CHOICES CHANCES CHANGES

I WISH

2016 Survey

of female students' attitudes to STEM

laya healthcare proudly part of AIG

Survey kindly sponsored by laya healthcare

I Wish has an ambitious goal

to increase female participation in higher education STEM courses* to

30% by 2020**

* New entrants to ICT/ Engineering/Physics/ Maths courses

** http://www.hea.ie/en/statistics/overview


71%
of Irish adults believe investment in STEM will have a positive impact on job creation
88%
believe a consistent supply of STEM graduates is critical to Ireland's economic growth
37%
of GDP is generated by women, though women are **half** the world's working age population
75%
female students wanted careers that improve people's lives
$12 TRILLION
can be added to global growth by advancing women's equality

Background

Three years ago, over a cup of coffee, a lawyer, an accountant and an IT director joined forces with an idea to address the skills gap in ICT in the Cork region.

These women were right to be concerned; the skills gap was a problem which was getting more critical every year however if successfully addressed the potential for growth in the region was phenomenal. The region needed to be able to deliver graduates with STEM skills to compete for placement of the best indigenous and multinational companies and drive economic development and growth in the region.

Every aspect of our society today from education, healthcare, enterprise, transportation, our homes and the physical environment that we work and live in are being transformed by the potential of technology, which has transitioned to support nearly every aspect of our daily lives. With industry analysts estimating there will be 50 billion connected devices in the world by 2020 it is clear that the potential in terms of growth, innovation and opportunity is unparalleled.

By 2020 an additional 18,000 jobs will be required in data analytics; between 2013 and 2018 there will be demand for 44,500 extra employees in ICT. As identified in Ireland's National Skills Strategy 2025, in the future Irish workers will need a mix of sectoral, cross-sectoral and transversal skills. In particular, it is evidenced that there has been an increase in convergence between ICT, business and engineering, which were once considered to be unique in their own right. ICT now permeates almost all sectors.

It is well documented[1] that the greatest challenge in delivering growth in the global technology sector is access to the right talent; the countries that address these needs best will lead the technology revolution.

The economic case is accepted. 71% of Irish adults believe investment in STEM will have a positive impact on job creation and 88% believe a consistent supply of STEM graduates is critical to Ireland's economic growth.[2]

Women are half the world's working age population but generate only 37% of GDP.

The World Economic Forum estimates that the top 5 economies in the world could loose up to 7 million jobs in the next number of years due to advances in technology and these job losses will fall disproportionately on women as they are not pursuing roles in technology to the same extent as men.

The founders of I Wish knew that the STEM skill shortage was due in part to the lack of female engagement in STEM.

They had an ambitious plan to change that.

A radical new approach was required, a coalition drawing from the public, private and higher education sectors.

This approach has since also recommended by others.[3]

"We have been discussing the issues of STEM careers and gender imbalance for too long. It is now time to take action as other nations have done. A coalition of stakeholders from government, industry and education needs to come together as a matter of urgency to decide on a course of action." Professor Brian McGrath, DCU President and Chair of National Review of STEM Education 2015.

In 2014 I Wish was doing just that!

Since then I Wish has grown into an award winning national program and in 2017 will reach out to 4,000 female students over 4 days at two separate I Wish Showcase events in Cork and Dublin.

I Wish comprises a series of events culminating in an annual showcase consisting of a conference and exhibition designed to encourage young women to consider careers in STEM.

One of the core elements of I Wish and the driver of its success has been the partnership approach involving a coalition of industry, local government and the higher education institutes.

With the support of I Wish partners including Cork City Council, Cork County Council, SFI, Cork Chamber, IT@Cork, Cork Institute of Technology, UCC, Cork Education and Training Board, Dell, Arup, PepsiCo, P.C.H. International, Analog Devices, ESB, Enterprise Ireland, Vodafone, Laya Healthcare and many more I Wish has delivered real change.

I Wish has an ambitious goal - to increase female participation in higher education STEM courses (new entrants to ICT/Eng/Physics /Maths courses) to 30% by 2020.[4]

In 2016 I Wish asked the 2,000 attendees at its Showcase event what influences and motivates them so as to ensure I Wish and all of its partners can continue to pro-actively demonstrate the fantastic opportunities in STEM and effectively engage with young women, future leaders and game changers.

[1] "Making Ireland a Global Technology Powerhouse" published by IBEC, ICT Ireland and the Irish Software Association.

[2] Science Foundation Ireland, Science in Ireland Barometer – An analysis of the Irish public's perceptions and awareness of STEM in society, October 2015

[3] McKinsey & Company, The Power of Parity – How advancing women's equality can add $12 trillion to global growth, September 2015.

[4] http://www.hea.ie/en/statistics/overview

I Wish was born out of an economic case but a passion to shape a better world sustains it

Choices, Chances, Changes, I Wish Survey 2016

I Wish had secured the right partners through the coalition of industry, local government and higher education institutes but to ensure the goal of increasing female participation in STEM courses was achieved the team at I Wish asked the girls what was important to them, what influences and motivates them.

With a special word of thanks to staff at UCC and Tyndall Institute led by Siobhán O'Brien (GENOVATE Project) we sought the opinions of 2,000 female students.

This Report summarises the findings of that survey.

The I Wish student/teacher survey 2016 set out to examine the factors influencing subject and career choices by female students today.

A detailed dataset relating to Irish girls attitudes to STEM now exists not just focusing on gender as a variable but also other variables such as school type. The results are fascinating and very useful.

STEM can change our world. Our survey indicates that our young women want to help make changes that matter – 75% of the girls said that helping others is important to them when choosing a career. Rather than fight against this, we want to work with it. A job with purpose. Let's explain to them how big the world's problems are, and let's put female role models centre stage (we know lots of these amazing women) to show them the real jobs in STEM that they can help in solving them. We can accelerate and deliver real change by harnessing the power of thousands of young women through STEM engagement.

I Wish is in a unique position to maximise the positive socio economic impacts of these guidelines and recommendations given the broad reach and strong inter-disciplinary nature of the I Wish community and events, which engage multiple stakeholders in education (students and educators), industry, academic and research institutes and citizens.

FIRSTLY, we examined the **CHANCES** available to students, critically we examine the availability of science subjects pre and post Junior Certificate and participation in extra curricular STEM activities.

SECONDLY, we examine how **CHOICES** are made at two key transition points: post Junior Certificate subject choice and further education and/or career aspirations.

THIRDLY we examine **CHANGES**. We have examined Change in two ways; firstly in an European/National context, describing changes to date and secondly in developing a set of guidelines and recommendations based on the survey results.

Our innovative recommendations will impact sustainable change, for example, including gender/sex analysis when designing Science Education and Outreach programmes which make a simple and direct connection between subject choices and cool and creative careers in STEM.

We are confident that these changes will ultimately increase the number of women in STEM, propelling and exploiting innovation potential across multiple established and emerging sectors such as Healthcare, Communications and Security. This will ensure Ireland's and Europe's position as a global leader not exclusively in scientific and technological innovation but also in delivering equality of opportunity for all our young people.

