STEM Secrets for Interviewing (Preview)

4 Secret Mindset Essentials to Conquer Interviews Including the Top 71 Interview Questions

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Introduction

The journey is yours. Enjoy each and every step. —Anonymous

"I am sorry, Dave, but unfortunately you are not the right fit for the position!" These were my exact words to a candidate I was interviewing for an entry-level junior engineering role in our company. On paper, he was an impressive young man, and one would say he was among the top academic graduates in his class. Besides this, his resume showed that he had participated in various school organizations that he called "resume builders." To me, he was the ideal candidate for the job and looked like a certain pick prior to the interview.

The other candidate for the same position was also a STEM graduate, whom I shall refer to as Jason, and had graduated with a degree in Mechanical Engineering. At first glance, his academic records suggested that Jason was somewhere in the middle of his class, although the grades were decent grades in my opinion. Unlike Dave, he had not been involved with any school organizations. If we had to go by the resumes alone for the selection process, Dave would have been offered the job with little hesitation. However, as the saying goes, "never judge a book by its cover, "the way the interview progressed quickly changed my opinion as I got to understand both candidates. The resulting decision was

based on our assessment of what the two candidates offered the company in the immediate as well as the future.

After a few questions, Jason explained the reason behind his "unimpressive" academic record if compared to Dave's. In order to put himself through school, he had to work a 35—40 hour job. As the interview progressed, he talked about the work failures that he overcame in his job with various customers. What was more interesting to us were the solutions he had to bring to the table to retain the customers. I could say he had a humble personality and proved to be a team player who acknowledged that he needed to learn more about our company. In his experience, he had learned that mistakes hurt the business and customers alike who, in turn, lose their confidence in the business. A team player with an understanding of business was a bonus to the engineering knowledge we were looking for. Dave, on the other hand, had a lot of confidence in his ability with a highly technical mind evidenced by his near-perfect GPA. His responses to our questions made it clear that he did not have the right mindset needed for the job, and had no idea how to be part of a team. As a result, we had to tell Dave that we could not offer him the position.

After the interview, Dave did call me to thank me personally for the interview and he wanted to understand why he didn't get the job. My response was something along the lines of, "I'm sorry but the other candidate had a skill set closer to our company's needs." He was in disbelief and asked if the other candidate had "higher grades" to which I answered that this information was confidential. Understandably, as someone who was under the impression that his academic record was the only factor that should have mattered, he responded that he could not believe our company did not hire him, despite knowing that the company had hired one of his friends with a lower GPA for another position. Again, I told him I could not answer his question since this was confi-

dential, and neither was I responsible for the other department's recruiting processes. His final response was, "Well, I have two other companies that I am interviewing for next week and I am sure I will be a better fit for them because of my high GPA." I would have imagined that Dave would ask about how he could have been a better candidate, and what he lacked that the company was looking for. Instead, I came to realize graduates still have no idea of the approach to STEM interviews nor do they take the time to find out what employers look for when filling STEM roles.

To me, it seems like this has not changed since I finished college many years ago. I too failed to secure a STEM job immediately after leaving college because I lacked knowledge at the time. After many failed attempts, I embarked on a journey to find out what I was lacking that prevented me from scoring the STEM job I had dreamed of, and finally nailed the STEM interview from which I have built a successful career. To date, I have worked for two Fortune 500 companies, eventually participating in the hiring process as the Engineering Director or Project Manager. My experiences as a STEM job seeker and an interviewer have given me deeper insights into what it takes to get the job.

My children are the inspiration behind this book, and their journey was a jog to my memory about the difficulty STEM graduates face in their quest to land their first job. Today, they too have successful careers in the STEM fields of Epidemiology and Mechanical Engineering and got their first jobs using the same lessons I will share with you. Since then, I have helped several other STEM college graduates, skilled worker graduates, and those looking for a change secure jobs on their first or second interviews. I am also looking forward to imparting this knowledge to my youngest son once he finishes his bachelor's degree in Construction Management. The biggest challenge for most college graduates is finding what to say during the interview. Most are

fresh out of the water experiencing the interview process for the first time, while for some it is their attitude that lets them down during the interview. The more experienced STEM graduates also face stiff competition.

