

This worksheet is comprised of responses from over 60 engineering PhDs , who each provided a single response to the following question: *What would you tell an undergraduate engineering student is the greatest benefit to getting a PhD in engineering (or CS)?*

Below, I categorized each response into theme(s)

<b>Survey Responses</b>	<b>Theme1</b>	<b>Theme2</b>	<b>Theme3</b>
The ability to discover what type of research you are best suited in terms of ability and fulfillment, while ensuring that you foster the skills and credentials to find employment where you can do that research.	VIP to research		
The amount of opportunities and flexibility it has provided me. It also afforded me the ability to learn how to perform detailed, well structured, and targeted research. This is an irreplaceable skill which serves me well across a multitude of technical fields in either academia or industry.	Career Flexibility	Deep learning	
The ability to make an original contribution to the science/engineering community	Create knowledge		
for a start-up company it is an invaluable resource to get a young person "in the door"	Expert VIP card	VIP card to Entrepreneurship	
It's the most versatile degree. You can even go into business or policy with it.	Career Flexibility	VIP card to Business	
The benefits of obtaining a PhD far outweigh the sacrifice of time and energy in pursuing it.	Career Flexibility		
You can build systems that can help humanity.	Solve humanity's problems		
The ability to establish evidence for the successful use of engineering and technology to solve problems. For me it is in reducing errors and making patients safe.	Proving engineering & tech are helping		
The flexibility - I'm a computer scientists and I feel there are so many things I can do with the Ph.D. in computing.	Career Flexibility		
You can work on the projects/research you choose	Career Flexibility	Choose work	
PhD in engineering is beneficial if one is interested to conduct research and enjoys being challenged and expand his/her knowledge everyday. A PhD would help one to reach the edge of the existing science and engineering boundary in one area and conduct research to push the boundary. If that is an exciting statement for someone they should consider a PhD in engineering.	Challenged to expand knowledge daily	Go to the edge of knowledge	
It give you a great chance to do actual engineering as opposed to project management	Do actual engineering		
As a PhD in engineering you are able to remain close to the technical side of engineering and use your creativity to solve real world problems and fundamental research problems.	Can stay technical & use creativity to solve problems		
freedom! (e.g., intellectually, socially, economically, etc.)	Freedom		
Gaining confidence that you can dig deep and learn about technical topic you wish to master.	Deep learning	Confidence in your aptitude	

Developing technical skills that allow you to function independently and make impactful contributions.	Freedom	Max impact	
Flexibility in the career you pursue now and later.	Career Flexibility		
The greatest benefit to getting a PhD is the opportunity to explore a problem that has industrial or scientific significance while simultaneously equipping yourself with tools (scientific as well as managerial) that will give you an opportunity to succeed in either path you choose.	Can stay technical & use creativity to solve problems	Career Flexibility	
Obtaining a Ph.D. provides you with the necessary credentials to explore a variety of interesting and intellectually challenging projects that have the potential to vastly impact society for the better.	VIP to inaccessible opportunities	Challenged to expand knowledge daily	Solve humanity's problems
Qualification to work in academia, which provides one many opportunities to make impacts by working with students and colleagues in the classroom and in research.	VIP to enter academia	Max impact	
Being an expert in your field	Expert VIP card		
Depth of knowledge and ability to create new knowledge to contribute to the field, ownership of career path.	Create knowledge	Career Flexibility	
interesting research that helps the world	Solve humanity's problems		
Provides you with specialty/expert knowledge that provides you with critical thinking and other skill sets that are valued. Moreover, I enjoy my career "time flexibility" given the "academic freedom" which I appreciate now that I have a family. I do work a lot but at least I can choose WHEN I work and WHAT I want to work on all of the time!	Deep learning	Career Flexibility	
The opportunity to create at the foundation level, where other folks will use your output for generations.	Create knowledge	Max impact	
flexibility in your life that time and money gives you	Career Flexibility		
Getting the degree teaches one how to overcome obstacles that one faces many times in life.	<b>Confidence in your aptitude</b>		
The title helps get access to a number of interests and opportunities that would otherwise be tougher to engage. It's somewhat like having a "professional citizenship" that affords with it certain "basic rights and privileges" (e.g., pursuing types of jobs, opportunities to impart) that are otherwise not so readily accessible.	VIP to inaccessible opportunities		
I would say that the biggest benefit is learning how to think about the world on a fundamentally deeper level. The second biggest benefit is being able to work in a position that allows me to use that skill.	Deep learning	Challenged to expand knowledge daily	
Being able to do cutting edge research - both in industry and academia.	VIP to research		
Becoming a recognized expert in a particular area and being able to take a deeper dive into anything that you are interested in.	Expert VIP card	Deep learning	
empowerment	VIP to inaccessible opportunities		
Limitless opportunities	Career Flexibility	VIP to inaccessible opportunities	

