

# STUDENT EXPECTATIONS FOR HIGHER EDUCATION IN BIOLOGY AT COMENIUS UNIVERSITY, BRATISLAVA, SLOVAKIA.

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## *Abstract*

The traditional value of higher education to train students to be productive and informed citizens who appreciate the arts and who are critical thinkers is now being challenged. The popular media in particular is weighing the cost of higher education against the employability of graduates and asking if it is worth it. In this study we examined the expectations of students in biology at Comenius University. We also examined faculty members to see if they understood the expectations of their students. Questionnaires were administered to BSc and first year MSc students and a sample of faculty members in the program. There were differences between student and faculty member responses. Among them were that 2nd year students and beyond selected 'learn things that interest me' as a reason to attend the university, whereas biology faculty selected 'get a good job' and 'prepare for a professional career' as most important. Another difference was that 'raising a family' was the student's most voted option regarding their futures, while faculty members considered 'becoming an authority in my area' as what they thought was most important for students. Students and faculty members, on the other hand, did agree on some of the questionnaire points, for example, both students and faculty indicated that 'laboratory and field instruction' are the most important teaching method. Both students and faculty considered 'soft skills' as important and both stated that the current curriculum included some of that training, and they both agreed that the most important role for a university teacher was to 'motivate students to learn'. The long-term goal of the study was to help faculty members better understand student expectations and then to apply any learned insights to updating the curriculum to better meet them.

**Key words:** student expectations, university education, higher education, biology education



## Introduction

Students tend to be bursting with enthusiasm and optimism for their futures and higher education is usually considered one step in the pathway to success. The value of a university higher education is now being questioned aggressively as never before in the USA and other countries as the cost of that education increases. In addition, the tradition value of higher education seems to be changing as costs increase, from having a broad education to job training; and hundreds of websites, media articles, reports, research papers and blogs point out many sides of this issue (Lowe, 2014; Lipsitz, 2015; Marklein 2013; Hacker & Dreifus, 2011; Higgins, 2012; Immerwahr & Foleno, 2000; Kandiko & Mawer, 2013; Sander et al, 2000). The overwhelming conclusion, however, is that university graduates typically earn considerably more over their lifetime than those who do not make that investment on their education. Azziz (2014) in his online article, “The Great Debate: Is College Still Worth it?”, makes the case that college graduates earn more, and are also less likely to lose their jobs during times of economic distress and have an easier time finding employment than those without a college education, even if only for two years. Taylor et al. (2014) in a study of 2002 adults ages 25 to 32 showed that they earn \$17,500 more per year, were less unemployed (3.8% vs. 12.2%), and 72% said that their investment in education had already paid off; and furthermore, 69% stated that their current work was at least somewhat related to their college field of study.

The current arguments about the value of higher education tend to not include discussion of the intangible aspects of that education – learning to be a critical consumer of concepts and ideas, appreciation of the arts, application of critical thinking and problem solving to everyday life and other things learned at the university as students pass through the curriculum. Wolfman (2011) states this clearly -- *“Decades of research have proven that the value of a college education goes far beyond the acquisition of “hard skills” and the increase in lifetime earning capacity. Higher learning may or may not always guarantee a fatter pay check. On the other hand, it does turn the people earning those pay checks into much more intellectual, engaged, and compassionate members of society than they would be otherwise.”*

One major aspect of this quandary concerns the question as to why today’s students think they are going to university and if the university does anything to analyse these expectations in updating and planning the curriculum. In this study, our intention was to

investigate what students at Comenius University (CU) in Bratislava, Slovakia expected from their education in Biology. Selecting Biology for this study was a logical decision because during the 2012 academic year the first author of this study was a Fulbright Senior Specialist at CU. His project was to conduct a review of the Biology program using a process common in the USA. A report on the Biology review was written and submitted to the Faculty of Natural Sciences, and some aspects of those observations will be tied in to the discussion below as they relate to the current study (see Appendix 1). One observation from the biology program review was that students tend to not be able to find jobs in that field of study after graduating, but many of them continue on to an MSc degree apparently still knowing that there were most likely no jobs for them. This then begs the question – if there are no jobs for biology graduates then why are students selecting that major, and if there are no jobs in this field, what is the university doing to understand and meet student expectations?

## Methods

Questionnaires (Table 1) for students, and faculty staff members were prepared with the intention of making comparisons between them. In the Biology program over 200 questionnaires were responded to from first, second and third year BSc students and first year MSc students; eleven faculty members participated. The student respondents were voluntary, and mostly from female students (82%). The data for the student and faculty questionnaires were analysed and compared. Those questions where no differences were observed will not be described, but all the data can be seen in Table 1.

