



**2020|21 Year 2**

**Get The Facts Out**

**Student Strategy Engagement (SSE) Analysis**



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## About Get the Facts Out

Get the Facts Out (GFO) is a five-year, NSF-funded partnership of the Colorado School of Mines and four national societies: the American Physical Society, the American Chemical Society, the American Association of Physics Teachers, and the Association of Mathematics Teacher Educators. GFO is a unique project designed to reach STEM majors in a large fraction of all U.S. mathematics, chemistry, and physics departments and has the potential to address teacher shortages in these high-need STEM disciplines significantly.

## Repairing the Reputation of the Teaching Profession

To change the conversation around STEM teacher recruitment at institutions across the country, GFO produces research-based content and reports that faculty can use to help improve their teacher recruitment efforts. The resources are designed to celebrate the positives of teaching and to provide students and faculty with facts that address misinformation and common misperceptions about teaching. The GFO Project Team continually works to update and improve these resources as well as provide support to the faculty who use them.

These resources, and all other content in this report, are intended to be used broadly to change the conversation around STEM teaching careers. We encourage anyone to use and distribute these materials for their intended purpose, within the terms of the [Creative Commons license described here](#).



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## Table of Contents

SSE Questions .....	2
Demographics .....	3
Question 1 Data (Includes Breakdown by Major) .....	4
Q1 Breakdown by Gender and Yes vs. No want to teach .....	5
Questions 2 Data (Includes Breakdown by Major) .....	6
Q2 Breakdown by Gender and Yes vs. No want to teach .....	7
Question 3 Data .....	8
Q3 Breakdown by Major .....	9
Q3 Breakdown by Gender .....	10
Q3 Breakdown by Gender and Yes vs. No want to teach .....	11
Question 4 Data .....	12
Q4 Breakdown by Major .....	13
Q4 Breakdown by Gender .....	14
Q4 Breakdown by Gender and Yes vs. No want to teach .....	15
Question 5 Data (Includes Breakdown by Major) .....	16
Q5 Free Response Analysis .....	17
Q5 Free Response Analysis (Want to teach) .....	18
Q5 Free Response Analysis (Don't want to teach) .....	19
Q5 Breakdown by Gender and Yes vs. No want to teach .....	20
Question 6 Data (Includes Breakdown by Major) .....	21
Q6 Breakdown by Gender and Yes vs. No want to teach .....	22
Comments/Suggestions Summary .....	23

## Questions include:

1. *How many faculty members do you remember hearing mention grade 7-12 teaching as a career option?*
2. *Have you had a conversation with a faculty member about **becoming** a grade 7-12 teacher?*
3. *Have you heard a faculty member mention grade 7-12?*
4. *Within your department, have you seen any media addressing any of the topics listed in Question 3?*
5. *How do you think your family feels about teaching as a career option? **Please explain.***
6. *Are you interested in sharing any media related to the topics listed in Question 3 with your family? This could be in the form of brochures, or flyers, etc.*



## Demographics

Student Gender Information (n = 2300)		
Gender	Respondents	Percentage
Male	1267	55.1%
Female	974	42.3%
Other	59	2.6%
<b>Total</b>	<b>2300</b>	<b>100.0%</b>

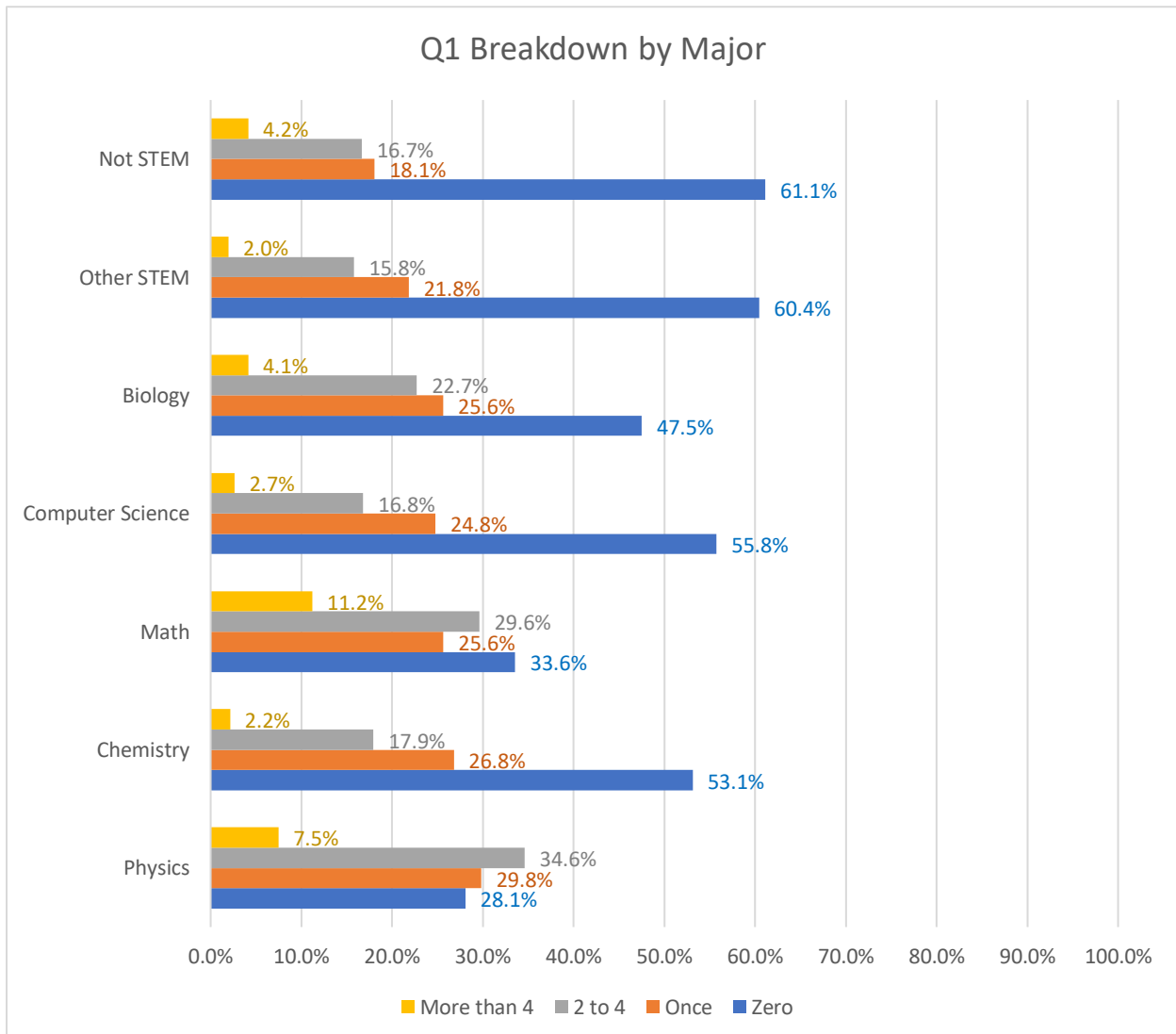
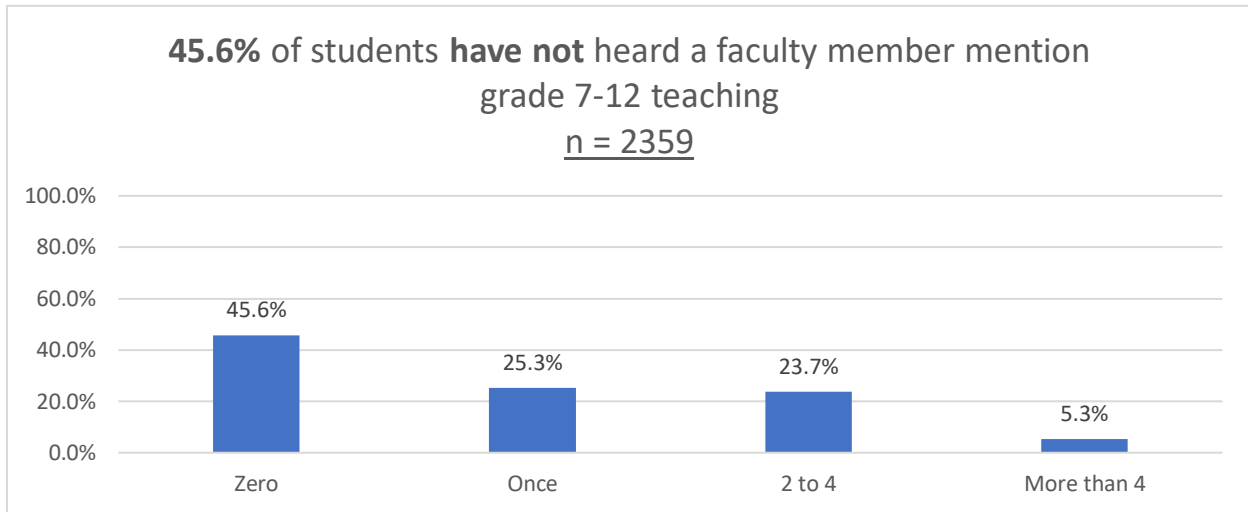
Student Department Information (n = 2570)		
Department	Respondents	Percentage
Math	433	17.0%
Chemistry	421	16.5%
Physics	630	24.8%
Comp. Science	113	4.4%
Biology	245	9.6%
Other	706	27.7%
<b>Total</b>	<b>2548*</b>	<b>100.0%</b>

\*This total counts people who selected multiple options

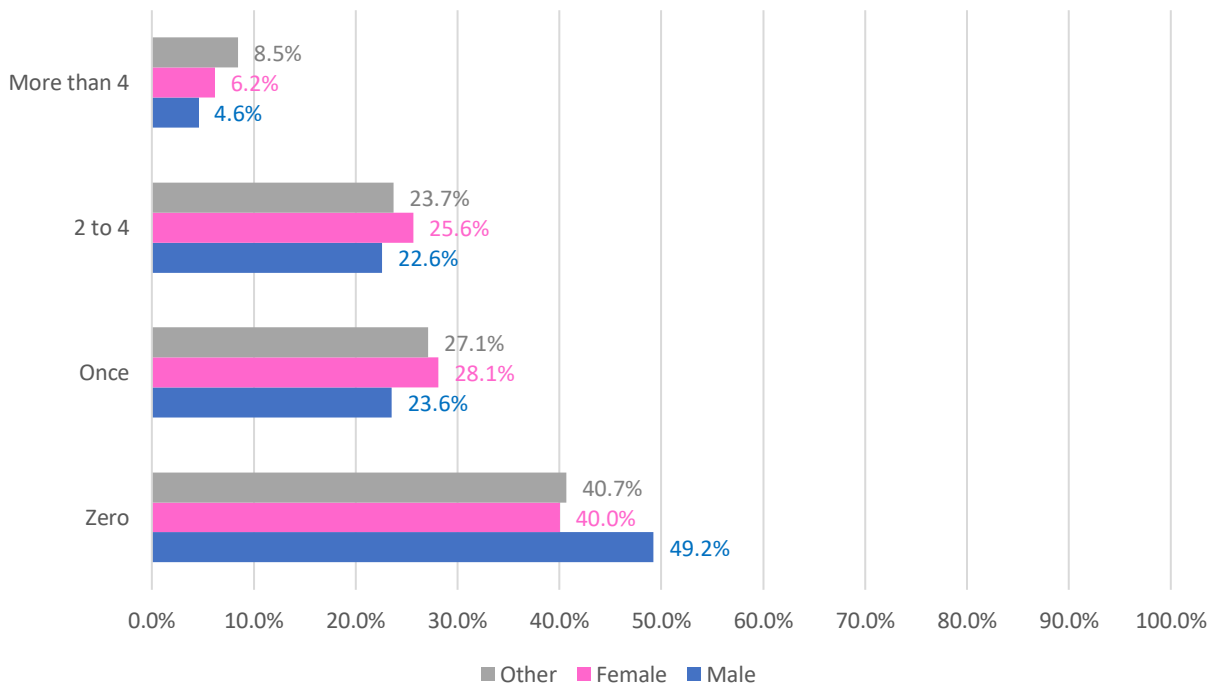
Student Race/Ethnicity Information (n = 535)		
Race/Ethnicity	Respondents	Percentage
White/Caucasian	1789	67.9%
Black/African American	77	2.9%
Hispanic/Latino	338	12.8%
Asian/Asian American	242	9.2%
American Indian/Alaska Native	37	1.4%
Native Hawaiian/Other Pacific Islander	24	0.9%
Middle Eastern/North African	53	2.0%
Prefer not to say	55	2.1%
Other	21	0.8%
<b>Total</b>	<b>2636*</b>	<b>100.0%</b>

