

## The impact of mentoring programs for sustainable career development and work/Life Balance in Biomedical Engineering Profession- Short Communication

Alma Tamunonengiofori Banigo<sup>1\*</sup>, Samuel Chidi Iwuji<sup>1</sup>, Judith Chinelo Ezelote<sup>2</sup> and Taofik Oladimeji Azeez<sup>1</sup>

<sup>1</sup>Department of Biomedical Technology, Federal University of Technology, P. M. B. 1526, Owerri, Imo State, Nigeria.

<sup>2</sup>Department of Public Health, Federal University of Technology, P. M. B. 1526, Owerri, Imo State, Nigeria  
Corresponding author: Alma Tamunonengiofori Banigo

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**Abstract:** The socio-economic, technological and emotional imbalance remains an issue of individual growth in career development and work-life balance. The impact of mentoring programs for sustainable career development and work and lifestyle balance in biomedical professions was examined. Career development was studied using self-assessment, career awareness, performance, skill acquisition, goal setting and work-life style balance. Career development can be achieved with pleasure if the essential routes were addressed by the parties involved in mentoring programs. Proffered solution of organizational support, social support, use of modern facilities and self-assessment were recommended as tools for mentoring programs that reduced pain, depression, friction and wear, and emotional stress of mentors and mentees. Thus, provide an outstanding strength of social, economic, technological and emotional output as well as good healthy conditions for career development and stable work-lifestyle to achieve a set goal and target in biomedical engineering profession based on action plans.

**Keywords:** Career Development, work-life balance, mentorship programs, biomedical engineering

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### I. Introduction

Mentorship programs are mainly to guide and care for young people in personal, academic and professional situations. Quality mentoring relationships connects young people to personal growth and development as well as social and economic opportunities that enable a mentor think less of himself or herself but rather utilize so much time proffering better solutions to greatly assist in building and maintaining a stable society, share the skills, knowledge and experience with the mentees, do the right things, tend to positively change lives in the process, develop career and teach several ways to balance work and life style of the protégé (RightPath, 2017; Lewis et al, 2017). It can be deduced that a mentor possesses a higher ranking influence of experience, knowledge and commitment with skills to provide upward mobility and support for the career of the protégé. Career development (CD) comprises of goals, objectives and ongoing series of activities set by or for a person in an organization or institution. It requires majorly training on both new and existing skills, acquisition of more knowledge, professional development, career planning activities, moving to higher job responsibilities, making a career change or even starting a business in order to successfully perform one's job, most importantly in Biomedical Engineering (BME) and Public Health (PUH) Professions (Lewis et al, 2017). The CD usually commences with self-actualization and self-assessment of person's interests and capabilities. Then, the interests are joined with the various available options. Acquired knowledge and skills as well as experience gained are important features for the specific career path, effective and efficient performance to achieve all goals and set targets (Cindy and Herald, 2015). This process helps to create stability at work and will eventually be a major tool to balance lifestyle and work (Cindy and Herald, 2015). Work and life balance (W/LB) can be expressed as a state of equilibrium between an employee's primary priorities of their employment position and private lifestyle.