European Context:

Given that women make up 59% of graduates in Europe, low participation rates by women in some STEM disciplines and gender differences in career progression have received much research and academic attention in recent years. It is increasingly recognised that interventions to address this imbalance are necessary.

As noted by Máire Geoghegan-Quinn-former EU Commissioner for Research, Innovation and Science:

'We need to address these issues, not only for the sake of fairness and equality, but for the sake of science and research itself.' [5]

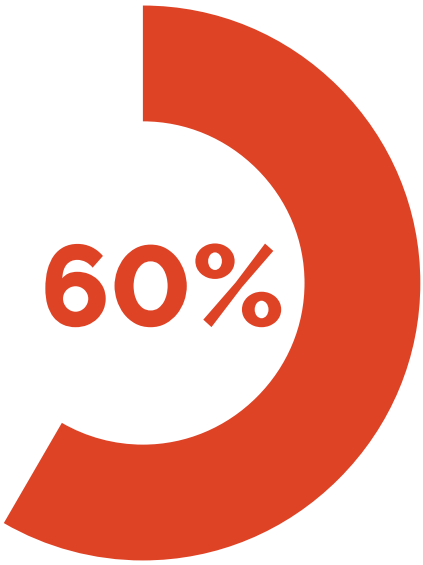
National Context:

When examining data from the State Examination Commission the persistent nature of 'gendered' leaving certificate science subject uptake is evident, see Fig 1. Central to understanding and developing successful strategies to counteract this is examining and quantifying factors influential at this key transition point.

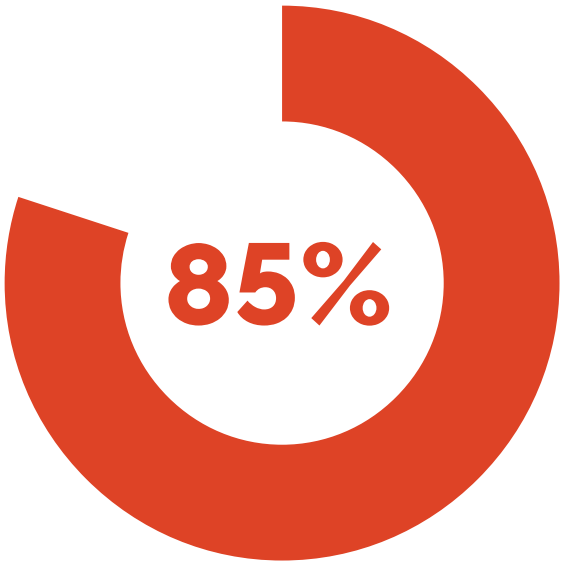
The I Wish student survey focuses on two key features here:

Firstly, in quantifying the availability of Biology/ Chemistry and Physics to Leaving Certificate and secondly, in quantifying the importance of various factors influencing student choices post Junior Certificate.

[5] Structural Change in Research Institutes EC 2012



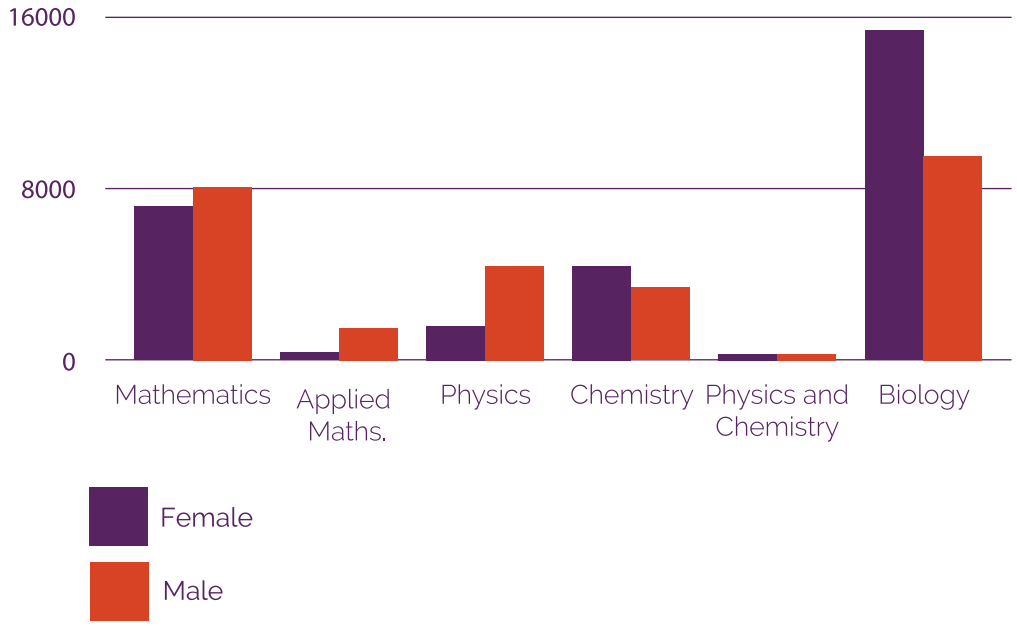
of students surveyed changed their subject choices as a result of the I Wish conference.



of teachers said they felt better able to advise their students on STEM careers after I Wish