\*This total counts people who selected multiple options

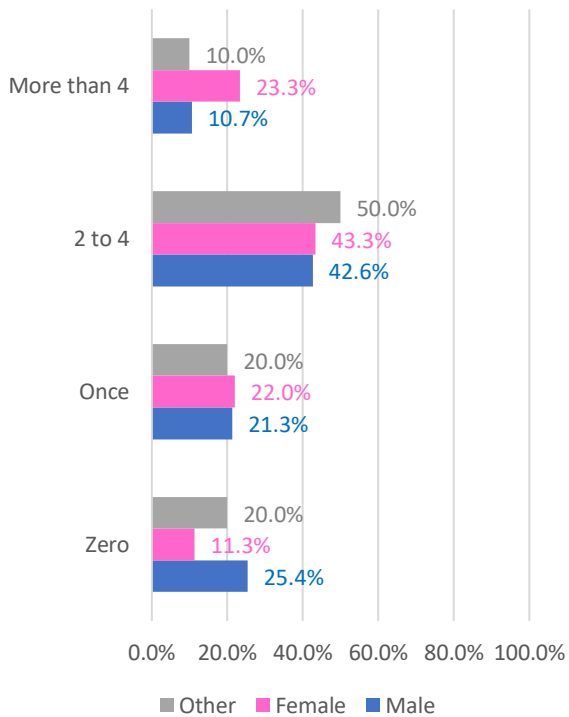
Students were asked how many faculty members they remember hearing mention grade 7-12 teaching as a career option.



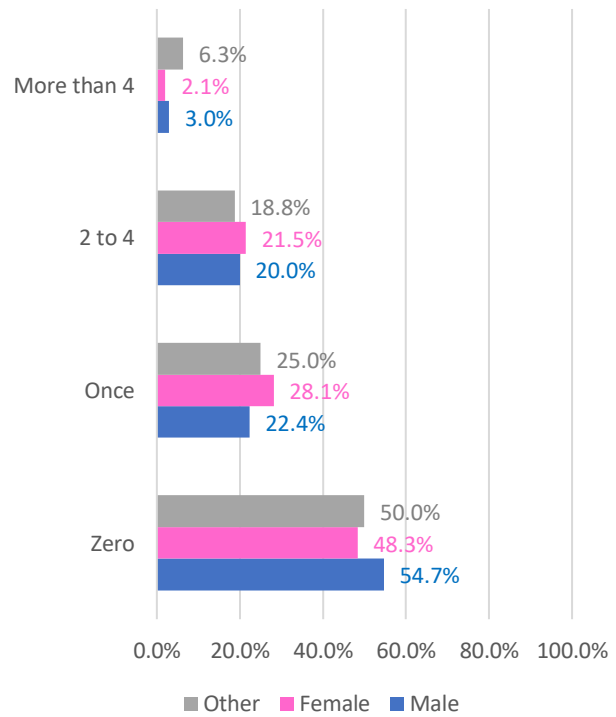
Q1 Breakdown by Gender



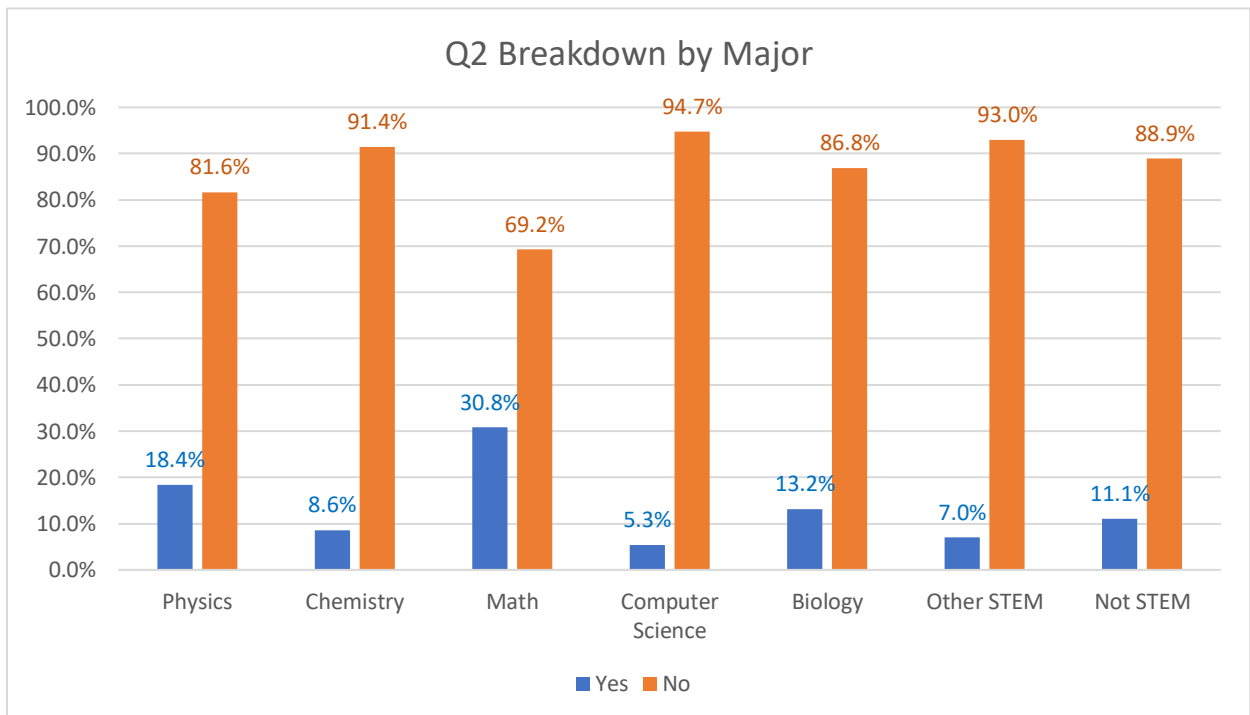
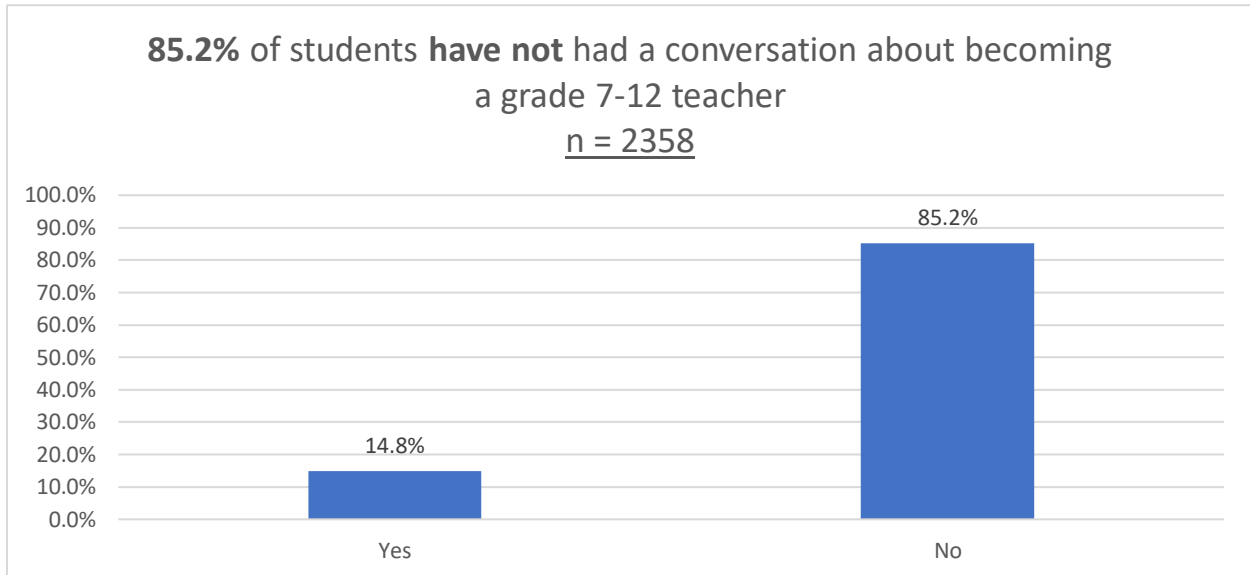
Yes I want to teach



No I don't want to teach

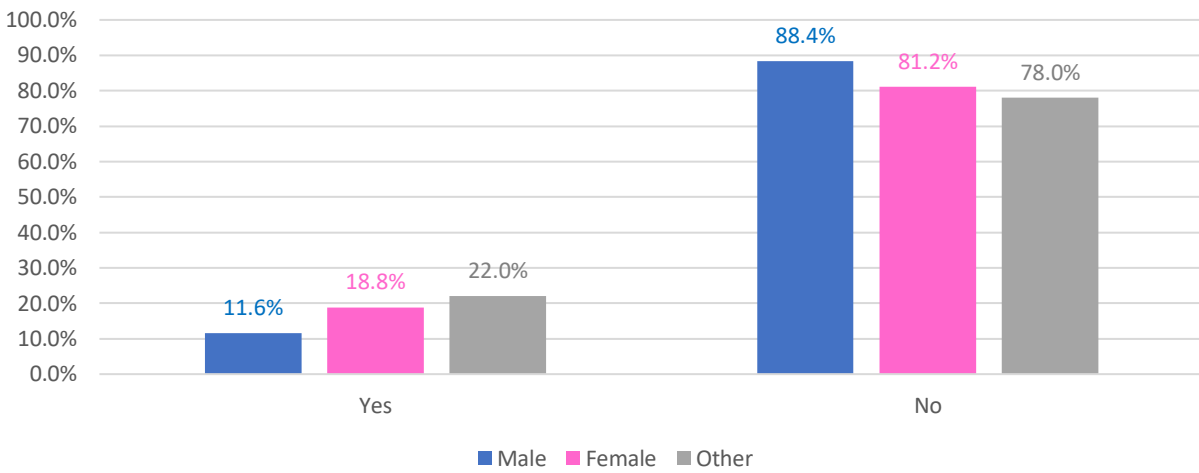


Students were then asked whether they have had a conversation about becoming a grade 7-12 teacher.