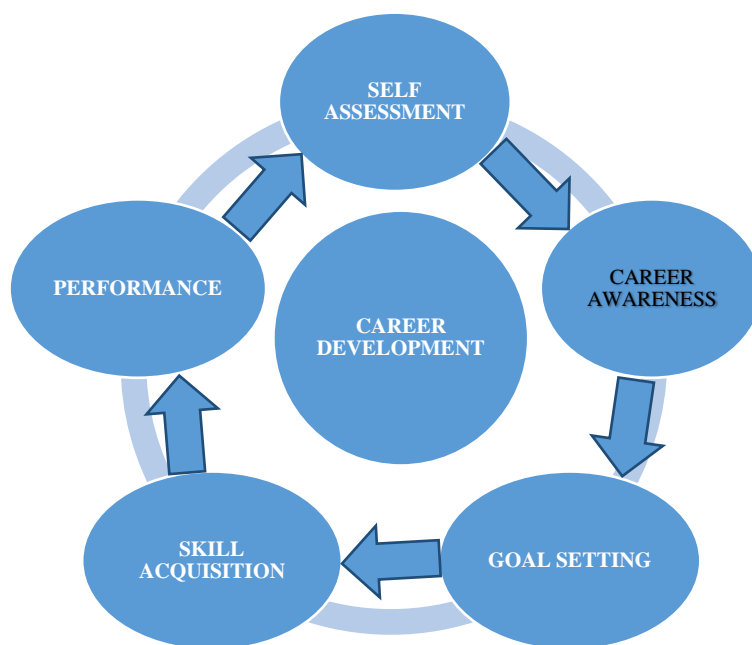
This indicated that there should be comparison between the time spent at work and your family or on your own. The work-life balance differs in individuals because of the presence of a variety of priorities and different lives, and state of an individual (Rolfe, 2017). For instance, the right balance for the individual at 20 years (single) will be different at 34 years (married) or even with kids in the family. It also affects individuals when they begin a new career or even when planning for retirement as well as finance, education and health. However, effectiveness of work-life balance is a dependant of *achievement, performance, motivation,*

*optimism and enjoyment* (Rolfe, 2017). Both CD and W/LB are forcing functions of mentoring programs for women and men in all professions, most especially biomedical professions in developing countries (Carpenter, O'Neal & Bakken, 2012).

In Africa, BME is still emerging and many graduates as well as employees in the field are sceptical about excelling in this profession due to many issues of concern such as socio-economic, technological and emotional imbalance of individual to achieve and enjoy the CD and W/LB. In this short communication, the impact of mentoring programs for sustainable career development, and work and lifestyle balance in biomedical professions was examined.

### **Career Development in BME**

Mentoring programs play significant roles in career development in BME through self-assessment, career awareness, skill acquisition and performance and work and lifestyle balance as illustrated in Figure 1.



**Figure 1: Basic Steps in Career Development.**

#### **A. Self-Assessment**

For quality mentoring programs in the area of career development in BME and other health professions, both mentors and mentees examine themselves based on goals, strength, challenges and characters before the program and assessment on purpose, communication, trust, process, progress and feedback during the mentoring program. This can be done either by using questionnaires or among themselves during an in-house session within a period of 3 to 6 months.

According to Rolfe (2015) report, prior to the program, both parties note the short-term (365 days) and long-term (between 3 and 6 years or more) goals and give reasons for choosing such paths first.

The role of the mentor and mentees in reaching those specific goals must always be defined and the level of knowledge acquired and years of work experience gained by the mentors during his study and work times will surely contribute significantly towards the growth and development of the mentees' career (Lewis et al, 2017). Secondly, identify their strength including personal, professional, interpersonal, organizational or other in actualizing these dreams and weaknesses that may hinder themselves from forging ahead. Next, determine better ways a mentor can assist to address the challenges. Finally, devise several means of working between the mentor and mentees (Rolfe, 2017). This could be achieved through mentoring interactions and conversation, executing a project together, and most effective and least effective in decision making with constructive feedback as reported by researchers (Rolfe, 2017; Warnock, 2006; Lewis et al, 2017). In as much as the mentor has so many questions to ask and answer with much work to do, the mentees also have specific roles to play.

During the program, both mentors and mentees see it as a very essential asset and must give a clear definition as well as objective of meeting together (Aroundcampus, 2017). According to Rolfe (2017), there should be official documents stating your agreement and purpose for enrolling in such a program, allocate a

time frame for the program, both parties should choose better communication tools and methods and never fail to call to cancel any fixed appointment, both parties should be effective in listening and store information all the time and ask relevant questions and share vital information about themselves. There should be avoidance of combining friendship with business, ensure all information is confidential to avoid breach of trust., do not speak ill of any person or criticize each other and employ the stages of formal meeting which include building rapport, setting direction, sustaining progress and close the formal part of the mentoring program, and then check if each person is comfortable with the idea. The mentor should ensure that there is continuous progress in achieving the life goals of the mentees. In addition, identify as well share interesting learning experiences and generate the results together. Finally, ask for honest and tactful positive as well as corrective feedback on your performance with confidence. All of these can help each person to critically assess oneself before, during and after the program.