You could be looking to land your first job, or simply trying to find greener pastures. If so, then this book has all the secrets you need. I am writing this book because I am confident that you too can benefit from the experience and knowledge I have accumulated over the years. All of the work put into this book is because of the passion I have to see STEM graduates reap rewards from the countless hours spent absorbing technical knowledge. My mission is to empower you to secure the STEM job of your dreams.

After reading this book, you will:

- Find out what companies are looking for and develop skills that will win you the job
- Gain confidence to express your critical thinking and problem-solving abilities during the interview
- Learn how to approach interviews with a mindset that leaves a good impression on interviewers, making you stand out from the rest of the pack
- Get insights into the top 71 interview questions, and the tips you can use to answer them confidently

Our journey will begin with defining what STEM jobs actually are, and how STEM education developed into what it is today in the US. After this, we will explain a little more about what makes STEM interviews different from non-STEM interviews for you to clearly grasp why critical thinking and problem-solving skills are the heart of securing the job. The two examples mentioned

and my personal experiences as a job seeker and interviewer will be used to explain the secrets I will share. I am confident that applying these secrets will set you apart from the rest of the field.

Let's begin the journey to being hired for the STEM job of your dreams.

Chapter 1

STEM Degree ≠ Getting a STEM Job

STEM jobs are plentiful but hard to get. This was true two decades ago and is still true today. People get surprised when I tell them that it took me nearly five years to get my first STEM job after graduating with a degree in Mechanical Engineering in 1992. I had applied for over a hundred positions and of these, I was only invited to a dozen or so interviews. Each time, I was told the same words I told Dave when he failed the interview. This was discouraging and the reality did not match the high placement rates that the University's placement office preached. Their stats did not tell the full story of who is getting the job apart from having a STEM degree. Frustrated, I decided to take a job at a local company, although this was not the role I had in mind.

After sending in your resume, the anticipation is to be invited for an interview. At this stage, the competition is already stiff given that at most seven graduates are called for interviews from a pool of resumes (Turczynski, 2022). Besides this, it only takes a few minutes for a resume to be evaluated after passing through the applicant tracking system (Booker, 2021). Candidates with good resumes are invited to the interview and for most this is

where things go wrong. In the workplace, usually, the theoretical mathematics learned in college is not very useful, maybe except for engineering and product design or research companies. At times, there is a disconnect between how students are taught to solve problems in class versus what they face in the real world. As managers, when interviewing candidates critical thinking and problem-solving are what we look for. Unfortunately, most colleges do not teach students how to think on their feet when faced with real-world problems.

Should You Study STEM?

The biggest question I always get from parents, high school students, early engineering students, and some interns is whether getting a STEM degree is worth all the effort—especially when they see downturns in the market, layoffs, or horror stories in the media. My response to getting a STEM degree is always a resounding yes. To start, I advise people to major in STEM if they have a passion for their chosen field because this is where success starts. I discovered this from my experience as an interviewer and is part of the secret mindsets that we shall discuss starting from Chapter 4. Our future undoubtedly lies in the hands of STEM, and these roles are expected to continue growing. The developments we have witnessed have greatly improved our quality of life and healthcare systems. For this reason, the government and private corporations continue to promote STEM in universities and colleges. STEM has fixed problems we had in the past, created new ones, and promises to fix the ones it has created and others. The type of problems that need to be fixed depends on the sector, but the principle is that STEM will continue to impact the way we live and do business. As a result, STEM roles are not just a job and interviewers seek a candidate with the right personality, skillset,

and mindset. To understand what makes the roles special let's find out how the idea of STEM came to be.

History of STEM

STEM is an acronym for the four subjects of science, technology, engineering, and math. Proposed by Judith Ramaley, the term refers to a collection of subjects that fall under the four domains, and their demand is predominant in the healthcare, information technology (IT), and advanced engineering and manufacturing sectors of the economy (Turczynski, 2022). STEM education is designed to give individuals exposure to the four subjects or fields in an integrated fashion. This was not always the case, but following a report that highlighted the economic and development dangers of the United States falling behind other countries, the push was to have a STEM-prepared workforce. Several studies followed, which aimed to define STEM and find ways to implement it in the education system. The rest is history, and for 10 years since 2000, STEM jobs have grown three times more than non-STEM jobs. Projections are that by 2029, there will be an 8.8% growth in the number of STEM jobs available (Ray, 2021). The links between STEM, prosperity, and jobs that are knowledge-intensive have been proven to be a guarantee to a nation's prosperity or development.

