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Best

Discipline Investigation

INTRODUCTION

My major is mechanical engineering with the focus on mechanical design and manufacturing. I chose this major because I always had interest in designing and manufacturing a variety of manual and automated tools. The mechanical engineering community has members who design and manufacture different tools and gadgets in many industries such as automotive, automation, utilities, and many others. Since performing within the framework of the mechanical engineering community is my ultimate goal, I intended to investigate this community. The purpose of this assignment is to interview a professional mechanical engineer and obtain as much information as possible about this field. The interview provided me the opportunity to understand the role of a mechanical engineer in a professional work environment. I acquired information regarding career path, qualifications, responsibilities, and communication skills of a successful mechanical engineer. I also used two documents for the purpose of gaining additional information about the mechanical engineering community, including types of jobs in this discipline and qualities of an ideal candidate. In this report, I will include a summary of my interview, which consists of interviewee's background, roles, and responsibilities as well as information about the importance of communication and writing skills in the engineering work environment. I will also discuss what I have gained from my interview in the conclusion section. The questions that I asked the interviewee are all included in the appendix section.

field choice and why
 Discourse Community of field
 assignment purpose & what I learned
 what the reader can expect **

INTERVIEW SUMMARY

Background and Career Path

After searching for a mechanical engineer to interview, I found the ideal person whose career very much interests me. I interviewed Mr. Farokh Ziari, who received his bachelor's degree in mechanical engineering from the University of California Berkeley. After graduation, he started his first job at Butler Precision Built-in. His responsibility in this company was to design tools that build a variety of products such as custom film belts. After a few years, Ziari departed from this company and started his second job at International Business Machines Corporation (IBM), where he worked for thirty years before he eventually retired. Shortly after his debut at IBM, he started to attend San Jose State University for his graduate degree in mechanical engineering. IBM significantly helped Ziari with the tuition cost of his post graduate degree. He eventually received his graduate degree and continued his career at IBM. Ziari was a Manufacturing Engineer at IBM, and designed a variety of tools. This position required more

Who?
 Education & career path

* Instructions said to explain your expectations before you interviewed and researched. This student explains what he got out of the exercise.

** You do not have to have the announcement style of thesis. Instead you can make statements of what each step provided you (or what you gained).

than just designing tools; it involved managing other engineers, assigning tasks to them, training machinists, and conducting meetings.

Ziari considers education an important factor that contributed to his success at IBM. He stated, "Education is the foundation for a professional job." Ziari also noted that a college degree was the minimum requirement when he was looking for a job. During the interview, he mentioned that the learning process does not end after graduation. Ziari participated in many training programs conducted by IBM. A few of the training programs that he participated in were project management courses, Computer Aided Design (CAD) courses, and most interestingly effective writing courses. When Ziari first started his career at IBM, he was surprised about the fact that he had the opportunity to take different training courses even though he had finished school. Ziari recognizes the combination of strong academic and training background as well as experience in the field as requirements for succeeding in any engineering work environment. Therefore, it is evident that the bachelor's degree that he received from Berkeley and a few years of design experience at Butler Precision Built-in helped him attain a position at IBM. Ziari recommended working as a mechanical engineering intern before starting a career. He noted that working as an intern provides one with the opportunity to gain knowledge and experience that are necessary for starting a career.

*necessity
of
education,
ongoing
training,
experience,
&
internships*

Roles and Responsibilities

As mentioned before, Ziari's job title was Manufacturing Engineer; his main responsibility was to design and build in-house process equipments. This responsibility refers to designing tools that build the company's products. Ziari's most important responsibilities were to come up with robust designs, train machinists, write manuals for the designed tools, and present the designs to teammates for comments and approval. He mentioned that a robust design is one that is safe, has high quality, and is cost efficient. Designing tools with such criteria was Ziari's biggest challenge in his career. During the interview, he emphasized the fact that designing a robust tool requires sufficient engineering knowledge and design experience. Ziari performed the task of training the machinists by conducting meetings with them. During those meetings, Ziari informed the machinists about the sequential manufacturing processes that were necessary to build the tools. He also wrote the manuals that explained the proper operations of the tools. This task was necessary because the product development employees had to know how the tools operate. According to Ziari, other responsibilities are shared by the entire design team and other mechanical engineers in a variety of positions.

*general
responsibilities
details
of these
responsibilities*

Many mechanical engineers in different positions contribute to designing and building the tools ("Manufacturing Engineering Overview"). A few of these positions are product development engineering, failure analysis engineering, and equipment processing engineering. As an example, Ziari explained that the manufacturing engineer must actively communicate with the product development engineer for the purpose of identifying the characteristics of the products. This information helps the manufacturing engineer design tools that build the products properly. The manufacturing engineer also has to work with the failure analysis engineer, who assures that the designed tools operate safely without failing or hurting someone. Finally, the

*variety of
engineers
work
collaboratively
details*

incorrect
parenthetical
notation; should be:
(Darnewood)

equipment processing engineer has to assure that the operations of the designed tools are done safely and efficiently. If a tool does not have sufficient efficiency, it is the equipment processing engineer's responsibility to decide how the tool must be implemented ("What Does a Process Engineer Do?"). In order to perform well in any of these positions, an ideal candidate must be able to solve engineering problems. Ziari specifically mentioned that innovation, creativity, and good problem solving skills play key roles in obtaining an engineering job. Ziari also put a lot of emphasis on the importance of ambition in the candidate's success. He stated, "A good candidate must strive for bigger jobs and bigger responsibilities." These qualities help the candidate demonstrate the ability to work in teams effectively ("Manufacturing Engineering Overview").