### **B. Career Awareness (CA)**

Career, is simply termed as a profession or occupation as the case may be. Career awareness in BME involves the basic understanding of various required skills as well as knowledge in BME profession. CA also entails the types of jobs available in the profession that one should identify and consider in order to be successful. In the process, both mentee and mentor can answer questions on responsibilities, relevance, state and future of BME as a career as well as qualifications needed for BME. The responsibilities of the BMEs solely depends on the kind of organization, the position at work and the particular discipline in BME that has been chosen by the mentee. For instance, if the mentee is a Biomedical Design Expert, knowledge and skills in specific areas such as mathematics and statistics, physics, information technology, engineering, numerical, modelling, critical thinking, innovation, medicine, biology, design concept are essential. They would be applied at any given time at work. As for qualification, Bachelor degree in Biomedical Engineering, Chemical Engineering, Mechanical Engineering, Electrical Engineering, Medicine, biology, chemistry and Medical Physics are relevant and also depends on your area of specialization. In future, the world will be a better place as regards to healthcare delivery for effective and efficient diagnosis or therapies as BME professions becomes ultimately enhanced. Moreover, questions on salary must be asked and answered in order to assist mentees' plans for career development.

The sole difference between self-assessment and career awareness is the fact that one must look inward by knowing the strength and preferences in self-assessment whereas career awareness makes the same individual look outward most especially in their field or organization.

### **C. Goal Setting (GS)**

Our targets, objectives or actions can be seen as goals and the ability to draft out or beautifully design a solid and achievable plan filled with motivation and guidance towards the goal is called Goal Setting. The set goals gives directions and determines the principles to apply for fruitful outcome or yields progress (expected results). For instance, a mentor in BME profession is expected to produce the most qualified, competent, well behaved, focus and most independent Biomedical engineers whereas the system here is the work the team (mentees) do every day. This may be attributed to time commitment and preoccupation of mentor with challenges in his/her own career. This is similar to the report of Cindy and Herald (2015). As a lecturer, I intend becoming an outstanding professor of BME in the nearest future and my system involves research, reading and writing every day. The process of setting goals are shown in Figure 2.



**Figure 2: Goal Setting Process in Biomedical Engineering.**

A potential biomedical engineer or an expert in the field must have faith and the right mind-set about BME profession. The individual visualizes that proper diagnosis, treatment and prevention of diseases come from enhanced healthcare delivery through multidisciplinary tools of biomedical technology. This can only be possible with our ideas that turned into reality as input in the field. The clearer your goals are, the closer and better you are to achieving them.

These sets of motivational goals must be very important in your life and there is a reward in achieving them. If the larger picture drawn is not so interesting and you are not eager to forge ahead, then there is no need to start at all. Motivation and value are the keys. The major factor in this particular area is goal selection which can be achieved using SMART tools (MindTools, 2017). SMART simply means specific, measurable, attainable, relevant and time bound goals that will motivate you, put in writing, draw an action plan and work with it as presented in Table 1.

**Table 1: SMART tools used for setting motivational goals in BME Profession**

S/N	SMART Tools	APPLICATION
1	Specific	The goals must be clearly identified and well defined. They are expected to show the way. They should have a good beginning and show precisely where you must go.
2	Measurable	These specific goals should be rated or measured in percentage, duration and in terms of achievement too. With this, it is easier to know if moving forward is good or taking a step back with a different strategy is better.
3	Attainable	It is better to set realistic but challenging set goals rather than a very easy one or unrealistic ones. People will praise you and would also learn from you at the end
4	Relevant	As a BME, the goals are expected to be related to my profession in order for one to grow and achieve so much.
5	Time bound	There should be a time frame and deadline for the work to be done with much attention, motivation, seriousness and urgency. By so doing, the work will finish on time and achievement comes quicker.