## Results and discussion

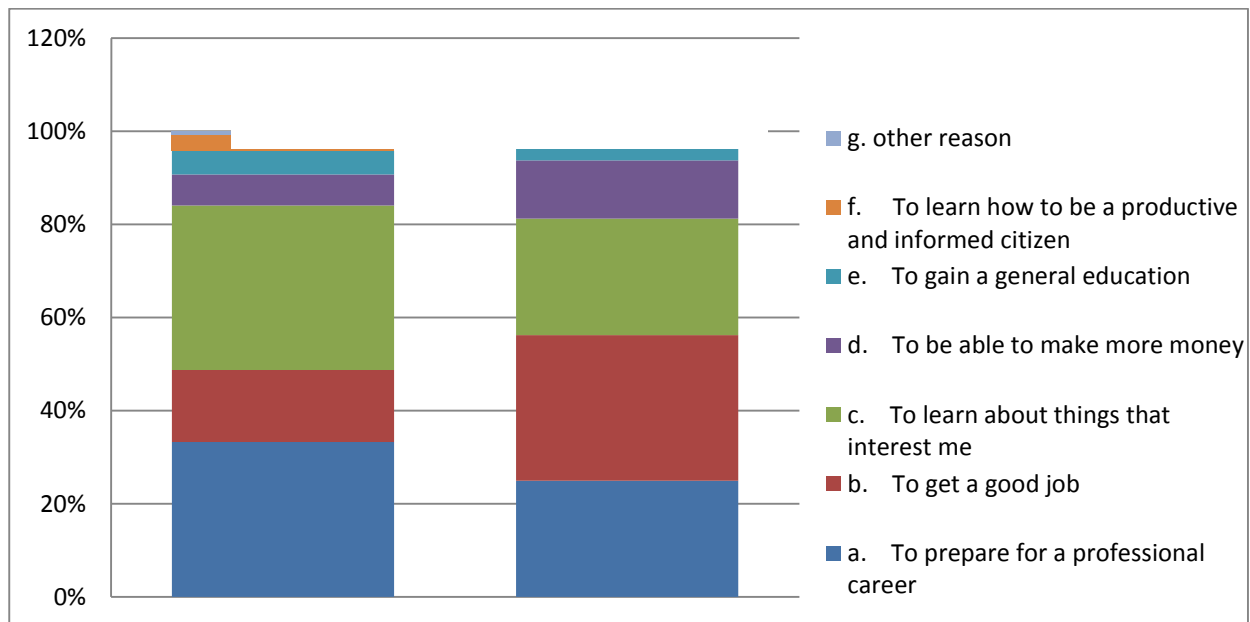
### Student expectations in Biology

This study concerned what expectations Biology students have for an education at Comenius University in Bratislava, Slovakia. Expectations often aren't based in reality and students presumably change their expectations during their time at university. To address this, questionnaires were prepared and handed out to students in various classes. In the following we will discuss the responses to questions and point out similarities and differences between students and members of the faculty.

### Data analysis

Q1. What is the most important reason for you to attend university (Figure 1)?

First year students responded that the main reason to attend university was to prepare for a professional career (Table 1). Older students 2nd year to first year graduate students changed their first choice to ‘Learn about things that interest me’ with a second close choice of ‘prepare for a professional career’. It is quite noteworthy that gaining a general education, learning to be an informed and productive citizen was a priority for only 5% and 3% of the students, respectively.



**Figure 1.** *Most important reason to attend university*

Making more money was only important to 7% of the respondents. The faculty differed in that 31% thought the most important function of the university was to ‘get a good job’ and 25% thought preparing for a ‘professional career’ and ‘learning about things of interest’ were a close 25% (Figure 1). Making more money and gaining a general education did get a few votes from faculty, but none of them thought that learning to be an informed and productive citizen was an important function. It isn’t unexpected that getting a job is of critical importance, but surely, one of the traditional functions of the university is to expose students to a diversity of ideas that will then enable them to think critically about a range of issues. It is interesting that this didn’t seem to be important in this study for either the students or the faculty who responded to the questionnaire.

Q2. Why did you select Comenius University (Table 1)?