For a while, the dilemma was to define what a STEM job exactly was. After much deliberation, two categories of STEM jobs with two domains each were developed. The first included roles in Science, Engineering, Mathematics, and Information Technology Domain, with the domains being Life and Physical Science, Engineering, Mathematics, and Information Technology Occupations, as well as Social Science Occupations. The second category developed is Science- and Engineering-related roles, with the sub-domains being jobs in architecture and health occupations.

What Is the Future of STEM Jobs?

A career in the STEM field is highly coveted, and most jobs in this field come along with a good paycheck. You should know this, otherwise, there would have been little incentive for you to pursue a STEM career. Good-paying jobs are getting more and more difficult to secure. If we look at the statistics, only 28% of STEM graduates are employed in a STEM position (Day & Martinez, 2021). Competition is stiff, and it's no longer the good old days. The pandemic shifted the job market from a "candidate market" to an "employer market too" (Neuman, 2020). More candidates are competing for the top jobs than ever before. As a result, many STEM graduates end up taking non-STEM positions. The world has changed too, and it is no longer about what you know or how much you know. Candidates must recognize the needs of their target organization. It's unfortunate that most graduates still perceive the current job market in the same way Dave did.

This doesn't mean that career opportunities in STEM roles are not there. On the contrary, STEM careers are among the fastest growing on the job market tripling their growth over the past decade (UC Davies, 2022). Already, there are growing calls by several legislators to direct more funding towards STEM studies, at the expense of non-STEM education programs. Companies incentivize this by offering higher wages too. Migrating to a role that requires STEM skills is sure to guarantee more than a 10% wage increase (UC Davis, 2022). In the end, graduates still compete for the same jobs, with the ones paying more attracting more applications. The average number of applications received for each job application differs on several factors, but it is not surprising for a position to receive over a hundred applications. Naturally, more and more people are chasing STEM subjects and managers need to separate the chaff from the goods.

Before you get the job, employers want to understand your critical thinking and technical skills to assess how you solve problems or hit targets. They want to put you into many different competency questions listed in this book. To evaluate this, they need to understand the steps the candidate used to get from point A to point B and how the STEM candidate achieved their final results. This is important to them because changes in the corporate world are rapid, and solving problems is the order of the day.

As a future leader, you need to learn how to adaptively solve problems to steer the company to greater heights or in times of uncertainty. Studies have shown that nations whose students are taught to use critical thinking are excelling compared to countries that do not. For this reason, this skill set tops the list for all employers.

Today, STEM jobs pay an average of $109,000 compared to non-STEM roles that pay slightly more than half of this on average according to a survey of over one million jobs in the US (Smith, 2022). These numbers are the only thing that most graduates hear from educational campaigns. Figures like this are attractive, and both the growth and rewards, unfortunately, give an impression that earning a STEM degree automatically guarantees them the job of their dreams. Other advantages include better job security, transferable skills, and for some, the thrill of working on cutting-edge technology. In the spirit of bridging the gender pay gap, several institutions are also actively advocating for girls to take on STEM subjects. According to the data, over half of college graduates are female, yet only 27% pursue a STEM career path (The Ad Council, 2022). This just shows how important and rewarding STEM careers are.

Yet, in reality, STEM jobs are difficult to get, otherwise, I wouldn't be writing this book. Companies do not just hire because there are vacancies to fill. If candidates do not demonstrate the qual-

ities they seek, it is better for them to continue their search instead. Bickel (2012), remarked that she "interviewed more than a dozen people, all highly educated, completing fellowships in neurology specialties and subspecialties. They'd been in school for a long time and are very accomplished, but they were scared and hesitant about job interviews." The Census Bureau estimates that among the 50 million college graduates in employment 37% hold a bachelor's degree in science or engineering. Of this, 14% worked in a STEM-related occupation based on one-year data (Cheeseman and Martinez, 2021). Just over half of the graduates who majored in Engineering, Computer Science, and Mathematics get a STEM job after graduation, because their skills are in greater demand—compared to graduates in Agricultural Science or Psychology, for example.