Lawyers write every time because of its importance attributed to it in their profession. As a BME, the written set goals remains authentic, memorable and powerful, and always framed positively. Goal commitment and focus are essential tools used at this stage for proper planning of the specific goals. Then, prepare a list to do, daily action plan (steps to follow) and keep it so close all the time. Always review the set goals to check for success, keep one on track and expect feedback. Remember to make it relevant, valuable and of high priority. Along the line, the action plan may change due to unforeseen circumstances but the final terminal remains the same. Always stay committed to whatever plan you've made, be accountable, reliable and trustworthy for any of your action.

#### **D.Skill Acquisition**

An act of undergoing training in a particular field such as BME for better performance of duties is called skill acquisition. Skill is very essential to man for the purpose of living. Most BMEs get better jobs because of the practical skills acquired in their profession and earn larger sum of money. In BME profession, acquired skills enables the individual to identify, formulate and solve engineering problems; design systems and conduct experiments; analyse and interpret data, ability to communicate effectively and work as a great team player and meet deadlines for the purpose of healthcare delivery. According to Benjamin Franklin in *Brainy Quote* (2017), 'Tell me and I forget, teach me and I may remember, involve me and I will learn'. Skills, time of contact and connections, and many more attributes lead to excellent performance at work and development of career, thus reducing unemployment rate in developing countries including Nigeria. This can be justified by the report of Lewis et al (2017) in which the successful and excellent performance of combined mentoring intervention (mentoring training and peer) dyads were perceived based on the quality of their time of contact to acquire the skill.

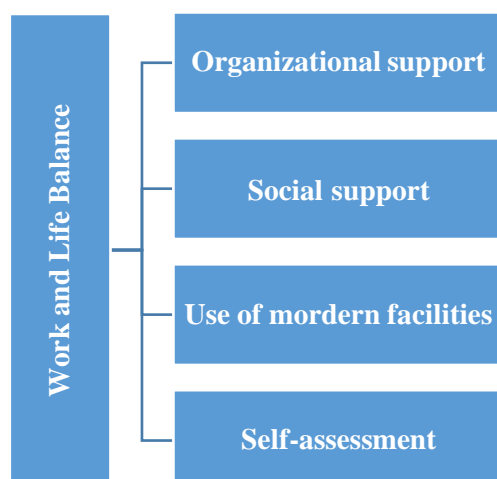
#### **E. Goal-performance relationship**

Performance of an individual is a major factor in CD and can only be actualized well when self-assessment, career awareness, goals setting, acquisition of relevant skills and other factors are greatly considered and implemented first. The employee has a clear career path and plan which apparently motivates him/her to move forward in life. Attitude, character and behaviour are vital elements that work with the individual's specific goals to give outstanding performance at work. Locke & Colleagues (1981) created a relationship between behaviour and goals.

They studied the behavioural effects of goal setting in laboratory as well as field studies and found out that setting specific challenging goals led to better performance than easier ones and also employers will receive excellent and faster outputs from employees if they make them focus on a particular direction with much effort rather than giving them a vague idea or expression or even work to do. Another area that contributed to excellent performance is the aspect of networking which makes the employee or mentee popular, reliable and accessible in the area of expertise. The time of contacts and connections with different people and ideas shared, facts and solution which could apparently change their lives and lives of others, make them better people in the society and increase the working values and standard above normal level. This indicated that successful leaders have more than one mentor as reported by Cindy and Herald (2015). The report of Carpenter et al (2017) indicated that the mentoring programs improved the career development and overall job satisfaction related to working climate, retention, and promotion. Hence, enhanced its efficiency and effectiveness.