Comenius University in Bratislava (CU) is the oldest university in Slovakia and has a strong history in science. A small group of highly ranked high school students were interviewed as

part of this project (data not shown) and all of them stated that they would not apply to CU because in their opinion it was not an excellent school. When probed about the basis of their opinion, all they could say is that is what they have been told. It is obvious that the university is not doing a great job in outreach to high school students. The first year students stated that they didn't have other choices in university selection with 'graduates get good jobs' a second selection. Second year students and all the other years changed their view and all stated that they selected CU because it had an 'excellent academic reputation'. This highlights the aforementioned idea that CU needs to do a better job of outreach, because once students get there they recognize the strong program in Biology, but they didn't think that prior to coming. Student's second choice for a reason to select CU was its unique education programs. The faculty responded that the main reason to select CU is that 'graduates tend to get good jobs' with a close second that CU has 'unique education programs'. The faculty also had a strikingly different response to the choice that CU has an 'excellent academic reputation' compared to the students – none of the faculty voted for this. This is a rather intriguing response where the faculty who responded seemed to not acknowledge the strength of their own programs, whereas the students in the program after year one had strong confidence in it. One of the possible explanations is that faculty members tend to compare CU rather in the international context, while students would consider their choice more locally.

Q3. What is your probable occupation when you graduate (Table 1)?

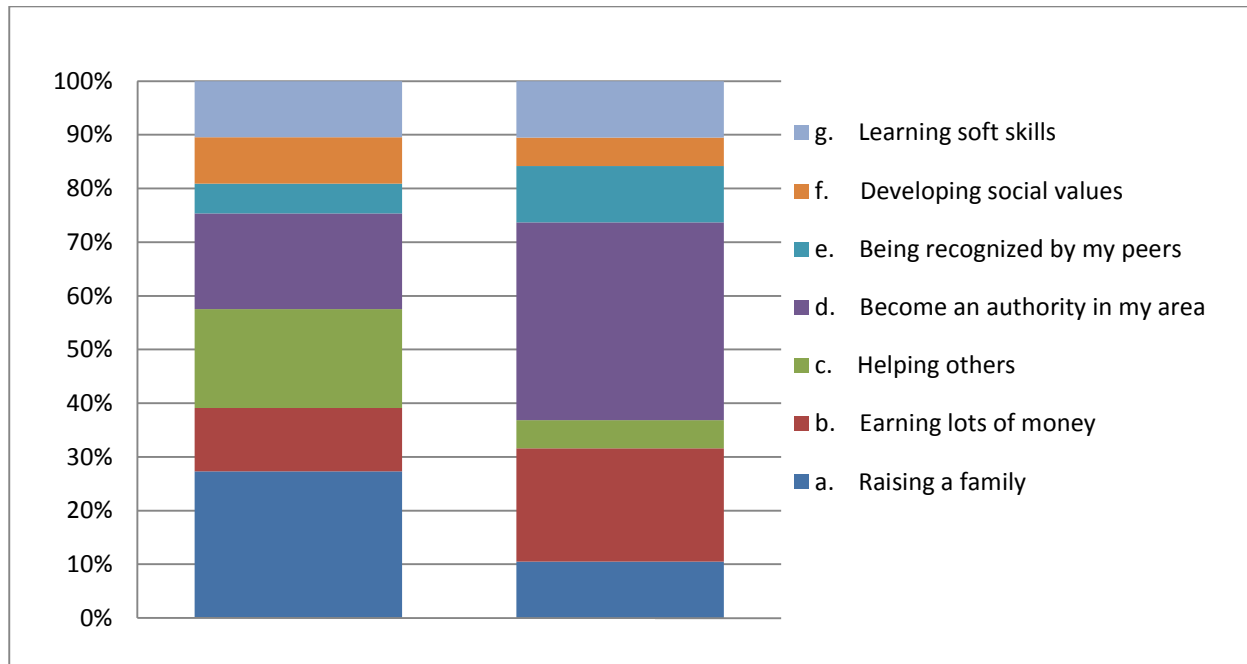
The responses to this question show a startling difference in view between the students and the faculty. The faculty responded (38%) that the most probable occupation for their students was business, whereas only 11% of the students made that choice. The most popular choice for students (37%) was 'other—', and the careers listed were primarily 'scientist', but also listed were baker, dog trainer, ethnologist, dancer and pharmacist. A strong second choice for students was medicine and university professor.

Q5. What is your estimate of your choices for the following (Table 1)?