ideal
candidate
in
engineering

Communication Skills

As a member of an engineering team, a mechanical engineer must demonstrate good verbal communication skills ("Manufacturing Engineering Overview"). These communication skills are often demonstrated through presenting designs to teammates and meeting with machinists and other engineers to discuss tool manufacturing processes. As an example, Ziari presented his designs to the team of engineers many times to get their feedback on his design concepts. The teammates often detected flaws in Ziari's designs and informed him about them during the meetings. Therefore, Ziari was able to improve his designs based on his teammates' comments and criticisms. The tool manufacturing process also became easier as a result of improving the quality of the designs. In other meetings, Ziari talked to other mechanical engineers and machinists about the tool manufacturing plans. These meetings helped him decide which manufacturing steps are the most inexpensive and the most appropriate to build the tools. Ziari conducted many of these meetings by choice; he was never required to do so. However, he chose to meet with his colleagues to gain more information so that he could perform his job with better quality. During the interview, he explained that his colleagues often appreciated his effort to reach out and ask for their opinion about designing and manufacturing the tools. Therefore, demonstrating strong verbal communication skills plays an important role in one's performance in an engineering work environment.

variety of
communication
skills
needed

cause
&
effect
of
communi-
cation

conclusion

Another way that mechanical engineers communicate with their colleagues is by writing engineering reports. The purpose of these reports is to discuss the design and manufacturing of an engineering product. Ziari mentioned that his job required him to communicate with his supervisors and other employees by writing reports. He explained that after completion of the manufacturing of each tool, he had to prepare a report that explained the design and manufacturing procedures and the results. According to Ziari, these types of reports usually consist of nomenclature, a table of contents, discussions, analysis, results, drawings, and the bill of materials. Every part of the reports must be concise and accurate because many other professionals, including supervisors and other engineers, will read them. Ziari also noted that these reports serve as documents that are kept in the companies as references and many tasks are executed based on them. As an example, employees in the finance department read the reports for the purpose of assigning budget for the projects. If an engineer fails to write reports with good qualities, the budgeting operations get sabotaged. Therefore, an engineer must demonstrate excellent writing capabilities to overcome the report writing requirements.

Subject
reports

purpose

contents
care/accuracy
purpose

conclusion

* You may paraphrase your sources or quote them. Both require correct in-text citation and formatting.

More writing

Writing letters and tool manuals are also forms of written communication between mechanical engineers and tool operators. Ziari often wrote manuals for the tools that he designed. The tool operators had to read Ziari's manuals to become familiar with the functions of the tools. These manuals are instructions that have to be well written and easy to follow so that the operators can easily learn the functions of the tools. Any ambiguity in the manuals could confuse the operators, and as a result, further communications between the engineer and operators would be necessary to address the ambiguities in the manuals. The further communications delay the operation of the tools and waste the revenue of the company. When further communications are needed, the mechanical engineer must write emails with professional and appropriate language to the operators. These emails can be written for a variety of purposes such as setting meetings or clarifying the manuals. This means that if one form of written communication lacks clarity, other forms of writing must be employed for further clarifications. Therefore, it is critical for a mechanical engineer to be able to communicate with his or her colleagues by utilizing different types of writings such as instructions and letters.

Subject: letters and manuals

care-necessity for

purpose

conclusion

CONCLUSION - Personal Reflection

After listening to Ziari's explanations about his responsibilities and reading other sources about the duties of a mechanical engineer, I realized that practicing mechanical engineering takes many skills. The topic about the required skills for obtaining a mechanical engineering position interested me the most. My understanding of Ziari's explanation is that the candidate's desire to execute challenging tasks is an opportunity for him or her to grow and become more knowledgeable. In my opinion, working as a mechanical engineering intern is a good approach to start learning how to perform professionally at an engineering company. Internships offer great opportunities for student "to gain real-world experience" ("Manufacturing Engineering Overview"). Working as an intern can provide me with the opportunity to become more knowledgeable in my field of study. Therefore, I am currently seeking to attain a mechanical engineering internship position to utilize my technical and writing skills to become a better engineer. The information from this interview and the documents I read, taught me that I must improve my writing and problem solving skills in order to work as an intern.

Background

Did not include why Ziari was drawn to ME

Communication Skills

Did not discuss reading explicitly, though training + communicating likely involved these

Roles and Responsibilities

Report does not discuss Ziari's biggest challenge.

APPENDIX

1. What was your job in this company?
2. How long have you been there?
3. Have you worked at other companies in similar position?
4. Tell me about those companies.
5. In your previous jobs, what types of experience did you have?
6. What is the current job market in this field?
7. Tell me about the skills and qualifications required in your job. Education? Ongoing training?
8. What were your job responsibilities?
9. Did you manage or supervise people?
10. Can you describe your biggest challenges in the job?
11. What are the different types of jobs that a Mechanical Engineering major might have in this company?
12. Prior to having a real job, are there requirements or opportunities to do volunteer work?
13. Can you describe the types of writing you did in this job?
14. What kinds of writing are done in your field?
15. Can you tell me more about the documents you wrote?
16. What are your suggestions to a senior Mechanical Engineering student?
17. What is the best way to go about attaining jobs or internships positions?

reverse names
last name first
↓

Works Cited

↓ italicize
(Cassie L. Damewood.) "What Does a ^DProcess ^EEngineer ^Ddo?" Wise GEEK.
Conjecture Corporation, 10 July. 2012. ~~Web~~. 9 Oct 2012.

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↑ italicize

Note
corrections