Leaving Certificate HL Examinations 2014/5

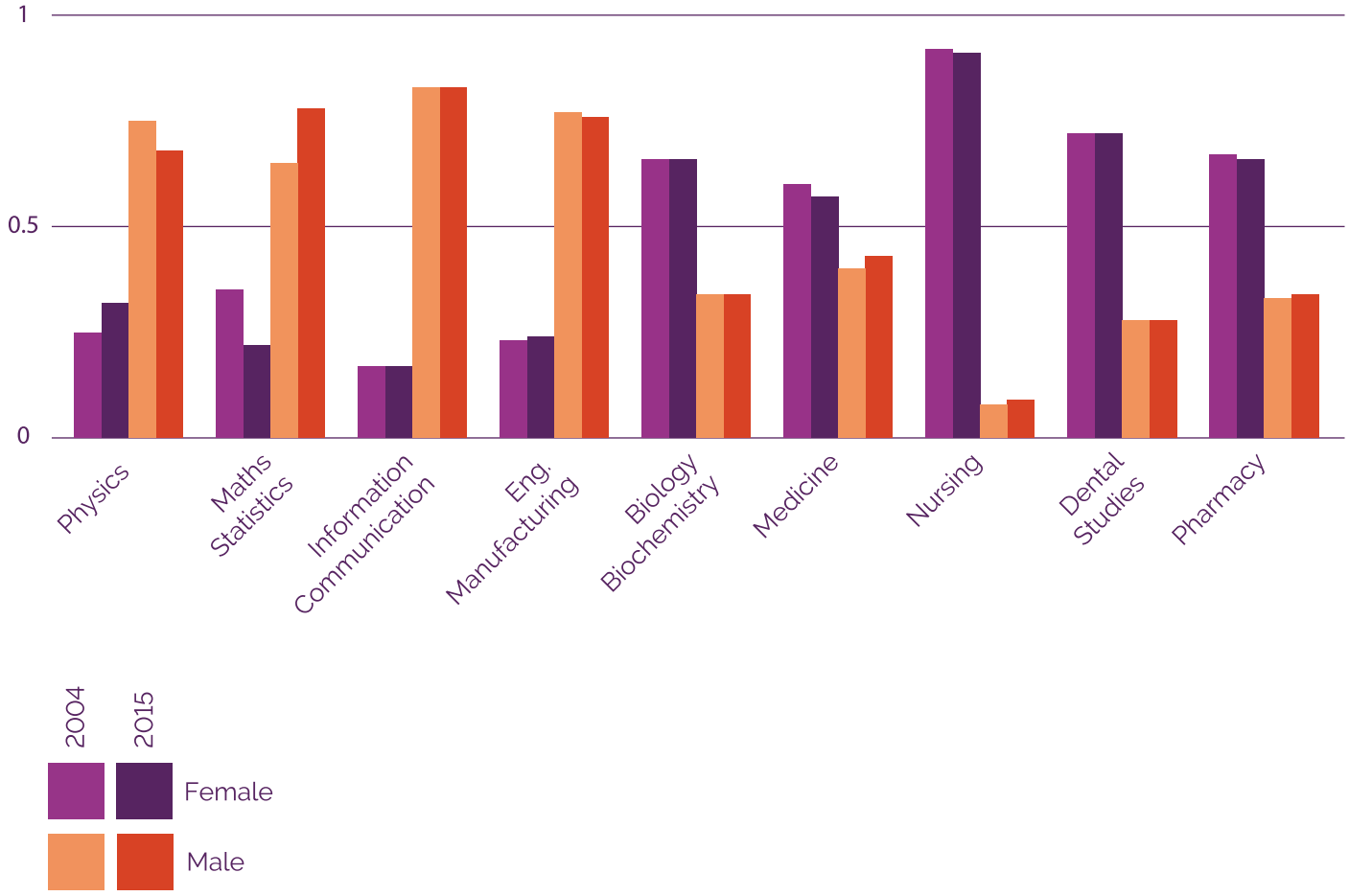
fig 1



Given the data presented here in relation to subject uptake at Leaving Certificate, it is not surprising that undergraduate new entrants also reflect the underrepresentation of women in some STEM disciplines such as ICT/Maths/Physics and Engineering with Biological Sciences being a popular choice for women.

New Entrants All Irish University

fig 2



Choices

What influences the subject choices made by young girls

of respondents surveyed said that finding the subject **interesting** was important or very important when choosing option subjects for Leaving Certificate.

89%

said that **enjoying the subject** was important in choosing option subjects for Leaving Certificate.

77%

said that subjects necessary for the **third level** course was important or very important when choosing option subjects.

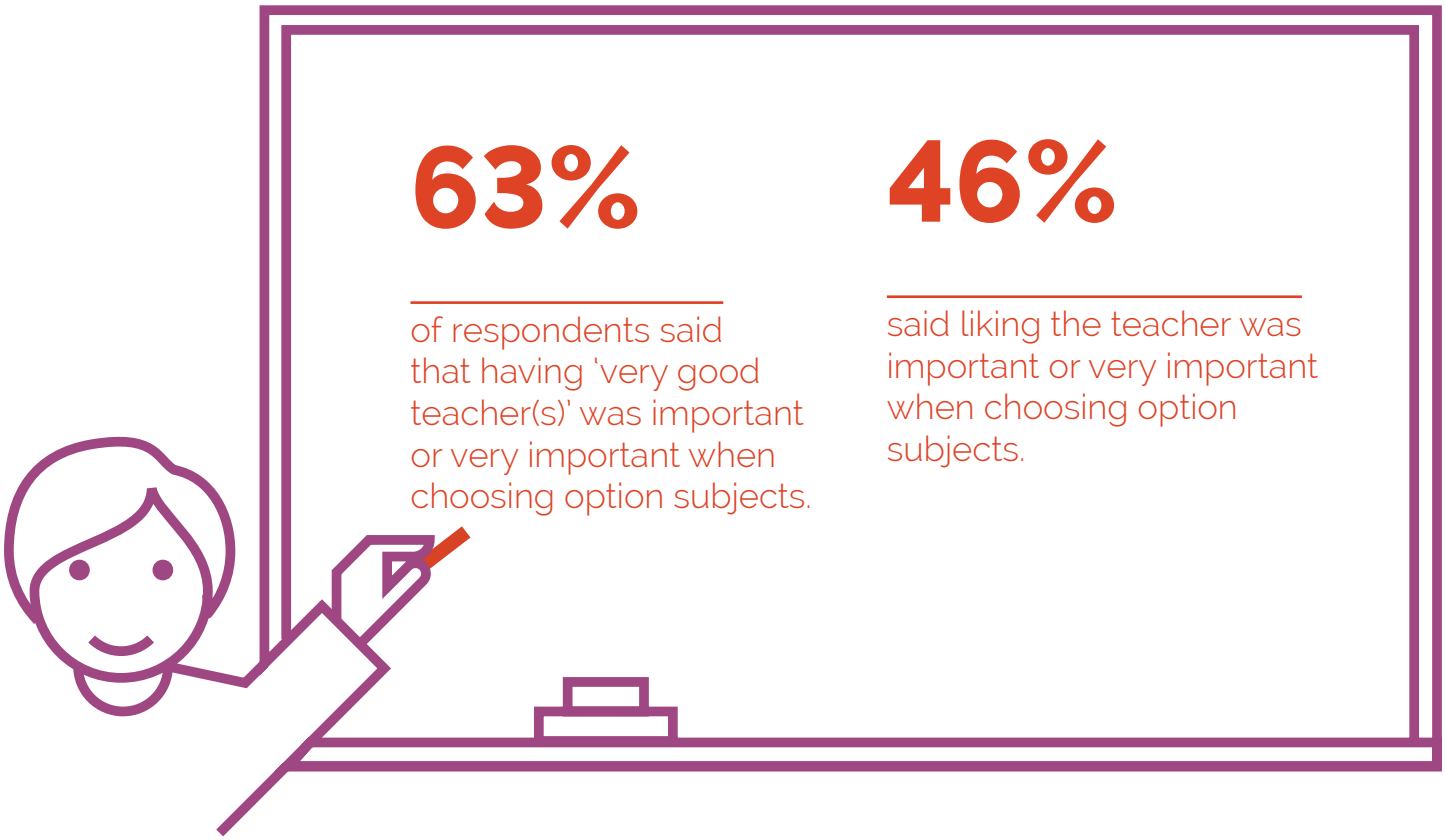
66%

of respondents are planning on taking honours maths to Leaving Cert.

The **most popular option subjects** for Leaving Cert were biology, economics, chemistry, home economics, business and accounting

Choices

What influences the career choices made by girls ?