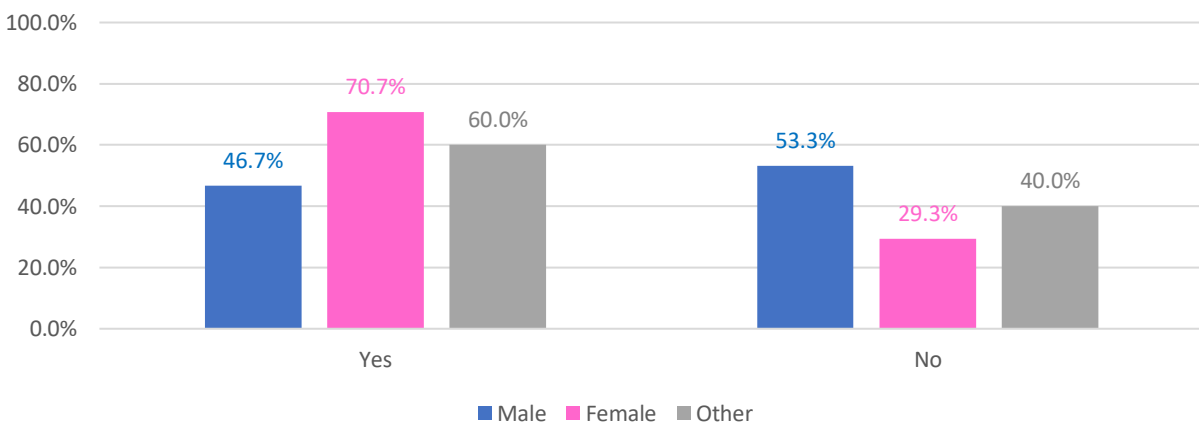




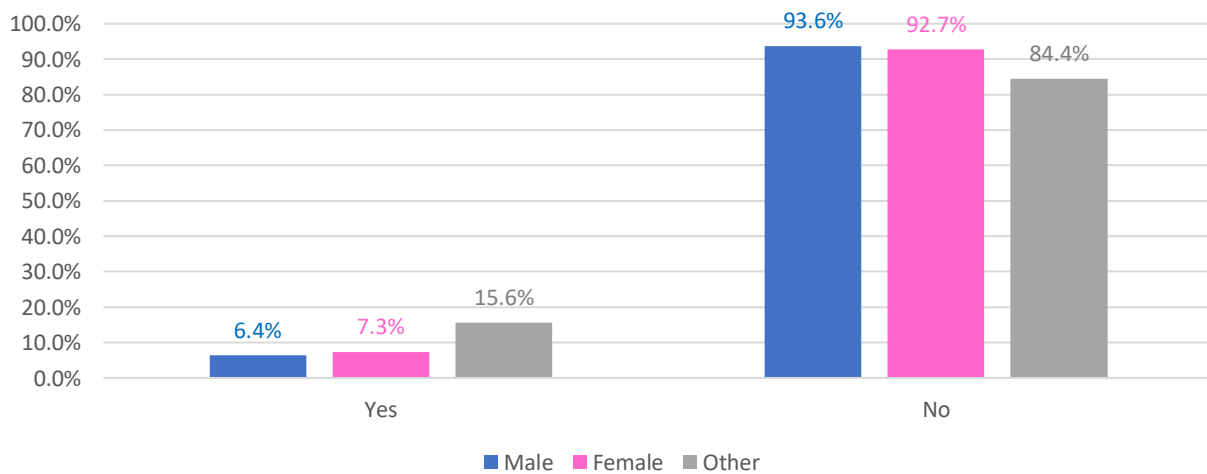
Q2 Breakdown by Gender



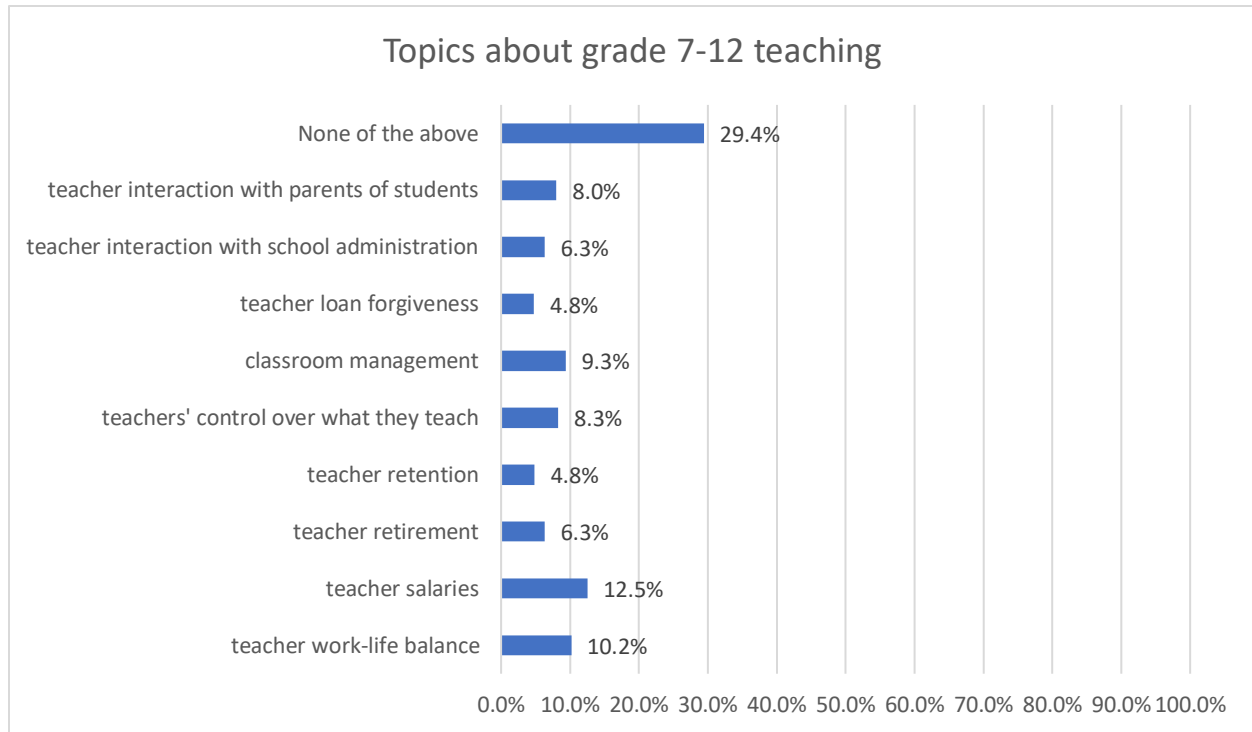
Yes I want to teach



No I don't want to teach

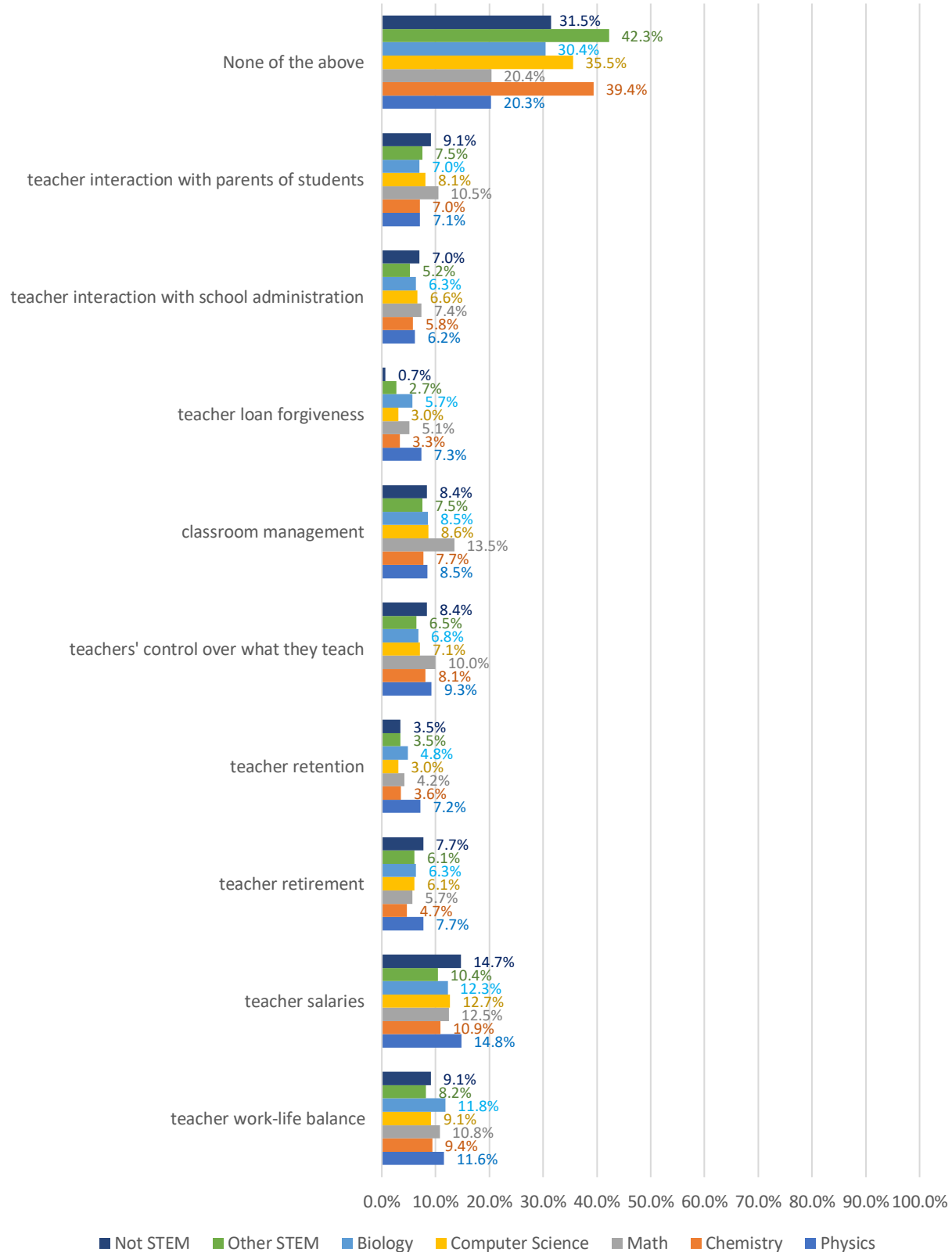


Students were asked whether they have heard a faculty member mention one of the options about grade 7-12 teacher below:

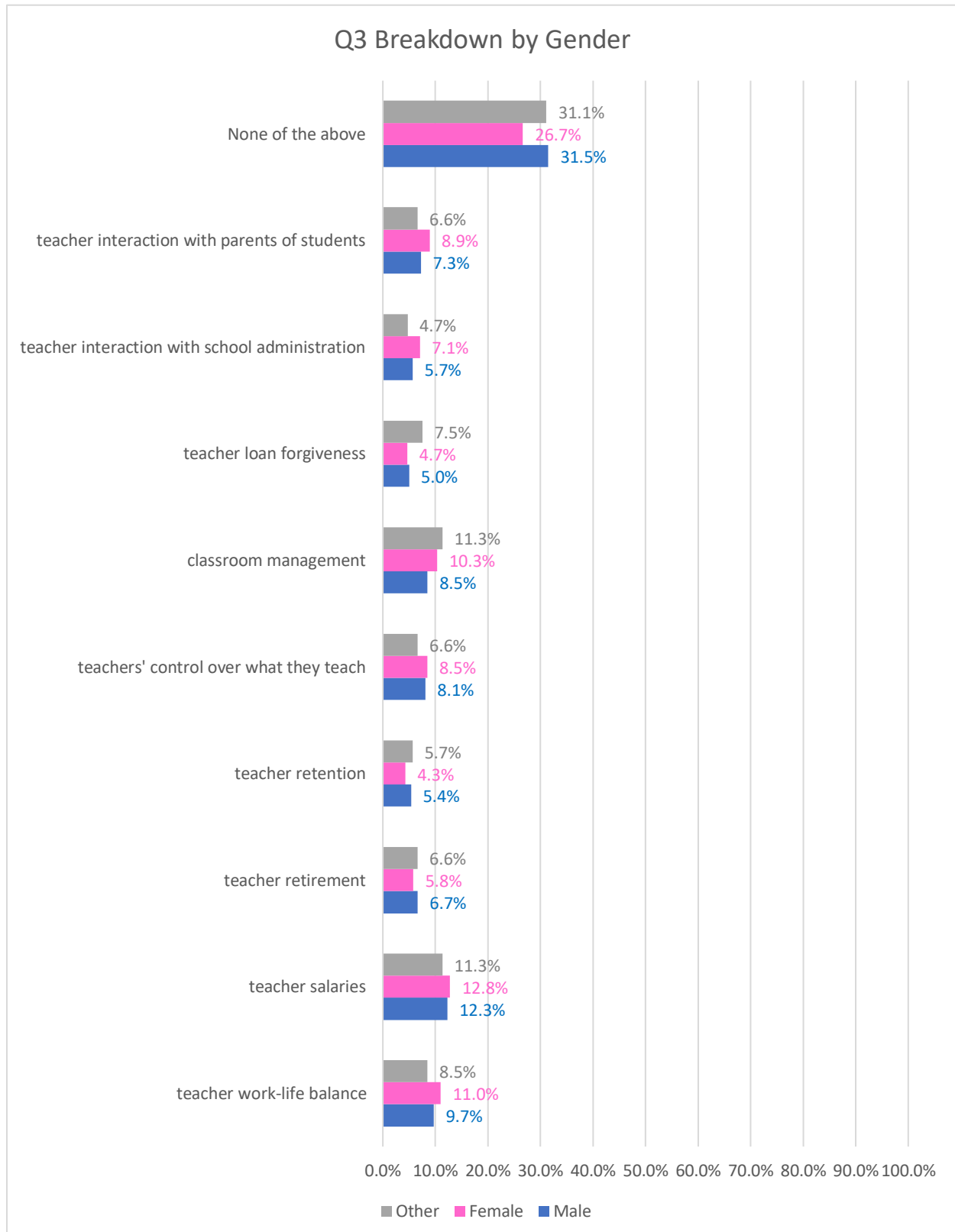


The majority of students have not heard any of the options listed above from a faculty member, but the most popular topics mentioned are teacher salaries and teacher work-life balance.

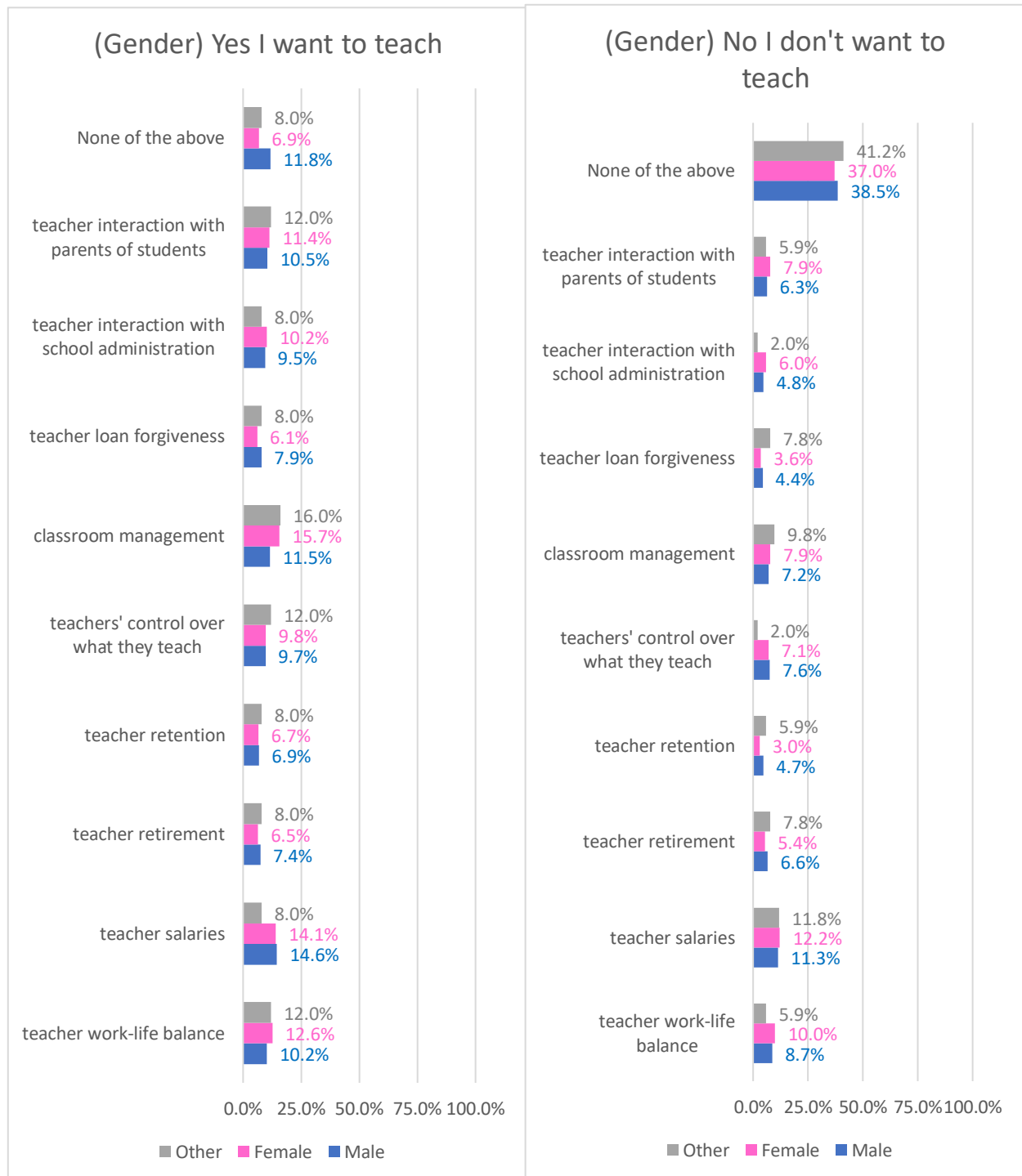
### Q3 Breakdown by Major



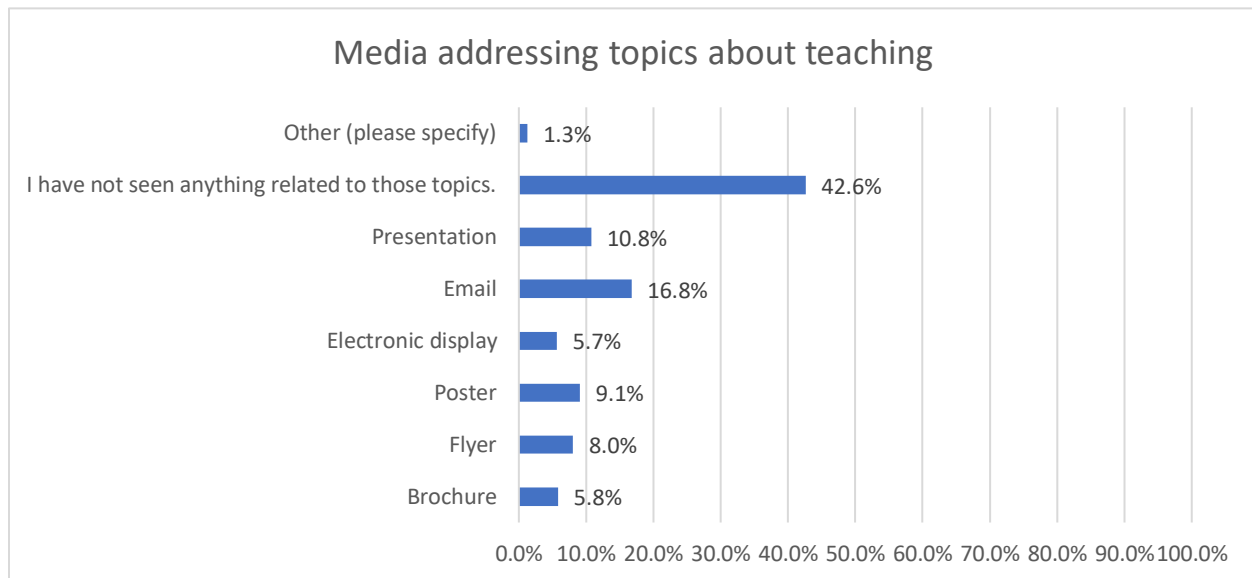
Have students heard a faculty member mention one of the topics about grade 7-12 teaching?



Have students heard a faculty member mention one of the topics about grade 7-12 teaching?



Students were then asked, within their department, have they seen any media addressing the topics in the previous question.