Students and faculty agreed that the students will have a high probability, 95% and 100% likelihood of finishing their BSc degree. Both felt strongly 82% and 70% that students would be satisfied with their lives ten years after graduation, indicating a strong hope for the future. Both responded poorly 38% and 10% to the choice of making a good salary in my first job after graduation. There was a striking difference in the responses to the second question –

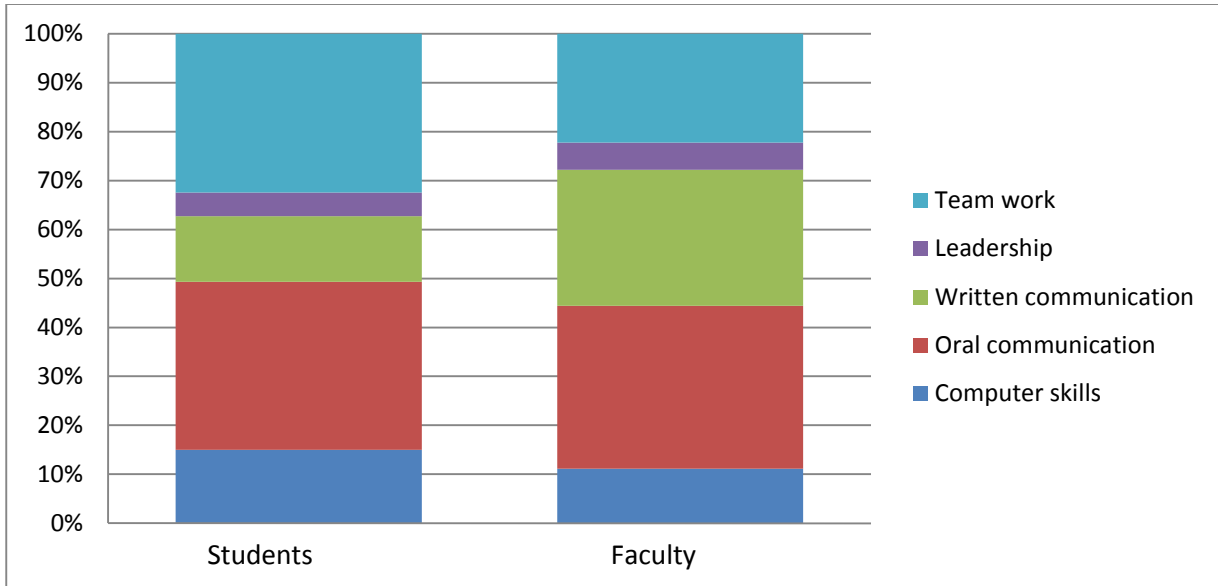
‘find a job in my area of study after graduation’; 75% of students thought that this was likely, and only 30% of faculty selected this choice.

Q6. Which of these things is most important to you (Figure 2)?



**Figure 2.** Which of these things is most important to you?

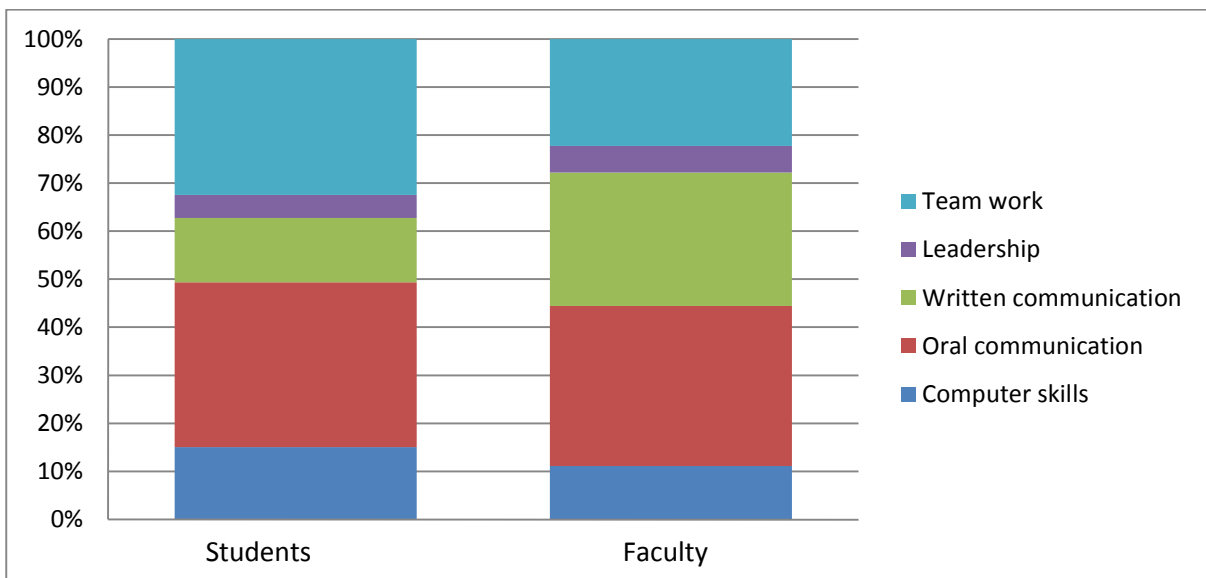
For the students, all of the choices received votes, but for all classes of students the most frequent choice was ‘raising a family’ (27%). The second choice for students after the first year was ‘helping others’ followed by ‘become an authority in my area’. The faculty had a very different view on what the students thought; their first choice (37%) was ‘become an authority in my area’ and the second choice was ‘earning lots of money’. These differences point to a possible disconnect between what was motivating the students and what the faculty thought was their motivation (Figure 2).