63%

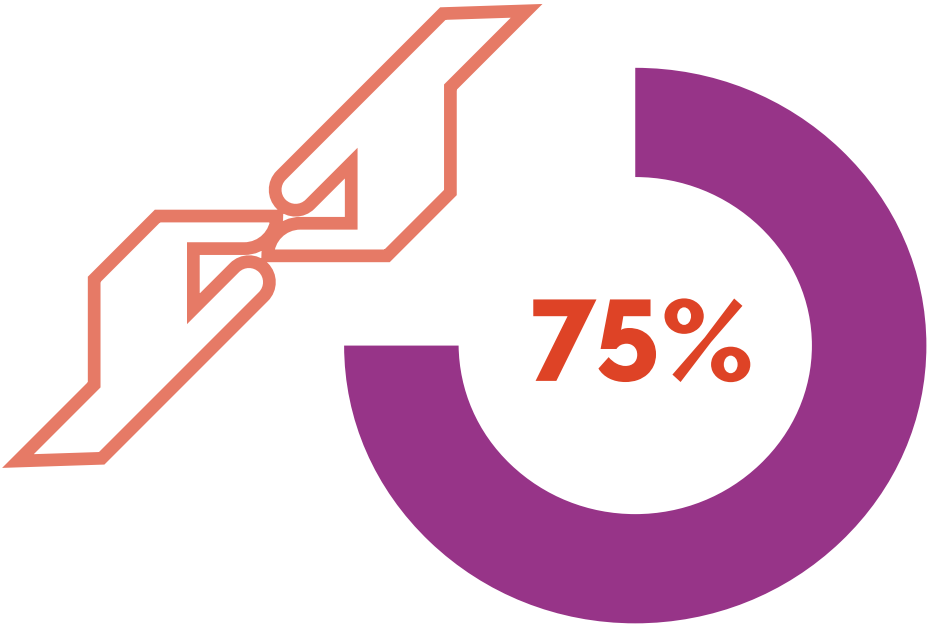
of respondents said that having 'very good teacher(s)' was important or very important when choosing option subjects.

46%

said liking the teacher was important or very important when choosing option subjects.

When considering uptake of STEM subjects post Junior Certificate one area of particular interest here is respondents intention to study Physics post Junior Certificate. When considering school type as a variable we found that in this case girls in single sex schools were almost 50% more likely, (19% of respondents who had choosen option subjects) to choose higher level Physics when compared to girls in mixed sex schools (13% of respondents who had choosen option subjects). Further investigation of these dynamics are key in developing effective sustainable strategies to counteract the underrepresentaion of women in some STEM areas

Having regard to the fact that 75% of respondents were motivated to help other people we should interrogate further the reason why STEM careers did not feature more strongly in the list of favoured career paths.



of respondents said that having a career that involved helping other people was important to them.

95%

of respondents surveyed said that having an **interesting career** was important or very important to them.

90%

of respondents expressed the view that being **good at the career** was important or very important to them.

86%

of respondents surveyed felt that **excellent job opportunities** in their career was important.

75%

of respondents said that having a **work/life balance** was important to them.

68%

of respondents said that **job security** was important or very important to them.

The **careers respondents were most interested** in were primary education, business, psychology, medicine, biological sciences, nursing, food science and law

Chances

Who is limiting who?
Do girls have every opportunity to understand and study STEM subjects?

31%

of the girls surveyed said that Junior Certificate Science was not compulsory at their school.

88.5%

of the girls confirmed that the option to study all 3 sciences to Leaving Cert was available at their school.

22%

agreed or were neutral about whether STEM was more suited to boys than girls.

16%

of girls believed that Stem is for nerds or those gifted in maths only.

10.7%

of the girls had competed in the BT Young Scientist program and of those only 11% in the technology category and 15% in the Chemical/Physics/Maths

53%

of the girls expressed the view that that they did not know enough about STEM.

Of the **girls only schools** in the Cork region that were invited to participate in the I Wish Showcase – **89% attended**

Of the **mixed schools** in the Cork region that were invited to participate in the I Wish Showcase – **49% attended**

The take up by girls only/single sex schools of 'I Wish' was twice that of mixed sex schools.

This suggests that there may be more of an awareness of the 'STEM skills deficit' and the arising opportunities for girls in single sex schools than mixed.

Changes

Is it society that needs a change of direction rather than young girls?

In the junior classroom

Girls want to study subjects that they find **enjoyable, interesting** and that they believe they can be **good at**.

Let's look at how we teach maths and science from a very early age

We need to make science compulsory pre junior cert.

We need to balance text based learning with more practical and fun focused engagement from an early age to help girls build their confidence in these areas in a less academic focused environment.

At the same time we should encourage and facilitate teachers to participate in programs outside of the classroom like the BT Young Scientist or the I Wish Showcase. These programs encourage engagement with STEM in a practical, dynamic, interactive and fun way which introduces STEM as a real driver of change across all areas of life and builds a bridge from subject choices in the classroom to higher education and future career opportunities.

Let's bring technology to the classroom earlier

Engagement with technology in the home starts for some as early as two with games and videos on phones and other hand held devices. However it is often not introduced into the classroom until second or third year and then in a very one dimensional fashion as a device to transmit information only.

We should look again at how initiatives like Coder Dojo can be introduced to the classroom as part of the curriculum at a very early stage so that by Junior Cert girls are very comfortable with basic program techniques and appreciate that elements of programing that they have mastered through fun sessions are actually maths based.

We need to start telling the STEM story earlier

We need to build a bridge across what we teach in the classroom and the jobs being done by people the girls know in their communities. 40% of the girls we surveyed knew someone already working in science and technology based careers but the girls didn't always translate this to STEM subjects in school or college. We have so many world problems to solve in the next few decades – over population, food shortage, food wastage, how do we feed many more billions of people using the same land, the same food, the same water? Climate change, Sustainability, Ageing populations, Disease, Urbanisation. How do we solve these problems? We know that the answer will be in STEM. Technology meets medicine. Drones finding animals lost on farms. The life changing opportunities through Artificial Intelligence, 3D Printing

We assume girls of 15 or 16 will know this, they don't

[6] 94% of those that responded are planning on further study after the Leaving Cert.

[7] I Wish Campus week at CIT in January 2016 was a phenomenal success. The participants saw first- hand what various third level courses could deliver and the career opportunities they translated to. We should explore the impact of similar such programs further.

and robotics are limitless.

Girls don't see what we see necessarily, at least not in sufficient numbers. They can't relate Physics and Chemistry in the classroom to the creative, cool, inspiring careers that are out there. Rather than fight against this, why not work with what we now know they do want? A job with purpose. Let's highlight for them how big the world's problems are, and let's put female role models centre stage (we know lots of these amazing women) to show young girls the real jobs in STEM where they can help solve these problems.

In the senior classroom

Young girls in Ireland today want to study further[6] and they want to **work**. In their chosen career they want to **make a difference** and they want to **help other people**. They also want **job security** and a **work life balance**.

A career in STEM can deliver all of these things yet the careers the girls identified that they were most interested in, primary education, business, psychology, medicine, biological sciences, nursing, food science and law were not always STEM focused.

