

Considering the Student Perspective: Factors that Undergraduates Perceive as Influential to their Academic Performance in Science

Ashley Welsh

Research Coordinator, CWSEI
University of British Columbia

Background

- Concern for student performance in certain math and science courses
- Understand students' perceptions
- Exploratory mixed method study
 - Self-developed survey (n=500)
 - Over 750 written comments
 - One-on-one interviews (n=24)
 - Focus group discussion (n=1)

Research Questions

- What academic, social, and personal *factors* do undergraduates within the Faculty of Science *perceive as most influential* to impeding or enhancing their academic performance in science?
- How do *male and female* undergraduates *differ* in what they perceive as being most influential to their academic performance?

Your perceptions...

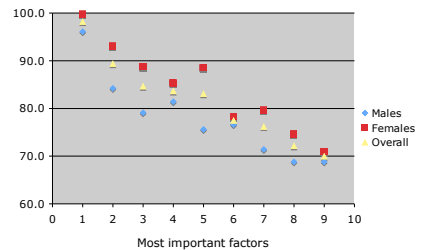
- What factors do you perceive as most influential to undergraduates' academic performance in science?

Most Important Factors (Survey Results)

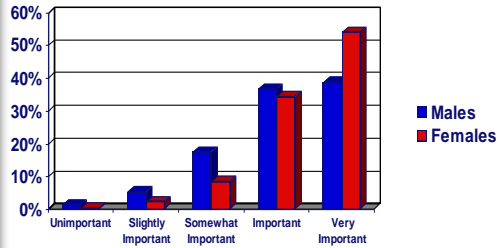
Rank Value	Survey Statement	% of students perceiving factor as Important
1	It is important for me to succeed academically	98.2
2	Ability for the instructor to make the course interesting	89.4
3	Developing and adapting study habits...	84.7
4	Instructor's ability to speak English clearly	84.3
5	The lack of relevant practice problems...	83.1
6	My interest in a subject...	77.5
7	Receiving encouragement from parents/family/guardians...	76.2
8	Uncertainty in types and difficulties of problems...	72.2
9	Volunteering or working limits studying...	70.0

Comparing Male and Female Responses

Percentage of males and females that perceive the top ranked factors as important to influencing their performance



The lack of relevant practice problems is a/an _____ factor influencing how well I perform on exams



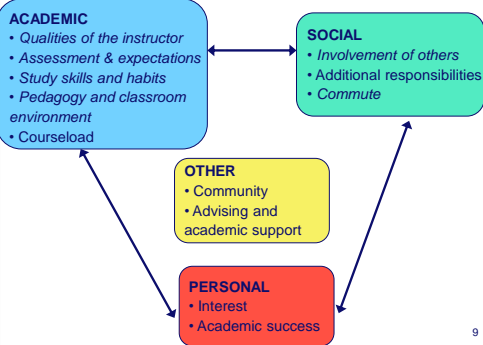
7

Statistically Significant Gender Differences

Statement	p-value
The lack of relevant practice problems ...	<0.01
The approachability of your instructor	<0.01
Receiving encouragement from my family...	<0.01
The use of in-class learning techniques	<0.01
Developing and adapting study habits ...	0.01
The number of students in the class	0.01
Suggestions ... influenced my choice of major	0.01
My uncertainty in knowing types and difficulties of problems...	0.02
Ability for the instructor to make the course interesting	0.03
My commute to campus...	0.05

8

Summary of the Most Important Factors



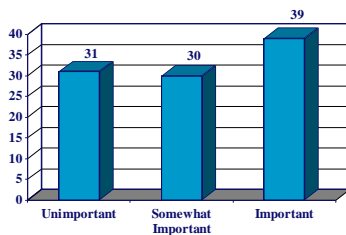
9

Academic Factors

- Qualities of an Instructor
 - Interesting*, approachable*, caring*
- Lecturing/Note-taking
 - Clear, organized notes (prefer online)
 - Monitor pace of lecture
- Assessment methods
 - Formative feedback*
 - helps students assess their progress and direct their studying

10

Active Learning Techniques*



- Over 250 positive, conditional, and negative comments

11

Active Learning Techniques

"Clickers haven't been used effectively by professors at UBC. They are either a waste of time, unhelpful, or are worth too many marks (not fair!)."

12

Active Learning Techniques

"It depends on the type of clicker questions asked. Sometimes the question is too easy and the answer can be found right in the textbook. The questions should be a bit more challenging to test our ability to apply the concepts and discuss with the professor along with the class about how to approach such problems."

13

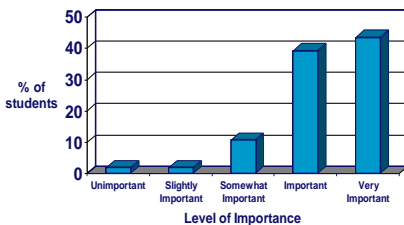
Active Learning Techniques

"Clickers are really great things. I've been relieved when, for example, 75% of the class selected my (incorrect) answer. It forced the professor to go over that material in a very beneficial way. I feel that if he simply asked "everyone understand?" no one would have said anything and we would have moved on."

14

Study Skills & Habits*

- 83% of survey respondents: Important to develop/adapt study skills and habits



15

Study Skills & Habits*

"I would cram just before the exam and continued to do that because I didn't know how to change. I should have talked to some people and didn't seek guidance so I got bad marks in first semester."

"I actually felt lost sometimes. I don't know how to study for some courses and it would be nice if there was, I guess, support and advice in that because I don't think you can study for different courses in the same way."

16

Courseload & Additional Responsibilities

- 13 students switched from taking 5 courses a semester to 4 or less
- Over half of the students work or volunteer during the school year
 - to enhance their academic experience
- Important to find a balance between academics and additional responsibilities

17

Commuting*

- 75% of students live off-campus
 - 45% with parents
- Over 40% have a minimum 45 minute one-way commute
- 62 comments regarding commuting

"When I drove a lot last year – rush hour controlled my life. I would be on campus at 6 am to avoid rush hour and to get free parking. I would bring my sleeping bag and sleep in the car for an hour and then go to class at 8 am. It was horrible!"

18

Community/Advising*

- Importance of building an academic and social community
- Students respect their professors

"I guess the teacher was really passionate about it and engaged with the class and it sparked my interest. It wasn't so cut and dry like memorize all these body parts – it was thinking deeper. Now that I'm in the sciences I'm looking at things way differently than I use to."

19

Community/Advising*

- Importance of building an academic and social community
- Students respect their professors

"I have had great advising from two professors. They are two role models that have been close to me and quite the influence on how I view and act in the field."

20

Recommendations

- Provide course-specific study techniques or guidance
- Implement more interactive teaching and formative assessment to help students assess their progress
- Explore ways to improve student experience for commuters
 - Online tutorials, office hours during the day, learning communities
- Provide students with more personalized academic advising
 - Enhance communication between professional services and faculty

21

Looking Back

"After all those shortcomings and not doing well in that first semester I came to the conclusion that it's going to be hard and I have to put a lot of work in. If I don't put a lot of work into it I'm not going to have to take what I can get."

22

Additional Information

- Ashley Welsh's Full Thesis
 - <http://hdl.handle.net/2429/28868>
- Selections from Ashley Welsh's Thesis: Data Analysis & Conclusions
 - <http://bit.ly/AWelshSelections>
- 2-page summary of Ashley Welsh's Thesis research
 - http://www.cwsei.ubc.ca/resources/files/Welsh_AcademicPerformanceFactors_2pager.pdf

23

Thank You!

24