**Figure 3.** Which skills are most important?

Q7 Which of these teaching methods do you consider most important (Figure 3)?

There was complete agreement here between the students and faculty members that ‘laboratory and field exercises’ are the most important teaching methods (Figure 3). This same point was clear in the Biology program review (Appendix 1). Independent research and lectures were secondary choices for both students and faculty, and very few students (3%) and no faculty considered online instruction important.



**Figure 4.** Which skills are most important?

Q8. Which of these skills is most important for you (Figure 4)?



These choices also elicited close connection between what students thought was most important (34% oral communication) and what the faculty thought were important for them (33% oral communication). The second most important choice for students was ‘team work’, and the second for faculty was ‘written communication’. The value of soft skills is not lost on these students, and obviously the Biology program provides ample opportunities inside and outside of class oral communication on classwork and research, but the other soft skills listed should also be considered important (Figure 4).

Q9. Have you received instruction and practice in any of the skills listed above (Table 1)?

71% of the students indicated that they did receive instruction on application of the soft skills mentioned in question #8 (i.e. computer skills, oral communication, written communication, leadership and team work) and 29% indicated that they did not; 100% of the faculty indicated that there was instruction on soft skills.

**Table 1. Expectations questionnaire – students + faculty**

Expectations Questionnaire Data - Biology – 2012 Questions		Hs	1st Yr	2nd Yr	3rd Yr	4th Yr	Sum	Students	Faculty
<b>1. What Is The Most Important Reason For You To Attend University?</b>	A. To Prepare For A Professional Career	4	22	53	35	30	144	33%	25%
	B. To Get A Good Job		6	31	16	14	67	15%	31%
	C. To Learn About Things That Interest Me	2	16	54	41	40	153	35%	25%
	D. To Be Able To Make More Money		5	13	6	5	29	7%	13%
	E. To Gain A General Education		2	10	6	4	22	5%	6%
	F. To Learn How To Be A Productive And Informed Citizen	1	3	7	3	1	15	3%	0%
	G. Other Reason			1		2	3	1%	
<b>2. Why Did You Select Comenius University?</b>	A. Graduates Tend To Get Good Jobs		8	17	3	9	37	13%	43%
	B. It Is A Pleasant And Friendly Place		5	19	7	6	37	13%	14%
	C. Excellent Academic Reputation		8	37	27	35	107	37%	0%
	D. Unique Education Programs		7	21	24	13	65	23%	36%
	E. I Didn't Have Other Choices		10	17	8	6	41	14%	7%
<b>3. What Is Your Probable Occupation When You Graduate?</b>	A. Teacher			6	5	9	20	7%	15%
	B. University Professor	4	6	23	19	7	59	22%	15%
	C. Medical Career	1	12	22	20	9	64	23%	8%
	D. Business Career		5	12	4	9	30	11%	38%
	E. Other	3	13	32	15	37	100	37%	23%
<b>4. What Is The Highest Degree You Expect To Obtain?</b>	A. Bachelor's				1	1	2	1%	
	B. Master's		9	18	18	15	60	22%	58%
	C. Phd	5	23	63	39	47	177	65%	42%
	D. Md	2		3			5	2%	
	E. Dvm						0	0%	
	F. Other				2		2	1%	
<b>5. What Is Your Estimate Of Your Chances For The Following:</b>	A. Get A Bachelor's Degree	7\0	33\0	77\2	49\5	41\4	207\11	95%	100%
	B. Find A Job In My Area Of Study After Graduation	7\0	18\14	65\22	42\15	38\5	170\56	75%	30%
	C. Be Satisfied With My Life 10 Years After Graduating	5\2	32\3	71\10	38\13	40\11	186\39	82%	70%
	D. Make A Good Salary In My First Job After Graduating	4\3	9\25	37\44	21\29	14\35	85\136	38%	10%
<b>6. Which Of These Things Is Most Important To You?</b>	A. Raising A Family	2	17	41	33	30	123	27%	11%
	B. Earning Lots Of Money		9	16	17	11	53	12%	21%
	C. Helping Others	1	7	32	22	21	83	18%	5%
	D. Become An Authority In My Area	3	12	30	17	18	80	18%	37%
	E. Being Recognized By My Peers		5	8	7	5	25	6%	11%
	F. Developing Social Values	1	6	15	11	6	39	9%	5%
	G. Learning Soft Skills		7	15	11	14	47	10%	11%