We need to re assess how we educate girls about the opportunities in STEM. We need to focus on the "life changing and saving" career opportunities in STEM.
We have known for some time now that girls are drawn to the more caring roles and we have tried to change that or simply ignored it in order to encourage young girls in STEM with limited success. I Wish believes that we should in fact build on that rather than seek to change it.

We need to get the message right.

Instead of just telling our students that there are great career opportunities in STEM we need to show them what they are and we need to focus on how those careers can make a difference to the world we live in.

Let's tell the girls about the role STEM plays in:

- Inventing high performance sports equipment for athletes
- Designing video games that help children with ADHD
- Managing transport for humanitarian relief
- Inventing new technology that reduces carbon emissions
- Building energy efficient homes
- Planning smart cities
- Working on satellites to aid communications to remote peoples
- Feeding more people with limited resources

Let's now look more closely at what we know is important to female students and develop a program through Transition Year that exposes girls to people working in STEM roles and the subjects they studied to get there. Let's make it simple, it should be!
The time is now right to re assess the TY Program and how we might better use this resource to introduce the opportunities in STEM. To do this we also need to invest in our teachers and explore the level of knowledge they have about STEM, what influences and what engages their young female charges.

At our Higher Education Institutes

The vast majority of respondents intend to study further after the Leaving Certificate.

We need to map a very clear path from the classroom to third level and on to STEM careers.
Currently this road is very cluttered, the choices for third level study are enormous and there is no index which maps engineering to a career with Boeing reducing carbon emissions from planes or maths to a career helping children with ADHD or physics to building robots that disarm mines in war ravaged countries.[7]

We assume girls of 15 or 16 will know this, they don't.

Let's make it simple, it should be!

Five key recommendations

1. #No Limits

Make junior certificate science compulsory in all second level schools and quantify the existing access to other STEM subjects

Conduct a 'STEM audit' of all second level schools to determine what STEM subjects are on offer in these schools to students for the junior and leaving certificate.

Science is currently not compulsory for all students studying the junior certificate.

The fact that young early teens could in theory forego science as a subject for the junior cycle is severely limiting opportunities at the next stage. These children will be at a material disadvantage from a very early age and are arguably too young to make an informed decision.

Young girls are twice as likely to sit honours physics if they attend a girls school. Combining this fact with the fact that there was significantly less engagement in I wish from mixed schools versus all girls schools suggests we need to investige further why girls are limited in this way

2. #Purpose

Integrate into the syllabus a clear link between subject choices and further education courses and STEM careers which support societal change and better quality of life.

To many of us in industry the link between major societal challenges such as energy conservation, global urbanisation, cyber threats and STEM in solving these problems is clear.

The I Wish survey demonstrates that while a significant majority of many young female students are motivated to help others they are not making the connection between the world's major challenges and STEM.

Some schools offer a comprehensive CSPE (civics, social, political education) module in the junior cycle, this is one possible forum for these conversations.

STEM Campus Weeks could be incorporated in all TY programs to help make these connections.

3. #Show Me

Extend the exposure of young female students to STEM employers and in particular young female role models working in STEM.

The survey feedback from both students and teachers confirmed the positive impact of interaction with STEM role models. This was also borne from I Wish where a majority of girls re-considered their subject choice after engaging with the STEM leaders and graduates at the 'I Wish' Showcase events.

The logical channel of access is through the school system and through industry sponsored initiatives such as "IT is not just for Geeks" program offered by Dell.

Attendance at events such as BTYS and I Wish should be a key component of all TY programs.

5. #Be the Best

Benchmark Ireland Inc. against current international successes in this arena.

The lack of STEM uptake by girls is a world-wide problem. Many countries have adopted initiatives to address this and an audit of these international best practices combined with our learnings, not just from 'I wish' but other Irish champions in this sphere will help us harness the power of thousands of young women to drive change more effectively and efficiently and Ireland to become a world leader and a magnet for STEM talent.

4. #Get Involved

Expand the existing conversation between industry, third level and local government to explore other future mutually beneficial collaborations.

There is a convergence of goals between the higher education institutes, industry need and the economic development goal of local government. During our work on 'I Wish' many of the organisations who have become involved as partners, sponsors and contributors had identified this skills deficit risk and had developed in-house programs under their international and national CSR programs.

I Wish provided a vehicle through which these employers could reach a wider audience, there is a real opportunity to formally explore this potential further.

I Wish calls on central government to establish a national coalition of HEI, industry and local government mandated to develop a STEM outreach program that can be rolled out in every region of Ireland.

Who am I?

It doesn't matter if I am a girl or a boy.

Don't limit me

and

I will be

all of these things.

Show me opportunities

to deliver change

and

I will use

all of these things.

I am the Future.

Appendix A

Part 1 - Student survey

Name of School:	

Is your school, please circle, a:	Community School	Vocational School	Secondary School
Are you taught all subjects through the Irish language:	Yes	No	
Is your school	Mixed sex	Single sex	
Gender	Male	Female	Age

1. Is Junior Certificate Science compulsory at your school?	Yes	No	Don't know

2. Have you personally competed in the BT Young Scientist Competition?			Yes	No
If yes, please circle category:	Social/ Behavioural	Biological/ Ecological	Technology	Chemical/ Physical/Maths

3. Is Leaving Cert. Physics (Honours) available at your school?	Yes	No	Don't know

4. Is the option to study all three science subjects (Chemistry, Physics, Biology) to Leaving Cert (Honours) available at your school?	Yes	No	Don't know

5. If 'no' question 4, is this due to:	No Demand	No teacher	Timetabling issue	Don't know
Other:				

6. Which Leaving Cert. subjects, if any, (maximum four), are in your opinion most important for careers in **Technology, Engineering and Maths**?					
Accounting	Agricultural Science	Art	Biology	Business	Other (s)
Economics	Engineering	Geography	History	Home Economics	
Mathematics	Music	Physics	Technology	Chemistry	

7. Have you chosen your three 'option' subjects for the Leaving Cert. exam? If no, please skip to Q9 If yes, please circle below and answer Q8 please				Yes	No
Accounting	Agricultural Science	Applied Mathematics	Art	Biology	Home Economics
Chemistry	Economics	Engineering	Geography	History	Other (s)
Music	Physics	Religious Education	Technology	Business	

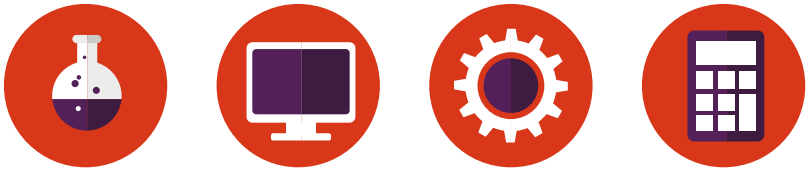
8. Why are you choosing these subjects? Please mark on a scale of 1-5, 1 being least important and 5 being very important.					
	least important	slightly important	neutral	important	very important
I find the subject interesting	1	2	3	4	5
Exam is easy to do well in	1	2	3	4	5
Very good teacher (s)	1	2	3	4	5
High grade at Junior Certificate	1	2	3	4	5
Necessary for third level course	1	2	3	4	5
I enjoy the subject	1	2	3	4	5
I like the teacher (s)	1	2	3	4	5
Other					

