
International	69%	69%	58%	43%	64
First-generation	68%	71%	55%	41%	147
Varsity athlete	69%	78%	62%	38%	286
Total	70%	75%	59%	37%	1116

# Concluding Thoughts

About Academic Engagement  
About Method

# Thoughts About Engagement

- ◎ Engagement is episodic
- ◎ Early engagement is beneficial; delayed engagement can be costly
  - > Choosing courses based on requirements instead of interests
  - > Persisting in areas of study in which students are marginally engaged (pre-meds)
  - > Affecting other forms of engagement
- ◎ Engagement and grades are complexly and variably related

# Thoughts About Method

- ◎ Involve all constituencies—especially students—in the process
  - > Design
  - > Implementation
  - > Analysis
- ◎ Keep it simple, but use both qualitative and quantitative methods if possible
- ◎ Do something longitudinal if possible
- ◎ Consider broader academic experience (not just science) in design

# Thoughts About Method

- ◎ Invite others into a conversation about what you're finding
  - Construct narratives
  - Share results (not necessarily analysis)
- ◎ Develop meaningful collaborations
- ◎ Use the information you gather to address hard and important questions
  - How can these data inform how we teach our classes?
  - How do our practices and policies either facilitate or diminish opportunities for student engagement?

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