In any case, the statistics do not reflect a 100% employment rate for STEM careers. Both the demanding and competitive nature of STEM roles result in STEM interviews featuring questions that probe the candidate's qualities deeper. The logic is that anyone can get a STEM degree, but not everyone develops the qualities needed for the job. To evaluate these qualities, the questions you will encounter in a STEM interview are different from those asked for a non-STEM role.

STEM Interviews

What Makes STEM Interviews Different?

The objective of the interviewer is to determine if you can effectively apply the critical thinking skills acquired during college. For you to be successful, you need to have an awareness of how you critically think. Michael Scriven & Richard Paul, defined critical thinking as:

An intellectually disciplined process of actively and skillfully conceptualizing, applying, analyzing, synthesizing, and/or evaluating information gathered from, or generated by, observation, experience, reflection, reasoning, or communication, as a guide to belief and action. In its exemplary form, it is based on universal intellectual values that transcend subject matter divisions: clarity, accuracy, precision, consistency, relevance, sound evidence, good reasons, depth, breadth, and fairness (The Foundation For Critical Thinking, n.d., para 2).

What interviewers are looking for is evidence that the candidate acquired the basic skills and knowledge expected from STEM education which seeks to broaden students' knowledge bases the related subject to enhance their ability to combine information and skills, encourage creativity, to promote teamwork, and create the complete STEM professional.

The Structure of STEM Interviews

Dave's example is a perfect illustration of the effectiveness of behavior-based questions characteristic of STEM interviews. The questions were designed to reveal the candidate's personality, which he fully displayed during the follow-up phone call. Unlike in other careers, STEM interviews are particular in the type of candidates they seek, and most STEM roles reward successful candidates handsomely.

Behavioral style interviewing and traditional interviewing are the two most common interview methods, and STEM interviewers prefer to ask behavioral-based questions. Both styles have a common feature in that they have a relationship with human behavior and psychology. In an interview, candidates will be selling themselves and will need to be interesting and capture the attention of the interviewer. Although an interview is an exchange of information between interviewer and interviewee in a professional

setting, social and emotional intelligence have an impact on how this process progresses. The interviewer will ask questions, wait for a response, process the answer and build more questions from there. As the candidate, you will also get to ask questions to demonstrate your zeal and curiosity for the role as well as the future of the organization.

Despite the format and nature of the two interview styles being the same, behavioral interviews feature questions that seek to find out how a candidate handled difficult or complex situations at work. The significance of this is based on theories from behavioral science that how people behave in the past sets precedence for their actions in the future. On the contrary, traditional-style interviews feature questions like, "What will you do if you find that your supervisor is ignoring safety procedures?" or "How would you handle a difficult customer?" (Doyle, 2022). The difference between these questions is that behavioral style interviews are designed to find out how a candidate solved a problem, while traditional style interviews remain theoretical.

STEM roles and complex challenges are synonymous and interviewers need to know that a candidate will be able to at least attempt to solve problems when they arise. To expand on this more, you will often get asked questions like:

- Tell us an example of how you used your theoretical knowledge to solve a problem.
- Give an example of a goal you reached and tell me how you achieved it.
- Describe a decision you made that was unpopular and how you handled implementing it.
- Have you gone above and beyond the call of duty? If so, how?

- Did you ever have to correct your superior on a mistake they had made? How did you do it?
- Have you handled a difficult situation with a coworker? How?
- Tell me about how you worked effectively under pressure.

You will notice that these questions are more probing and often build up to follow-up questions that you may have to answer. This is why the experience of some sort is important because it gives you a platform to develop your problem-solving skills. Answers like, "I haven't had the opportunity to work yet, but I am sure if I am presented with a problem I can adapt easily" are theoretical and employers are not interested in this. It would be better to try and adapt an unrelated situation and put it in the context of the question if by any chance there is no experience regarding the setting in question. By probing, the interviewers will be trying to evaluate the candidate's critical thinking skills beyond the technical competency skills that they already know about from your resume or transcript. The end goal is to find the four mindsets.