9. Are you planning to take Higher Level Mathematics at Leaving Cert.?	Yes	No	Don't know

10. Are you planning on further study after completing the Leaving Cert.?	Yes	No	Don't know

11. What career are you most interested in working in the future, please choose maximum 3?					
Biological Sciences	Physics/ Maths	Pharmacy	Engineering	Computer Science	Don't know
Food Science/ Nutrition	Nursing	Medicine	Dentistry	Psychology	Other
Secondary Education	Sports Studies	Social Work	Trade, plumber etc.	Business	
Hotel/ Restaurant	Administrative	Travel/ tourism	Hair/beauty	Physiotherapy	
Architecture	Design	Primary Education/working with children		Law	

12. Why would you like to pursue this career/job in the future? Please circle on a scale of 1-5, 1 being least important and 5 being very important.					
	least important	slightly important	neutral	important	very important
Interesting Career	1	2	3	4	5
Stay/live in Ireland	1	2	3	4	5
High Salary	1	2	3	4	5
Job security	1	2	3	4	5
Working in a team	1	2	3	4	5
Helping other people	1	2	3	4	5
Working on my own	1	2	3	4	5
Making new discoveries	1	2	3	4	5
Would be good at it	1	2	3	4	5
Work/life balance	1	2	3	4	5
Excellent job opportunities	1	2	3	4	5
Other					



13. Do you know anybody who works in a Science, Technology, Engineering and Maths career?

If yes, please list STEM area:

14. Please state if you agree/disagree with the statements below and circle on a scale of 1-5, 1 being strongly disagree and 5 being strongly agree.

	strongly disagree	disagree	neutral	agree	strongly agree
STEM is for nerds or those gifted in maths only	1	2	3	4	5
STEM is a growing area of opportunity	1	2	3	4	5
I don't know enough about STEM	1	2	3	4	5
STEM is more suited to boys than girls	1	2	3	4	5
Role models are very important in STEM	1	2	3	4	5
I Wish is an important source of information about careers in STEM	1	2	3	4	5

15. Any other comments:

Thank you for taking part!

With thanks to UCC for facilitating this survey.

Please cut out both tickets keep one and submit the other to be entered into a draw at the end of your group's session. Best of luck!

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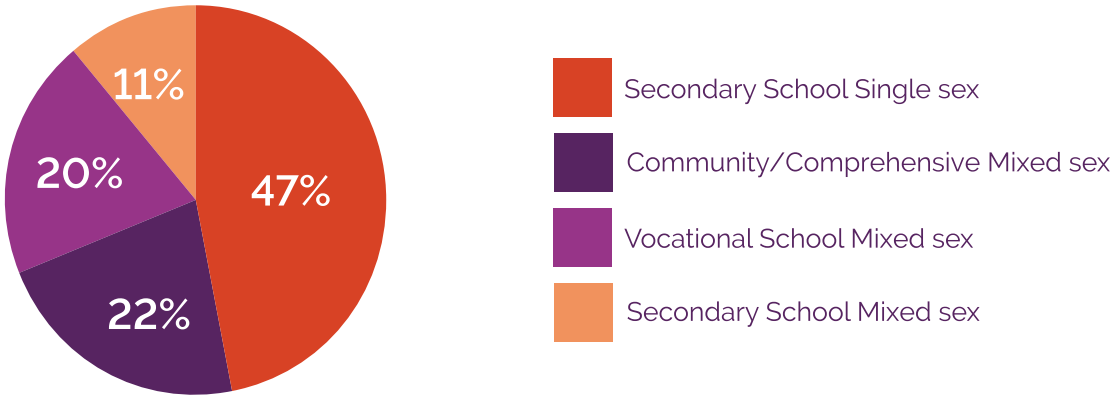
Appendix A

Part 2 – Data Graphics

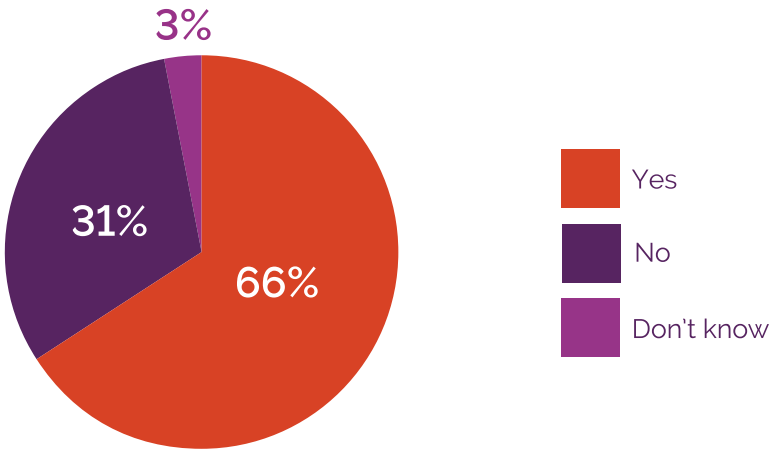
Type of school

fig 3



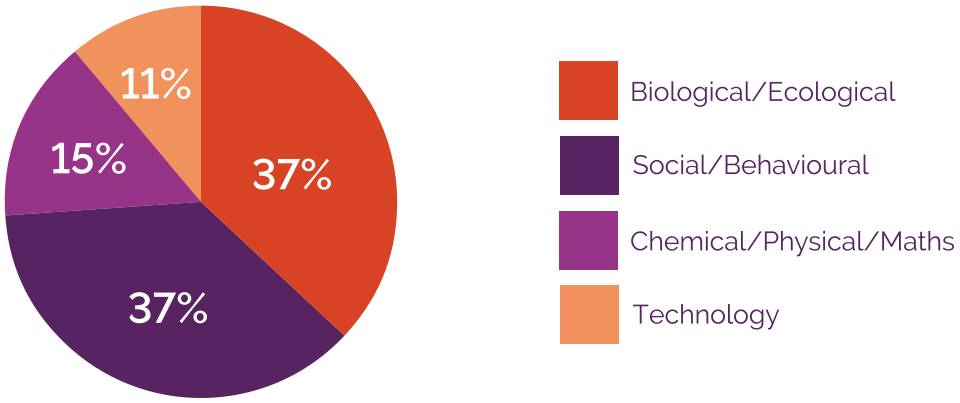
Is Junior Science Compulsory at your school?