**Table 1.** *Expectations questionnaire – students + faculty (Cont'd)*

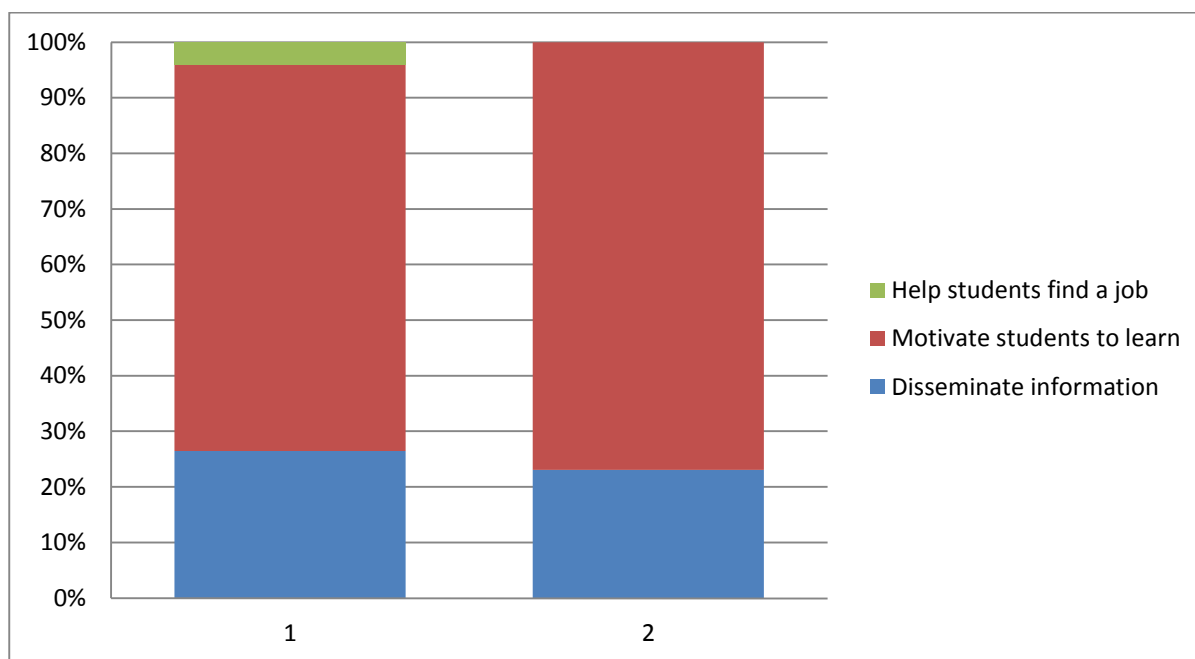
<b>7. Which Of These Teaching Methods Do You Consider Most Important?</b>	A. Lecture	2	6	15	16	14	53	14%	25%
	B. Laboratory And Field Exercises	3	32	83	53	58	229	60%	40%
	C. Independent Research Projects	2	13	12	18	19	64	17%	25%
	D. Online Instruction And E-Learning		1	4	4	1	10	3%	0%
	E. Independent Reading And Web Learning		4	7	9	3	23	6%	10%
<b>8. Which Of These Skills Is Most Important For You?</b>	A. Computer Skills	2	11	17	15	11	56	15%	11%
	B. Oral Communication	3	21	41	38	25	128	34%	33%
	C. Written Communication		10	10	14	16	50	13%	28%
	D. Leadership	1	2	4	4	7	18	5%	6%
	E. Team Work	1	14	51	27	28	121	32%	22%
<b>9. Have You Received Instruction And Practice In Any Of The Skills Listed Above?</b>	A. Yes	7	20	66	36	38	167	71%	100%
	B. No	1	11	18	17	20	67	29%	0%
<b>10. Do You Expect Your University Courses To Be Difficult?</b>	A. Yes	4	35	68	46	48	201	79%	58%
	B. No	1	4	22	13	15	55	21%	42%
<b>11. What Grade Do You Expect From Your Courses For Average Work?</b>	A. A	4	2	19	17	15	57		2
	B. B	1	6	30	22	30	89		4
	C. C	1	27	33	14	8	83		6
	D. D		5	14	4	5	28		1
<b>12. Do You Expect Your Courses To Provide A Syllabus And Course Web Page?</b>	A. Yes	5	31	70	46	45	197	79%	64%
	B. No		3	4	5	4	16	6%	36%
	C. It Doesn't Matter To Me	1	3	10	10	13	37	15%	0%
<b>13. What Is The Most Important Role Of A University Teacher?</b>	A. Disseminate Information	4	12	30	12	20	78	26%	23%
	B. Motivate Students To Learn	3	29	67	54	52	205	69%	77%
	C. Help The Student Find A Job		3	3	4	2	12	4%	0%
<b>14. What Is Your Gender?</b>	A. Male	4	10	18	4	10	46	18%	64%
	B. Female	3	26	72	57	54	212	82%	36%
<b>15. What Is Your Level In School?</b>	A. High School	7					7		
	B. First Year In University		36				36		
	C. Second Year			91			91		
	D. Third Year				61		61		
	E. Fourth Year					64	64		
<b>16. Did You Parents Go To University?</b>	A. Yes	6	21	49	30	32	138	53%	45%
	B. No	1	15	42	31	31	120	47%	55%