In essence, interviewers will be looking to identify if the candidate has the desired critical thinking mindset three, five, or 10 years down the road to determine if the candidate will be a high-impact employee. They are not just filling a position in their company, but they are also looking for the next CEO, manager, leader, mentor, or business breakout star with their customers. Skill-based competencies are needed for success in these roles.

In Chapters 4 to 7, we will discuss the top competencies in line with the four secret mindsets which I identified from my experience. The secret mindsets are success, leadership, business, and overcoming failure. If I were to summarize the relationship con-

necting the mindsets together, it appears that STEM candidates who have learned how to succeed, developed their ability to lead, and grow to overcome failures are guaranteed to succeed beyond the position they are applying for. We will dig deeper into each of these mindsets after we discuss how to get ready to participate in a STEM interview and provide a glimpse into the questions you might meet to illustrate the link between the questions and the mindsets.

Chapter 2

STEM Interview Preparation

Failing to prepare is preparing to fail. —Benjamin Franklin

All things require preparation to be successful. As interviewers, we assume that in college a candidate would have learned how to perform research and that they will adapt this skill to find out more information about the organization they want to join and how they do business. Most companies have a culture that drives how they do business and want employees that are on the same page with the company goals, mission, and long-term vision. Nothing annoys interviewers more than a candidate who exhibits a lack of preparation on their part and such candidates will not be considered serious. You need to show enthusiasm for the opportunity and the questions you will ask throughout the interview process are cues for interviews to determine this enthusiasm, and whether your career goals align with the company vision.

It's not just about the money, and a candidate who demonstrates knowledge of the company they plan to join will certainly grab the attention of the interviewers. Pelczarski (2021) advised finding information on the interview team, organizational structure, the company's financials, growth plans, competitive environment, the

company's reputation in the industry, culture, and the typical profile of people who get employed there. Brief information about the company's history, employee turnover, and promotion policy are essential. You can group these factors into three segments, namely information regarding the employer, industry, and yourself. Perform the groundwork before arriving at the interview and make sure this information is on the tip of your tongue.

The Devil Is in the Details

Find Information on the Employer

The first thing to find out is who the employer is, what they have been doing, and their values and vision for the future. For big companies, this information is readily available on their official website and 10k reports in the case of Fortune 500 companies. You will find information that explains the business sectors the company has in its portfolio, its risk profile, and other high-level details regarding the financials, projects, and business structure. Your investigation should start by finding the skills the company values.

Going back to our example, Dave's biggest mistake was thinking that the company valued people who knew everything and how to solve problems on their own. On the other hand, Jason had done his homework and displayed how his experience aligned with our culture of solving problems through teamwork and shared knowledge. 43% of companies believe that "a cultural fit" is the most important quality employers look for (Huhman, 2021). Knowing this will also help you determine if the company is the right fit for you because this is important too. Continuity and harmony are important to companies and as their future leader, your values must be aligned with the company's values.

Another important piece of information you must have relates to the interview team. Contrary to examinations, interviews are an interactive process and communication is a two-way street. Behavioral psychology rules apply to all interview processes that involve human interaction, and research has shown that interviewers have their own cognitive biases too. You need to be able to relate to each person on the interview team and by looking them up on platforms such as LinkedIn or the profile section of the company website, you can get insights into the professional life of the interviewer. A simple Google search can also point you in the right direction, and the information you find should include:

- Their professional experience and role with the company
- Areas of interest and expertise
- Values and goals
- Key players in the organization

You may not find all the information, let alone know who exactly will be leading the interview. Usually, the human resources manager will be part of the interview, and so will the person you will be reporting to such as the head of the department or a director. The email received as an invitation to the interview can provide you with clues. If the company is small and has no information online, be bold and ask for the contact details of who will be interviewing you. Remember the objective is to just build rapport with the interviewer, and not to find "loopholes" that can be manipulated to the candidate's advantage. Use the information you find professionally to build genuine connections. Plan your questions for them accordingly.

Want to read more.....the full book is waiting for you!