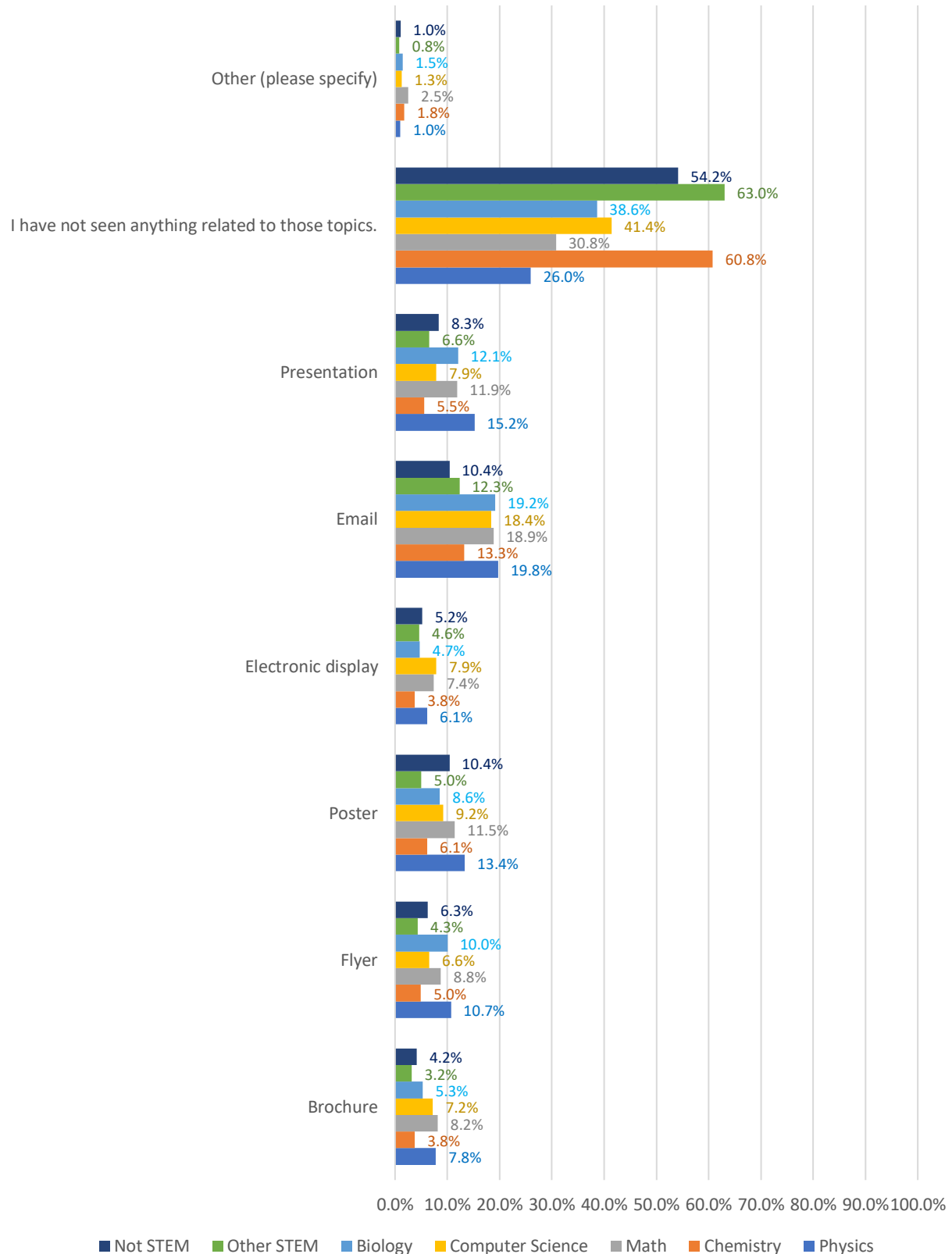


Similar to question 3, the majority of students said they have not seen anything related to the topics above. The most popular medias were Email and Presentations.

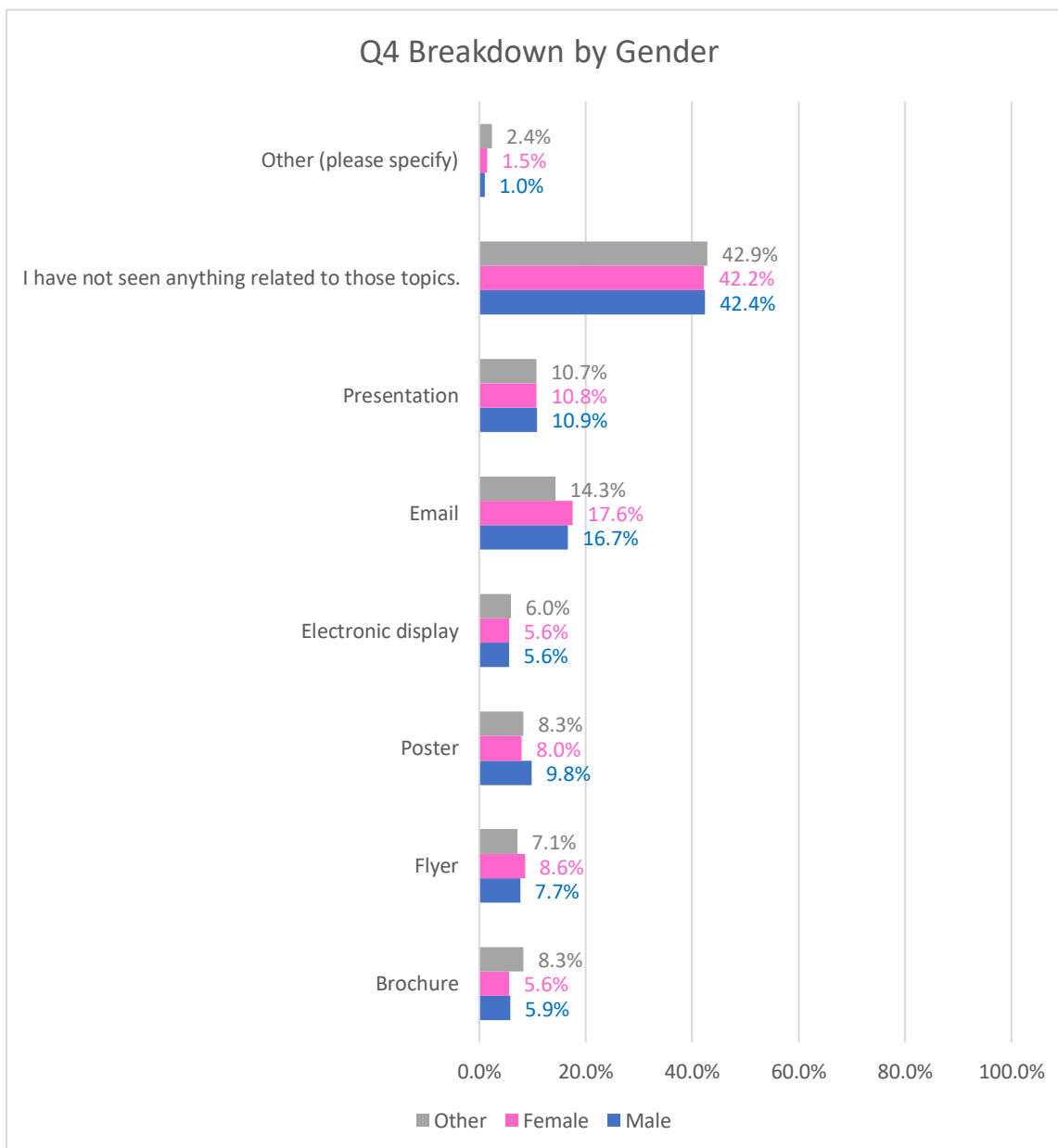
Other responses include:



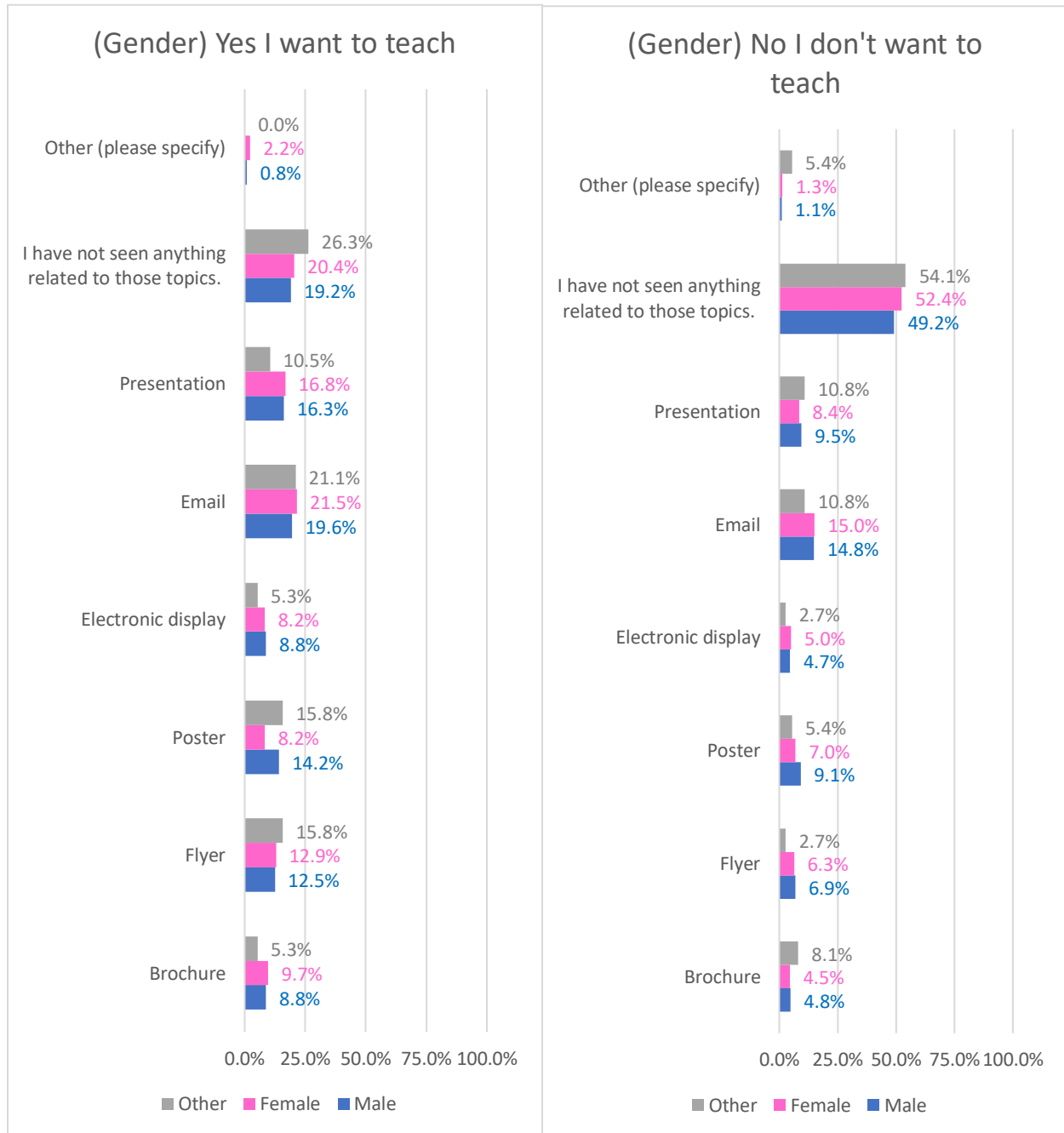
### Q4 Breakdown by Major



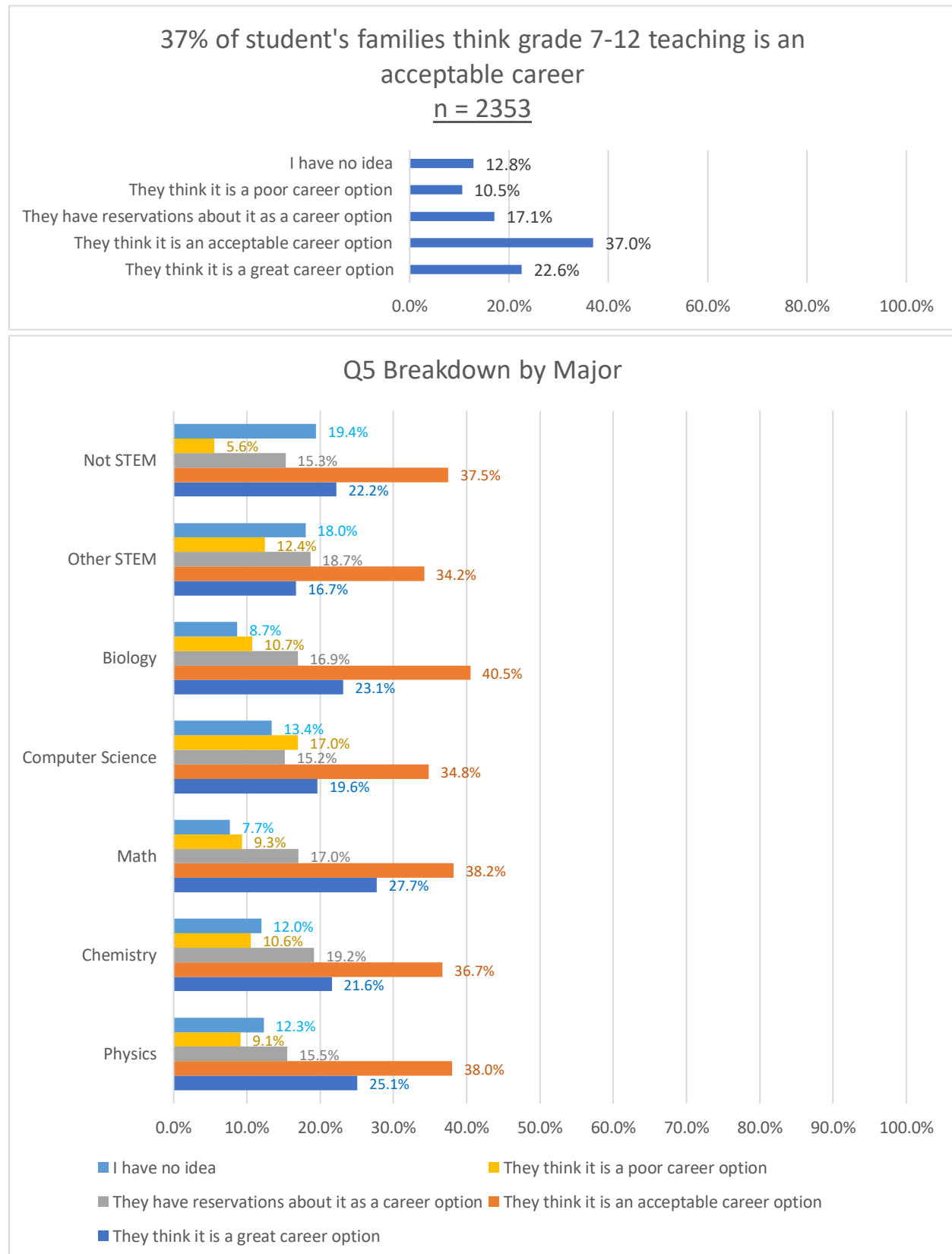
Within their department, have students seen any media addressing the topics in the previous question



Within their department, have students seen any media addressing the topics in the previous question



Students were asked how their families feel about grade 7-12 teacher as a career option.



## Explanations of what families think of grade 7-12 teaching

Male: n = 347 | Female: n = 292 | Other/Prefer not to say: n = 22

I have family members that are/were teachers .....	149	- 77	69	3
My family will support me for any career choice including teaching .....	137	- 63	69	5
Teachers do not make enough money/are treated poorly/overworked .....	94	- 48	41	5
I or my family does not want me to teach/want to pursue another career .....	81	- 40	39	2
Never asked/Not sure .....	59	- 34	21	4
I have family members that are/were teachers, BUT they do not support a career in teaching .	30			
Teaching is an acceptable profession, but there are better careers/more money outside of teaching .....	27	- 16	10	1
Family is supportive of teaching, but would prefer working in a different industry .....	26	- 17	8	1
Parents don't mind what I do with my career .....	18	- 10	8	0
Teaching collegiate level is better than grade 7-12 .....	13	- 7	6	0
Going into teaching is a waste of talent/potential .....	12	- 7	5	0
My family thinks it is a great/acceptable career .....	11	- 7	4	0
Teaching is a backup career .....	8	- 3	4	1
Parents had reservations, but are now supportive .....	6	- 2	4	0
My family thinks going to an expensive school for a teaching degree is not worth it .....	3	- 3	0	0
Great career for having a family .....	2	- 0	2	0
Teachers are paid too much.....	2	- 0	2	0

## Explanations of what families think of grade 7-12 teaching

### Students that want to teach

Male: n = 42 | Female: n = 44 | Other/Prefer not to say: n = 3

My family will support me for any career choice including teaching .....	27	-	10		17		0
I have family members that are/were teachers .....	15	-	7		7		1
Teachers do not make enough money/are treated poorly/overworked .....	9	-	6		3		0
I or my family does not want me to teach/want to pursue another career .....	8	-	3		5		0
Family is supportive of teaching, but would prefer working in a different industry .....	7	-	4		2		1
Parents had reservations, but are now supportive .....	5	-	1		4		0
Teaching is an acceptable profession, but there are better careers/more money outside of teaching .....	4	-	2		2		0
Never asked/Not sure .....	3	-	3		0		0
Parents don't mind what I do with my career .....	3	-	1		1		1
Teaching is a backup career .....	3	-	2		1		0
Teaching collegiate level is better than grade 7-12 .....	2	-	2		0		0
Going into teaching is a waste of talent/potential .....	2	-	0		2		0
I have family members that are/were teachers, BUT they do not support a career in teaching ...	1				0		0



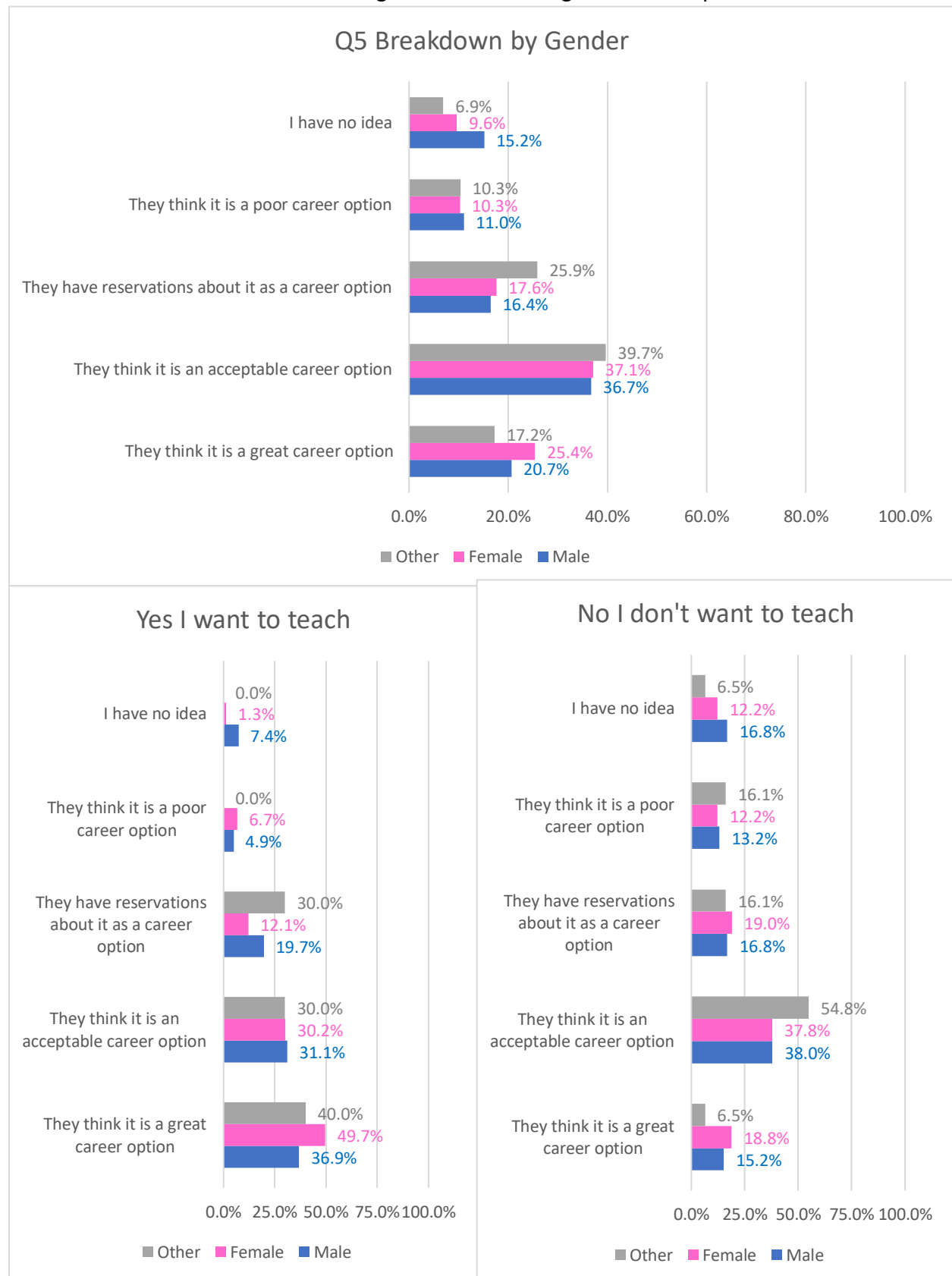
## Explanations of what families think of grade 7-12 teaching