Q12. Do you expect your courses to provide a syllabus and course web page (Table 1)?

79% of students and 64% of faculty considered that the Biology courses provided a syllabus and webpage. 36% of the faculty indicated that the Biology courses did not provide these things, and interestingly, 15% of students scattered across all classes selected the choice that a syllabus and webpage ‘...doesn’t matter to me.’

Q13. What is the most important role of a university teacher (Figure 5)?

There was remarkable similarity in the response here from the students and faculty with the choice ‘motivate students to learn’ as the main choice (69% and 77% respectively). The second choice for both was to ‘disseminate information’. It is rather advanced thinking that motivation is more important than dissemination of information and quite interesting that the students came to this conclusion even as first year students (Figure 5).



**Figure 5.** *Most important role of university teacher?*

## Conclusions

Student opinion evolves after exposure to education and new ideas. First year students expected their university education to prepare for a job, but second year and older students changed their view to learning about what interests them. First year students mostly stated that they selected CU because there were very few other choices, but that evolved to a view that CU had an excellent reputation. Student expectations and opinions evolve during a student’s

career in school, but universities need to do a better job of communicating to incoming students about the long term value of higher education. Learning skills that can be translated into a job are important, but learning skills that can lead to a better life and more informed person are even more important.

CU and other universities need to do a better job to demonstrate how training in biology can lead to a productive career. Secondly, universities should make it their business to find out what career expectations students have that enrol in biology. Anecdotal information indicated that many biology students selected biology as a far second choice after being rejected by medicine. This should be investigated because biology training can be applied to many fields. Universities need to provide students with lists of related occupations and include interviews with former students who found their ways in different paths.

Questions on what is important showed a clear disconnect between students and faculty members. Students indicated that raising a family and helping others was a strong motivator for their education, while faculty members stated that they would consider becoming an authority was their motivator. The curriculum should add outreach experiences so that the 'helping others' expectation can be achieved while in university and as training for after graduation. Insuring that soft skills, like team work and leadership training, are incorporated will also help.

Students and faculty members agreed that laboratory and field exercises are a most important teaching tool. Unfortunately, these are also the most expensive ways to teach. Universities should attempt to engage students through other ways to gain practical experience by internships, independent research projects and other means to gain hands-on experience.

Student expectations on the role of university teachers were unexpected. They agreed with faculty members in that the most important role of a university teacher is to motivate a student to learn. Dissemination of information in our on-line world is no longer the exclusive role of the professor, instead showing students the excitement of your field can motivate students to study on their own and discover.