Credibility	Expert VIP card		
The greatest benefit is the process of in-depth learning where you gain access to many different ideas and methods in order to answer a research question and you get to travel along a journey of becoming an independent scientist and critical thinker with a breadth of experience within your field and gaining knowledge about others' fields to apply principles to your own work.	Deep learning	Challenged to expand knowledge daily	
You get the opportunity to gain expertise in a specific area of engineering and learn about the latest advances in technology relevant to that field.	Expert VIP card	Proving engineering & tech are helping	
Hidden opportunities for growth and development not available to MS or BS graduates.	VIP to inaccessible opportunities		
Pursuing a PhD has opened so many doors for me and can do the same for you.	VIP to inaccessible opportunities		
Personal satisfaction of know I could do the work.	Confidence in your aptitude		
opportunities to effect change	Max impact		
An PhD enables student to delve deeper into scientific issues. Such aptitude is rarely seen otherwise. Certain high level positions require PhD, thus a doctoral degree opens up many opportunities. Post PhD, a person starts at level that would need atleast 4-5 years for an undergraduate to reach in an industry. Doctoral degree opens up possibilities at academic and industrial positions. At the end - putting "Dr." ahead of your name is just a small bonus!	Deep learning	VIP to inaccessible opportunities	Call me "Dr."
Increased options	VIP to inaccessible opportunities		
PHD provides extraordinary career flexibility: one can teach, do research, consult, start a company, etc. A PHD does not narrow, but instead broadens career possibilities.	Career Flexibility	VIP to inaccessible opportunities	
The chance to be a leading researcher in a field.	VIP to research		
You become an expert in a niche field of interest to you and you're always around very smart people who challenge your thinking.	Expert VIP card	Challenged to expand knowledge daily	
The greatest benefit for me personally was providing me with the academic credential I needed to teach, which was my career aspiration. Generally speaking, a Ph.D. in engineering proves high-level capabilities in not only one's disciplinary area, but also in broad areas such as research, statistics, and communication. It helps one gain the respect of peers (and others) as an expert who has earned the highest possible degree in the discipline.	VIP to enter academia	Expert VIP card	
A diversity of opportunities due to having technical depth, which can be applied to almost every potential direction (job, etc.).	Expert VIP card	VIP to inaccessible opportunities	Career Flexibility
Even in industry jobs, a Ph.D. earns you the ability to pursue side investigations to improve designs and methods that extended beyond the solutions typically used.	Expert VIP card	VIP to inaccessible opportunities	
To get an opportunity to research a topic/technology in depth, understand its limitation and figuring out ways to improve its performance, applicability or understanding.	Deep learning	Proving engineering & tech are helping	
With a PhD, you can really shape your career path; whether it's in academia, consulting, entrepreneurship, government or industry. And people have to call you Doctor.	Career Flexibility	Call me "Dr."	

You get to work on deep problems. You learn to learn and you LOVE learning. Learning never stops- you are never bored.	Deep learning	Challenged to expand knowledge daily	
Ability to critically think and create.	Create knowledge		
Opens doors with regards to technical respect amongst peers and management. Encourages camaraderie amongst fellow specialists.	Expert VIP card	VIP to inaccessible opportunities	
The greatest benefit so far has been the freedom to pursue research that I personally interests me. I also have a much more flexible schedule than some of my peers that went into industry after their doctorates. As an member of the engineering faculty, tenure is also a huge benefit.	VIP to research	VIP to enter academia	Tenure
You can literally do whatever you want in terms of a profession, from the White House to corporate or academia.	Career Flexibility		
That you have reached the highest scholarly level in your field with an understanding of the state of knowledge and how to create new knowledge that is your own. You can continue to learn new skills and innovative ideas instead of just applying those you already know.	Expert VIP card	Create knowledge	
Receiving a PhD teaches you how to be independent and resilient.	Create knowledge	Career Flexibility	Confidence in your aptitude
Freedom to work on whatever I want.	Career Flexibility	Freedom	
career flexiability	Career Flexibility		
The ability to grow	Challenged to expand knowledge daily		
The flexibility to find a job that you enjoy and can learn from every day.	Career Flexibility	Challenged to expand knowledge daily	
Helps you build confidence which allows you to take on seemingly insurmountable challenges!	Confidence in your aptitude		
Being in control of your own destiny. Let me explain a bit: if you enjoy research, the pursuit of answers to a deep question, you can do research without a PhD. However, without a PhD, you're doing someone else's research. With a PhD, you control your own direction, you have the independence *and knowledge* to be able to pursue any research topic that you want. You have control over where you go, not a manager, not a professor or other researcher, but you.	VIP to research	Career Flexibility	
Learning how to solve problems that no one has ever solved before.	Create knowledge		

**Below is the frequency for all the themes that appear in Cols B, C, D**

<u>Themes</u>	<u>Frequency</u>
Career Flexibility	20
VIP to inaccessible opportunities	12
Expert VIP card	11
Deep learning	9
Challenged to expand knowledge daily	8

Create knowledge	7
Confidence in your aptitude	5
VIP to research	5
Max impact	4
Freedom	3
Proving engineering & tech are helping	3
Solve humanity's problems	3
VIP to enter academia	3
Call me "Dr."	2
Can stay technical & use creativity to solve problems	2
Choose work	1
Do actual engineering	1
Go to the edge of knowledge	1
Tenure	1
VIP card to Business	1
VIP card to Entrepreneurship	1