fig 4



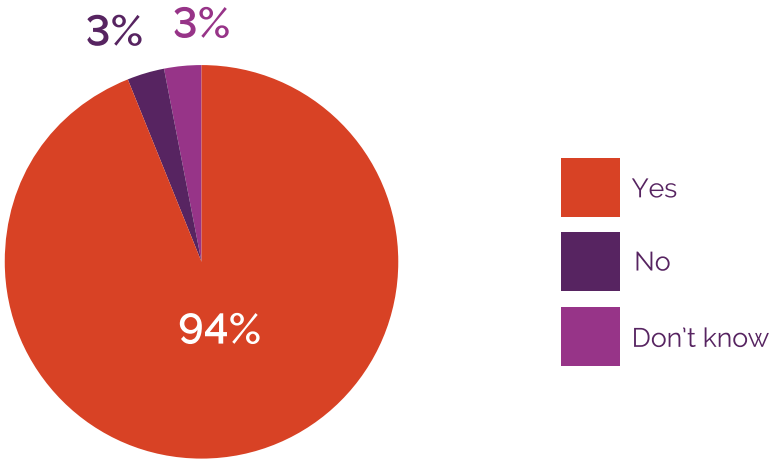
BTYS Participation

fig 5



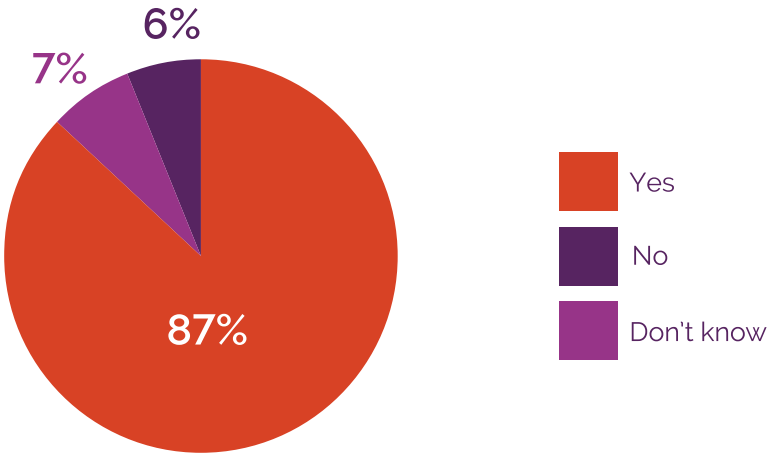
LC Physics availability

fig 6



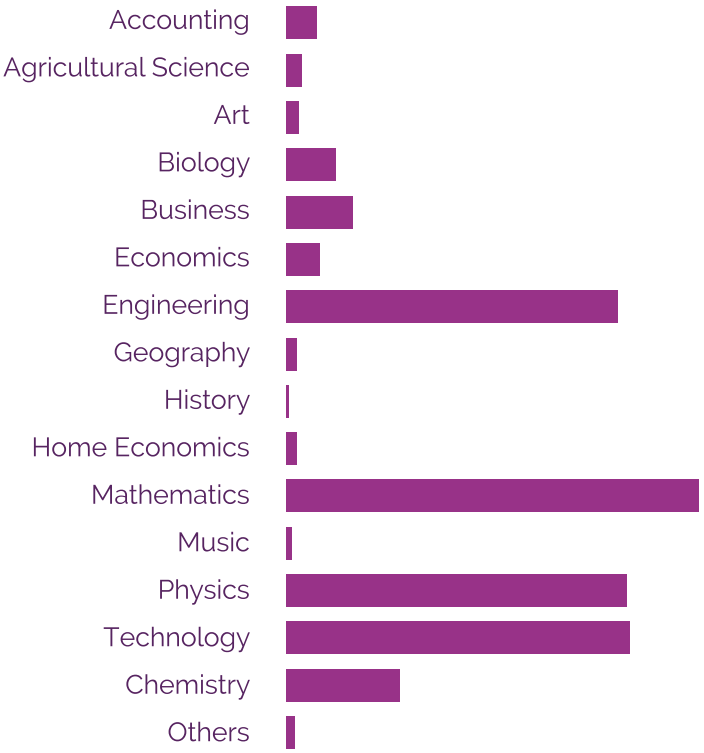
Q4. Is the option to study all three Science subjects (Chemistry, Physics, and Biology) to Leaving Cert. (H) available at your school?

fig 7



Q6. Which Leaving Cert. subjects, if any, are in your opinion, most important for careers in Technology, Engineering and Maths?

fig 8

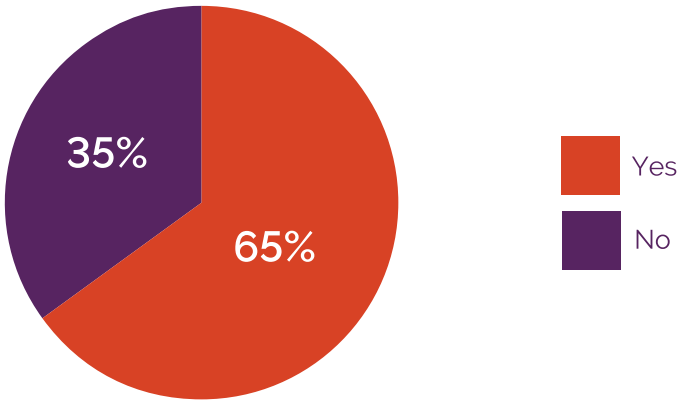


Only **11%** thought that **Biology** and **25%** that **Chemistry** were most important for careers in **Tech, Eng. and Maths**, however these are the most popular science subjects chosen by female students post Junior Certificate.

75.5% of students chose **Physics** as being important for careers in TEM.