### **Students that do NOT want to teach**

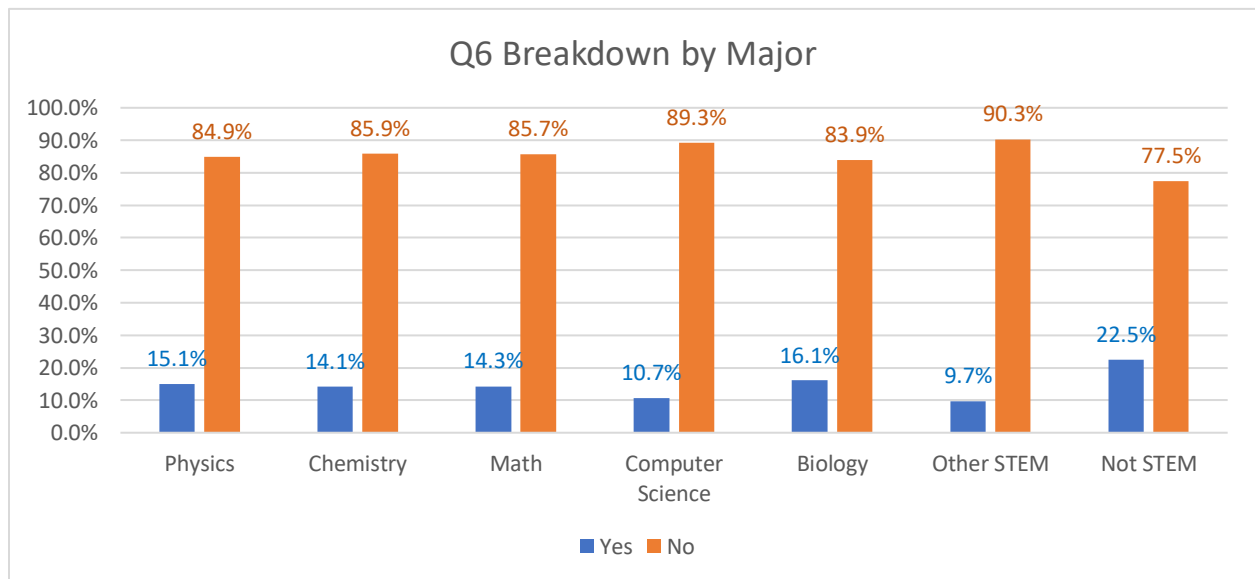
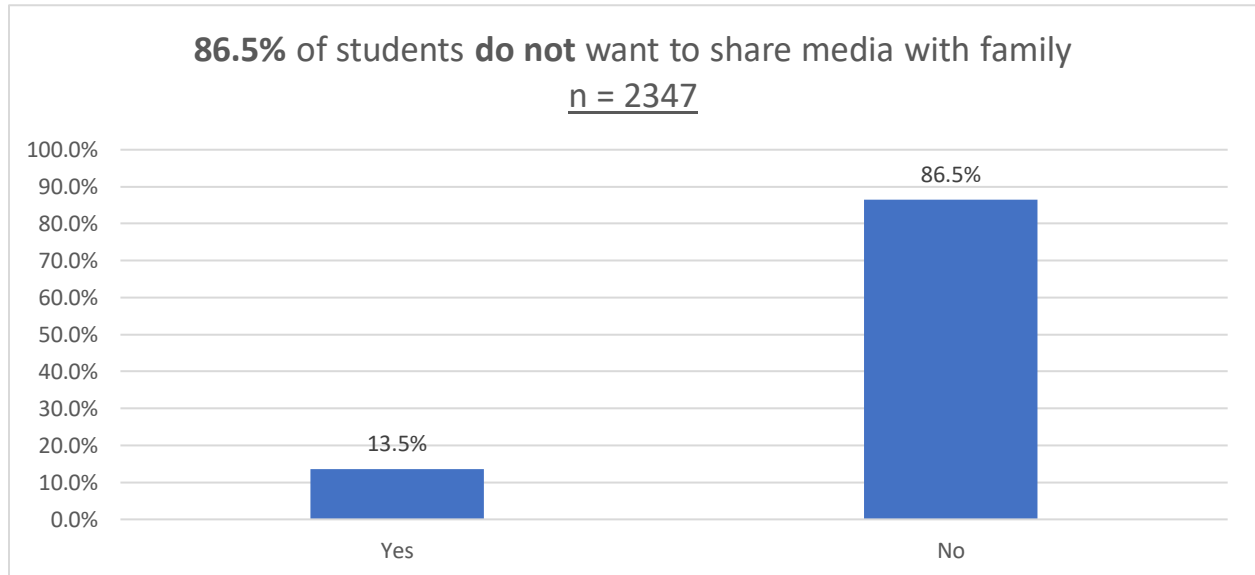
Male: n = 229 | Female: n = 181 | Other/Prefer not to say: n = 12

I have family members that are/were teachers .....	99	- 55	43	1
My family will support me for any career choice including teaching .....	81	- 37	40	4
Teachers do not make enough money/are treated poorly/overworked .....	62	- 35	24	3
I or my family does not want me to teach/want to pursue another career .....	59	- 32	26	1
Never asked/Not sure .....	41	- 27	17	2
I have family members that are/were teachers, BUT they do not support a career in teaching .	22			
	10	11	1	
Teaching is an acceptable profession, but there are better careers/more money outside of teaching .....	21	- 13	8	0
Family is supportive of teaching, but would prefer working in a different industry .....	16	- 12	4	0
Parents don't mind what I do with my career .....	14	- 6	8	0
Teaching collegiate level is better than grade 7-12 .....	6	- 3	3	0
Going into teaching is a waste of talent/potential.....	6	- 4	2	0
My family thinks it is a great/acceptable career .....	4	- 2	2	0
My family thinks going to an expensive school for a teaching degree is not worth it .....	3	- 2	1	0
Teaching is a backup career .....	2	- 0	2	0
Parents had reservations, but are now supportive.....	1	- 1	0	0
Great career for having a family .....	1	- 0	1	0

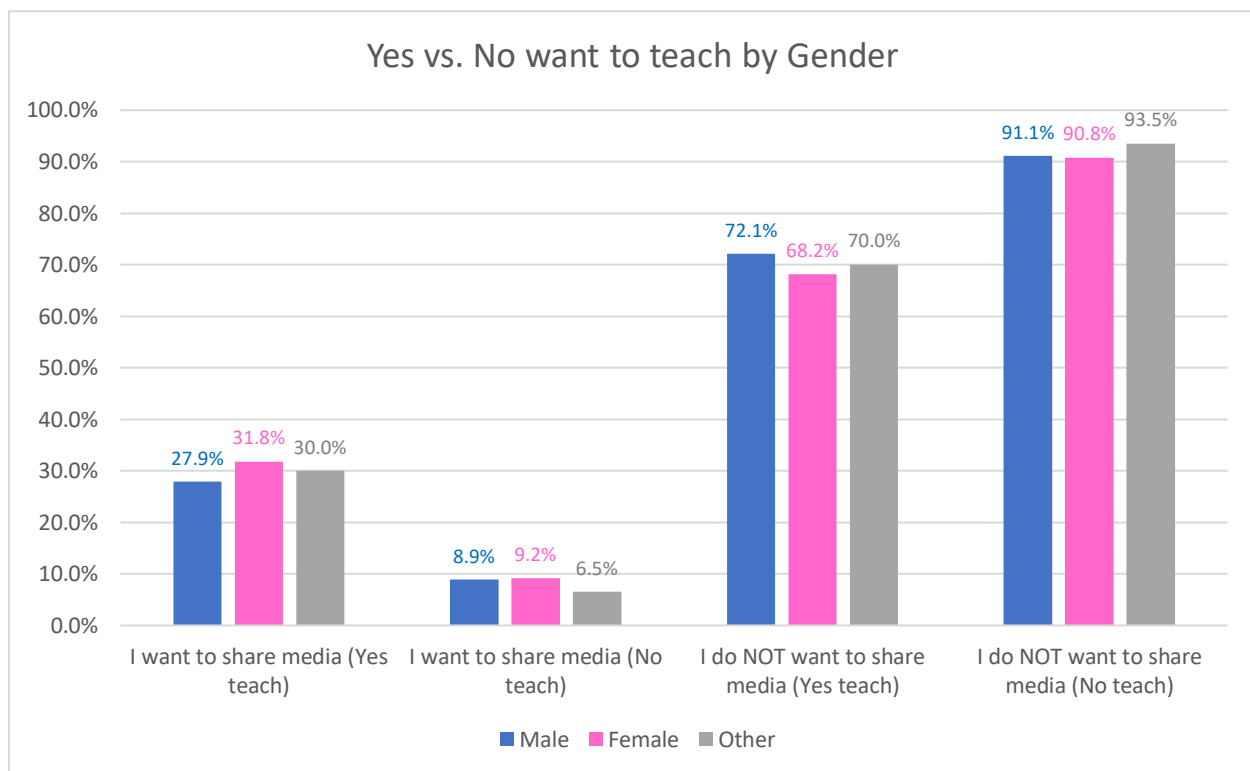
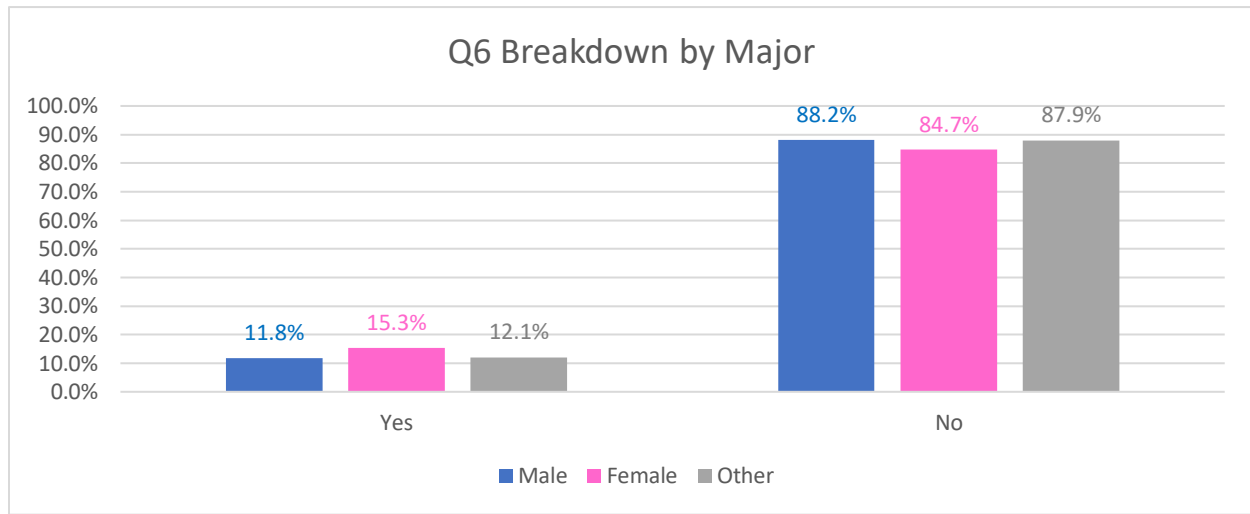
How do students' families feel about grade 7-12 teaching as a career option?



Students were finally asked if they would share any of the media relating to the topics in question 3 with their family.



Do students want to share any media relating to the topics in question 3 with their family?



## Comments/Suggestions

### Positive:

#### Survey was great/informative – 18

- This survey I felt was informative for me because I actually had to think before answering every question and formulate my thoughts on the matter
- I think this is a great initiative

#### Teaching is a great/important career – 18

- Teaching at any age is so important, especially science. Making sure science education is covered is a priority of mine, and I would like to do some outreach someday as a scientist to encourage more scientific discussion for students earlier, like in high school. I've always been interested in science but I feel like there were never visible outlets for it until college.
- We need 7-12 grade teachers, because they do inspire students and build the foundation for further education whether through experience or some form of formal education. They deserve more praise, and possibly a raise, for all that they deal with and do for students.