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## References

- Azzis, R. (2014). "The Great Debate: Is College Still Worth it?", [http://www.huffingtonpost.com/dr-ricardo-azziz/debate-college-worth\\_b\\_4561068.html](http://www.huffingtonpost.com/dr-ricardo-azziz/debate-college-worth_b_4561068.html)
- Hacker, Andrew and Claudia Dreifus. 2011. Higher Education?: How colleges are wasting our money and failing our kids---and what can we do about it. Times Books, New York. Pp 271.
- Higgins, Holly. (2012). Why some graduates believe university was a waste of time. <http://www.gardian.co.uk/higher-education-network/blog/2012/may/01/graduates-university-employability-waste-time?CMP=>
- Immerwahr, John and Tony Foleno. (2000). Great Expectations: How the public and parents – white, African American and Hispanic view higher education. National Center for Public Policy and Higher Education. Pp 52. San Jose, CA.
- Kandiko, C.B. and M. Mawer. (2013). Student Expectations and Perceptions of Higher Education: Executive summary. London: King's Learning Institute, UK. Pp12.
- Lipsitz, Ethan. 2015. The value of college may not be what you think it is. The Huffington Post, 6/15/2015. [http://www.huffingtonpost.com/young-entrepreneur-council/the-value-of-college-may\\_b\\_7573022.html](http://www.huffingtonpost.com/young-entrepreneur-council/the-value-of-college-may_b_7573022.html)
- Lowe, William J. 2014. Education is worth the investment. The Huffington Post, 9/4/2014. [http://www.huffingtonpost.com/william-j-low/e/education-is-worth-the-in\\_b\\_5767518.html](http://www.huffingtonpost.com/william-j-low/e/education-is-worth-the-in_b_5767518.html)
- Marklein, Mary Beth. 2013. What's a college major worth? Study linking first-year salaries with majors finds some surprises. USA Today. September 3, 2013.
- Sander, P., K.Stevenson, M. King and D. Coates. (2000). University Students' Expectations of Teaching, Studies in Higher Education, 25 (3), 309-323. <http://dx.doi.org/10.1080/03075070050193433>
- Taylor, Paul, Rick Fry and Russ Oates. 2014. The Rising Cost of Not Going to College. Pew Research Center. <http://www.pewsocialtrends.org/files/2014/02/SDT-higher-ed-FINAL-02-11-2014.pdf>
- Wolfman, Kevin. 2011. Why college is always 'Worth It'. Education News. 10/20/2011. <http://www.educationnews.org/higher-education/kevin-wolfman-why-college-is-always-worth-it/>

## Appendix 1. Biology program review -- Student Questionnaire Summary – 2012

The program review was conducted in the spring term 2012 based on responses to questionnaires submitted by 135 Biology students from 9 different classes including 1st, 2nd and 3rd year undergraduates and 1st year master's students.

### 1. Quality of the study program and studying conditions

Most of the students (93 %) were happy about being in the Biology program and 87 % replied they choose it as their major. Comments concerning both questions were positive, considering the program as “interesting” or “fascinating”. In the evaluation of courses and teachers, the most frequent score was 2 (1 excellent- 5 poor), however the evaluation of teachers is more positive compared to evaluation of courses. Most of the teachers provided a syllabus (90 %) that pointed out the most important concepts (84 %). However, there is different meaning for the term syllabus in English compared to the meaning in Slovak (the meaning is “list of topics”) which has to be taken in account in the interpretation of these results. Students mentioned a big variety of study materials provided by teachers (including digital formats such as PowerPoint presentations) and 84 % of them declared that the materials are available to them. 78% answered that there is study hall or location for study and only 47% answered that there is student club.

## 2. Self-evaluation of gained competences

98 % of student respondents answered that courses have laboratory or field instructions. Most of the students (57%) feel prepared in computer skills however in some of the groups of bachelor degree students responded negatively. 44 % of respondents felt prepared in communication skills but only 30 % responded that their training in English is sufficient. Some of them commented that they feel prepared in English because of individual study.

## 4. Evaluation of career perspectives

74 % declare that no one at the university discussed career opportunities with them; however, 64 % thought that their training in Biology at CU will enable them to get employment after graduation. Comments concerning this were mostly negative, pointing out that lack of employment opportunities in Slovakia. Many respondents expressed their intention to find the job abroad or in different field. 61% of the students stated that their courses had websites, but in the faculty questionnaires, 19 of 21 said that they did not have a website for their courses. 98% of the students stated that their courses had laboratory or field exercise components, and 20 of 21 faculty members stated the same. It wasn't possible to follow up on this, because in the expectations survey conducted later, almost 100% of the students indicated that one problem with the curriculum was that it didn't have enough laboratories associated with courses. 57% of students stated that they were prepared with computer skills, but it wasn't clear if formal course work was offered. 72% of the students stated that they were lacking in communication skills, and 92% stated that they needed more skill in English language.