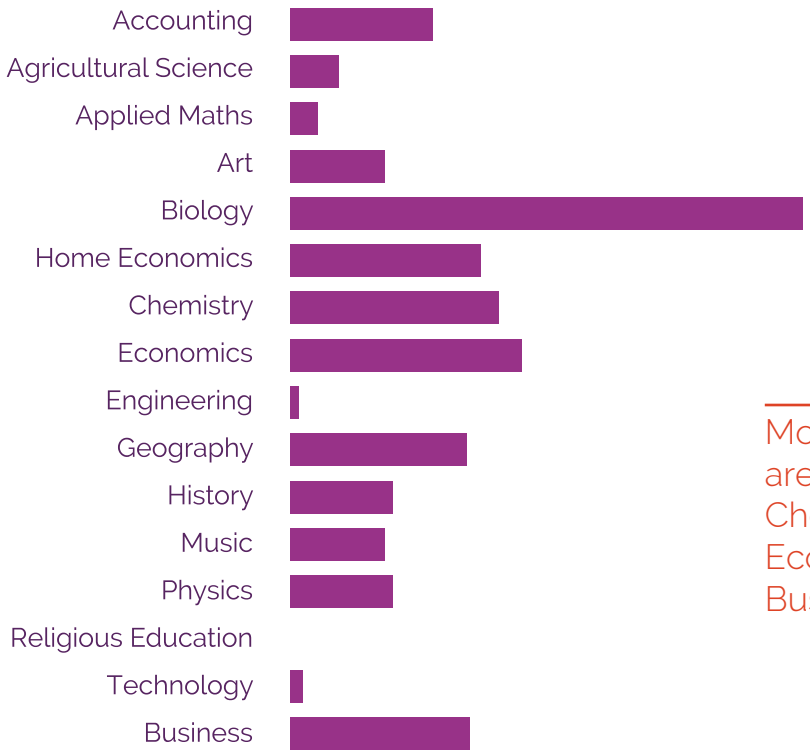
Chosen Option Subjects LC

fig 9



Subject Choice

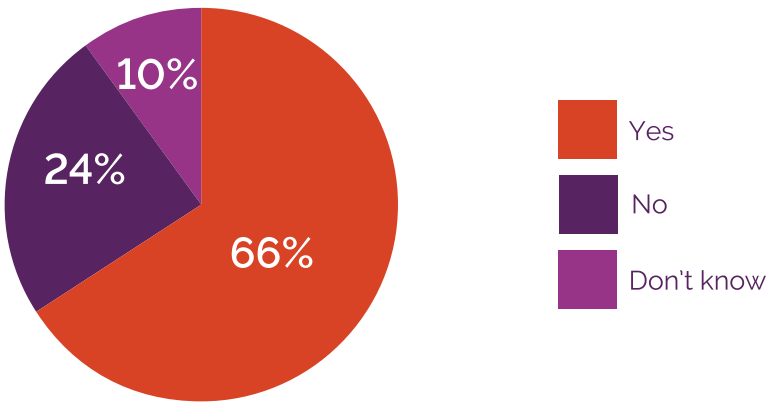
fig 10



Most popular subjects are Biology, Economics, Chemistry, Home Economics, Geography, Business and Accounting.

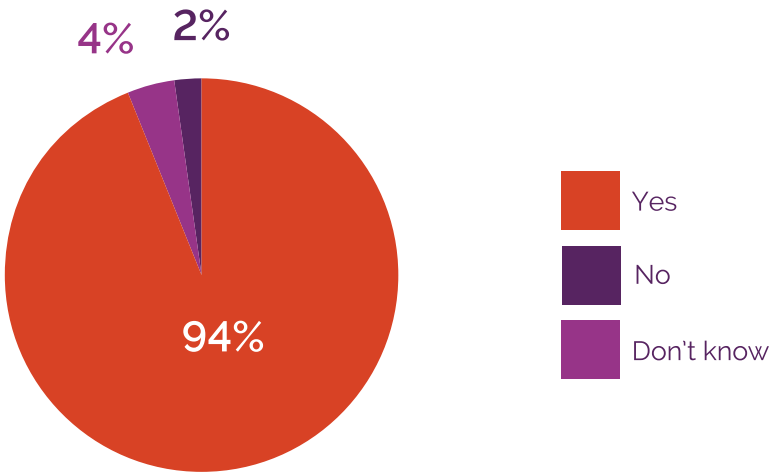
Q9. Are you planning to take Higher Level Maths at Leaving Cert.?

fig 11



Q10. Further study after completing the Leaving Cert.?

fig 12



Key Statistics Question 14.

STEM is for nerds or those gifted in maths only:
84% of respondents disagree/strongly disagree

STEM is a growing area of opportunity:
88% agree/strongly agree

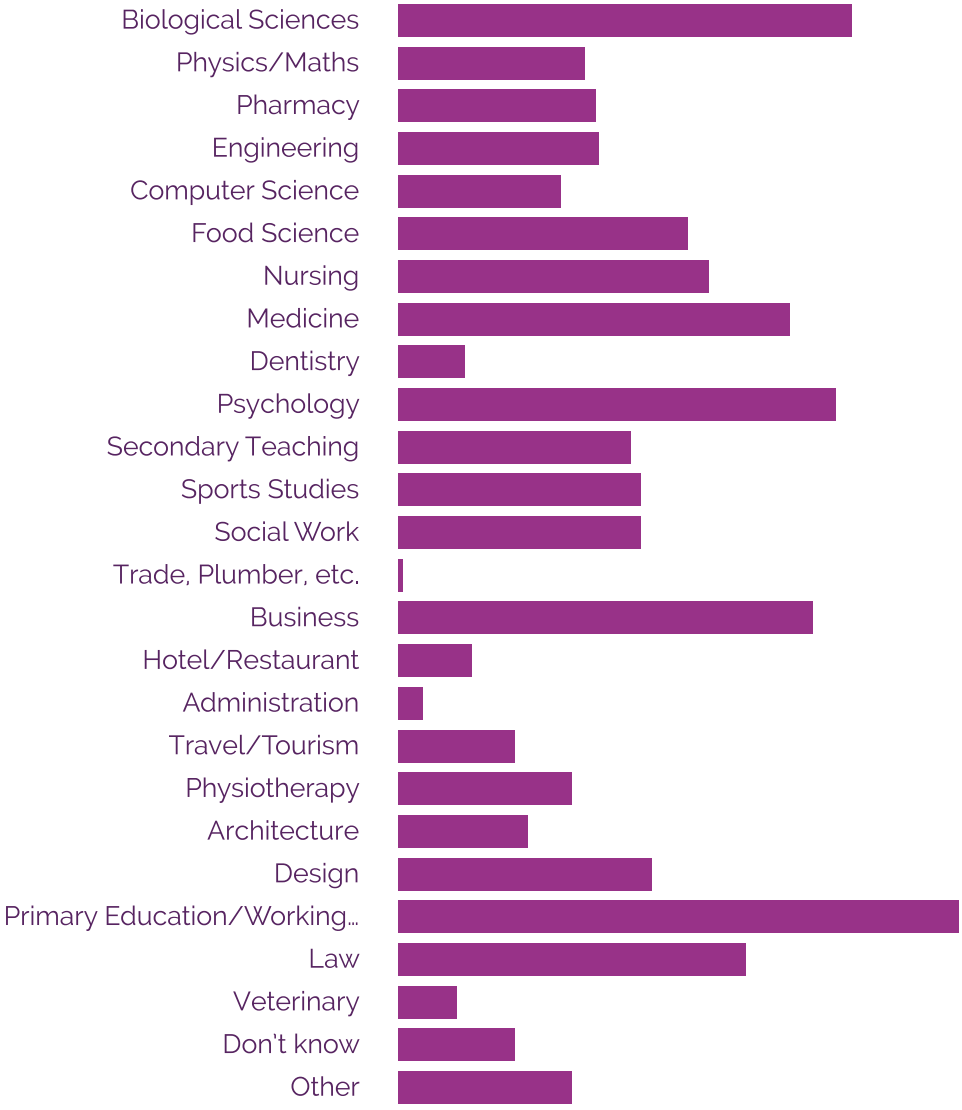
I don't know enough about STEM:
53% agree/strongly agree, only **11%** disagree/strongly disagree, suggesting that this low number considers that they know enough about STEM.

STEM is more suited to boys than girls:
While **78%** disagree/strongly disagree, **22%** agree or have a neutral opinion.

I Wish is an important source of information about careers in STEM:
84% of respondents agree/strongly agree.

Career Choices.
Q11. What career are you most interested in working in the future?

fig 13



Of note here, popular career choices such as Primary Ed/ working with children, Business, Psychology, Medicine, Biological Sciences, Nursing, Food Science and Law

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