#### I am a teacher/in education or am going that route – 6

- This made me want to teach Math or Physics after my Primary career in Physics Engineering
- I am a mathematics major already in the teaching concentration so I have heard a lot more about teaching from advisors/few professors than other people in my major

#### I want to learn more info about GFO/7-12 teaching – 4

- I would love to see if I can help with this in anyway. My email is michaelrutland5@gmail.com
- Seeing how I just recently started seriously considering becoming a high school teacher as a career, I would be very interested to keep up with the results of this survey, and to learn more about the field in general.

#### Never thought about teaching before this survey/made me rethink about teaching as a career - 4

- This definitely made me rethink if teaching is a good fit for someone like me.
- Thank you for your dedication to promoting middle school education. I will consider teaching as a possible career path more than i would have before this survey.

#### People should go into whatever they career they are interested in

#### Referenced other to teachHouston because it is a great program

**Negative:**

Salary/education system is poor – 29

- Teaching is a poor career choice as the education system is terrible, pay is bad, and most teachers have no motivation to do well. Some of my worst times in terms of whether I really wanted to continue school was because of terrible teachers that don't care about anything but the authority.
- I would be interested if teachers were paid better and if it was a respected job by professionals. I work in an environment over the summer with many teachers, some are STEM teachers and they hate the environment. I just feel like teachers are not as respected as professionals in any STEM field.
- Unless there are serious changes to the education system, I really don't think that working as a 7-12 STEM teacher would make financial sense, and so I won't seriously consider it.

Have not heard any/enough professors talk about grade 7-12 teaching – 6

- I say that I have not encountered any speak of K-12 education in my department, but right now, as a freshman, career opportunities are less talked about. So that could be why. (CSOM)
- I wish teaching was talked more about at Mines-- I hear a lot of my friends who are interested in pursuing teaching but we feel like we don't have a ton of resources. (CSOM)
- I'm hoping by faculty members you meant high school and middle school teachers and administrators, because that's who I've spoken with about teacher salaries and benefits. I've only been in my math department as a declared math major for one year, so I haven't met with too many professors yet. (BYU)
- I'm new to the major, so I haven't had really any conversations with math/science faculty
- Due to Covid I haven't really talked to many individuals in my department and that why some of the data I am unable to answer. (BYU)
- I know of students that are planning on becoming 7-12 grade teachers in science, but I have not heard professors advertising doing teaching for 7-12 grade. (Westmont)

Don't want to teach – 5

- I personally am not interested in becoming a teacher at any level. I don't have enough patience to teach.
- I'll be blunt - teaching is just not for everyone. If someone thinks they have what it takes to inspire students to excel, all the more power to them. After witnessing firsthand the kind of things teachers need to put up with from their students and on occasion their students' parents, I just cannot bring myself to ever consider teaching for a living.

Don't want to go through the lengthy requirements in order to become a teacher – 3

- Teaching is a good profession. The only thing that is deterring people from being teachers is all of the hoops that we have to go through to get certified like edTPA.

People at the top of their class should not go into teaching – 2

Don't want to deal with younger students – 2



Rare for STEM majors to go into teaching due to school being difficult – 2

Other -

- Only hear about teaching college rather than grade 7-12
- Teaching feels like a backup career
- I considered completing my certification with my undergrad, but the college was disorganized and the process is already a lot to go through. I just did not feel supported by my university.
- The education system is failing. I've seen first hand the heavy load teachers have to carry. Dr. Mena consistently says it's an honorable profession so it's not the faculty's fault. I think math students who aren't struggling and are able to handle the course load should sit in a few classrooms first like I did to see how a HS classroom works in a normal (not high achieving, diverse, not affluent area) school district. I think their desire to teach will either dissipate or motivate them to work extra hard. I believe only excellent teachers who put in a bunch of extra hours and are extremely dedicated make an impact. Scaled grading is disgusting and pushes through students who literally don't know anything. I struggled in math in middle school and high school, but I passed honorably unlike what I've seen in schools and classes with scaled grading.
- If this survey is meant to observe the milieu of engineering/stem schools towards 7-12 teaching, then I do have some comments I'd like to make. I do personally believe that Secondary School Stem Education needs significant improvement globally, largely because Stem fields have a huge untapped potential: Creativity. If STEM classes were taught in a more hands on, free-to-explore manner, then I believe more students would come out of high school with better outlooks towards STEM fields. It's for this reason I spent half of my Senior year in high school helping design and outfit a makerspace for the school, and why I plan to spend a portion of my own money once graduating on making more of them. I recommend Adam Savage's book Every Tool's a Hammer, it really shows the link between STEM and artwork in a way that more schools need to.
- Teaching is important but shouldn't take place in schools after middle school. High school should be an apprentice based learning experience and be supplemented as needed. Most of the population won't use General Chemistry or Calculus and to teach it to everyone is very inefficient.
- I think that attempts to manipulate students are obnoxious. Colleges are terrible because of all the attempted manipulation. Students do not need more manipulation. I really hate to participate in research that is designed, ultimately just to manipulate students. Generally, I don't have much respect for teachers because they put up with working in such a coddled and manipulated environment. I hope that the future of education is a massive reduction of in person education. I find online education to be much better than in person education. I think that professionally produced, high production value, standardized lectures should replace lectures from every teacher. I think that it is a conflict of interest to allow the institutions that teach students to also be responsible for testing them so I would like to see that changed. I think it's inevitable that these changes will occur over the next 20 years and that teaching as a career will, for most teachers, be an online experience. I think that the need for teachers will be dramatically reduced.

**Neutral:**

Specific Survey Feedback - 9

- A 77 question survey for college students?? I think you guys need to revisit the survey length. For real guys... you can't seriously expect to get any real statistically useful data from a 77 question survey. Shorten it next time. :/
- survey is too long
- Where were the questions regarding perception of potential co-workers? Some individuals will not pursue a careers in teaching because of the coworkers they would have to deal with. Not to mention the overwhelming politicization of teaching material and inability to have creative freedom with one's own teaching method
- I think it's best to put the are you a robot question at the start.
- I would recommend changing "s/he" to "they"
- As a math ed major, I don't like how the questions were phrased in this survey. Some of them felt demeaning. If I want to become a 7-12 grade teacher I can and I will regardless of my 4.0 GPA. It will be put to good use. More good teachers are needed.
- Question 73- I heard about these topics from a focus group I attended offered at Mines not from my department. I wish there was an "I don't know/unknown" option because most of these questions I answered "neutral" because I didn't have a true answer
- Question 11 felt like it's answer may be interpreted incorrectly. I don't view grade 7-12 teaching as scientific, but it is not simple either, because you do need to test material, learn, and adapt on more than just a yearly basis. Question 24 was confusing. Did it ask for an estimate of the starting pay if I was teaching grades 7-12 with a bachelor's or if I pursued another career in the field of my bachelor's degree?
- some of these questioned seemed more geared towards undergraduates

Teaching is great, but not for me – 8

- Teaching is an invaluable job, and I have utmost respect for those who do so. I simply do not think that it would be a good fit for me due to my personality and the fact that I've had my heart set on working in medicine for years now.
- Teaching is an amazing career for some people, but I am not personally interested.

Rare for STEM bachelors to go straight into teaching rather than graduate school - 2

Other:

- If I was going to become a teacher, teaching grades 1-6 is much more likely for me than 7-12.
- I hope you are also looking into other ways to improve education. Getting more teachers won't help if we are still forcing them to teach an awful curriculum designed to sell lots of textbooks
- Teaching is a great career option, I've learned a lot about it in one of my education GE's. One downside is that California is the only state that really has amazing benefits and pay for teachers at the 7-12 level. So it would be a career path that dictates where you live

- I am concerning that how I could find a job after graduating. Also, I want to apply for the PhD program but I heard that it is very difficult to find a job with the PhD degree in college or university.
- I believe teaching is very fulfilling and important to training the next generation of people to break the barriers of what was thought possible. That being said, multiple things need to change for 7-12 grade teachers for it to be seen as a great career for many students: - More flexibility in how they teach their course - Higher salaries and less students per course - Better teachers need to be placed in the basic courses in a specific major, for example you need to have a very good Algebra 2 teacher so that when you take Trig and Geometry, you'll have a super solid foundation to work from. I know many students completely drop a major because they get to a prereq class with a terrible teacher and then refuse to go any further in the class progression - Schools are limited and controlled through government funding and what they can actually do is highly dependent on legislation such as the no child left behind act. Teachers are afraid to fail students and because of that, students never face adversity and coast through school. This combined with so many schools underfunded results in a terrible educational experience where the student hasn't learned anything and is unlikely to pursue higher education. I would honestly love to talk or get involved with this research, it seems very interesting!
- I have spent considerable time tutoring and teaching. I like working with students, but prefer to work one on one and come up with my own curriculum. I think I would get frustrated by bureaucracy. I intend to volunteer in schools throughout my career. Teaching in college is a possibility, but I'm not interested in academia and adjunct profs have poor pay.
- I wonder why you are particularly interested in grade 7-12 education. American standards split secondary education into two group: 6-8 for middle and 9-12 for high. I think of teaching in middle school and teaching in high school as different career choices and here in this survey, I had to think of them as one-in-the-same. Thanks
- My responses to the "hearing this from faculty questions" were drastically skewed from the last time I took this survey as I am taking a "Teaching Physics" course this semester. So the topic of what teachers do, how are they payed, what are their benefits; have come up unusually frequently. Besides this professor, I have only had one other teacher bring up these topics, and it was about the pay-scale.
- I feel that it is a common practice, especially in chemistry and physics for faculty to push students towards graduate school. I feel it is less popular to only get a bachelors degree in physics and to pursue something else.
- I honestly think you should remind teachers why their job is important. The teachers I admire the most love teaching and felt compelled to share the reasons why they love their job and their students. It is harder for young people to do this because their was a huge push for women in tech in the late 90s that altered gender roles in teaching professions that wasn't balanced with a push for more men in teaching. I am lucky to have had a balance of men and women role models in teaching professions, but I also think I am stronger for seeing women in non-teaching technical roles. Even though I enjoy teaching others, I've always wanted to spend time thinking about how people think, I still find myself in an experimentalist's role. I am most effective in on the job training and conceptual thinking; I'm a horrendous tester and writer; I get too excited about some things that can put people off. Furthermore, since there is an enormous amount of pressure on women to be correct all of the time, it is not appealing to me to stand in front of

male children. My mom is also small, and she taught people from all walks of life just fine; I still have this perception.

- Organize conferences is university campus to talk about grade 7-12 science teachings and their benefit.
- Teaching is a difficult and important job, I think most science students feel that way. I think there is also a perception that 7-12 grade teachers are not at the cutting edge of their fields. A science student who feels that they are thriving is unlikely to consider teaching unless they have a particular passion for it. If you want to attract more science students to consider teaching, convince us that we are not abandoning a chance to do original work with other trained professionals.
- Teaching high school does not require a PhD, so getting a PhD to end up teaching high school is often due to poor planning or a change of heart (i.e. deciding that academia was is not what someone wanted to do). If I expressed to my professors that I wanted to teach high school at the start of my graduate school career, it would be legitimate for them to ask me why I'm spending my time on a PhD, and also, why should they invest time and energy into someone who isn't going to use the skills they are learning in the future.