#### **Work and Lifestyle balance**

In this case, the employee has to see the importance of both family as well as work and try as much humanly possible to strike a balance. Look at your personal and professional goals. Prioritize well and use your time judiciously. The end point for both work and life balance is fulfilment and satisfaction which will reduce stress, pain and depression to a minimum level. Hiccup or conflict at the office or home usually causes an imbalance at work and in life. When this happens, the individual is filled with exhaustion, psychological stress and depression, which apparently generates poor or terrible outputs. This affects female researchers most times as they start bearing children and caring for the families. Researchers, most especially early career researchers can also face pressure like funding, grant applications, reviews, article writing and proposal preparations which could wear them out, be stressful or even be detrimental to their health and career. According to Banigo et al. (2016) and FSWSE (2010), it is not advisable to lose a great female student or employee for family reason, because you may be losing a nation in the process. More resourceful and flexible programs and policies provided by universities and organizations will eventually play a role in developing both women and men in BME and other health professions. Figure 3 highlights four major solutions to solve aching problems in balancing work and life.



**Figure 3: Proffered solutions for proper work and life balance**

### **Organizational support**

The use of opportunities including paid maternal and paternal leave, flexible work hours or part-time appointments, child care and many other services for assistance, aid to alleviate burden on them and strike a balance. It is important to check if these services exist in an organization before applying for the job. It helps one focus on desired and more tangible output instead of work overtime (Bafor, 2017). Provision of facilities for both mentors and protégés such as funding, materials, accommodation, incentives and many others by organization contributed significantly to work lifestyle and career development in biomedical and other health professions. The appointment of mentees for younger staff (mentors) with progressive feedback report from both parties by the organization based on target builds an outstanding career and work life of both parties. This stays in agreement with report of Cindy and Herald (2015) report. Moreover, proper planning of the responsibilities at work and home, having enough time to rest and do other extracurricular activities usually keep the body fit, sane and balanced. Work well with teams and sometimes delegate some daunting tasks to reduce detrimental stress on employees' health. These major points tend to create an equilibrium between work and life style and also act as a major factor in career development.

### **Social support**

Build strong networks of social support with different people as well as organizations and connections between the workers, mentors and mentees strengthen, maintain and sustain the best work and life balance. This creates cordial relationships between the mentors and mentees and promote the work life with improved career development. The provision of recreational and relaxation centres for both mentors and mentees improved the work life in an organization. These have been observed in many multinational companies because they increase the spirit of friendship, contact time, interactions and love between the mentors and mentees. If there is any issue with mentee, this will provide an avenue for the issue to be solved between the mentors and mentees through a means to learn a mode to accept an offer to help. In the cause of mentoring programs effect on work lifestyle and career development, the sexual involvement should be avoided in order not to abolish the mentor and mentee relationship. This is in agreement with the report of Banigo et al (2016) and Banigo et al (2017).

### **Utilizing modern facilities**

Telecommunication through the use of mobile devices, internet or smart portable devices help the individual strike a balance. These machines can be operated at home (unofficial environment) to conduct research based work, for instance, either checking or responding to emails or even reading articles at home and taking unofficial work of mentee such as scheduling appointments or online shopping to the office. This also helps to improve intimacy between the mentor and mentee through chatting using social media like whatsapp, facebook, palmchat and so on. It is paramount to know when to switch off from office work to home work or relaxation mood because BME researchers may fail to know when to do so.

### **Self-assessment**

This is the last but most delicate step to take because it tends to determine what you actually want. Self-care is very important (Bafor, 2017). Weekly or monthly assessment of personal, priorities and professional

goals enables the mentors and mentees to be aware of themselves and make strategic decisions about tasks, time management and responsibilities but not perfectionism.

## II. Recommendations

Every working class individual should assess and evaluate himself/herself occasionally on the strength and weaknesses of their work, time management at work and home.

If there is an imbalance, try to draw an action plan to work with, for proper balancing of both work and life style as well as development of career through mentoring programs. This action plan should cover responsibilities at work and home without guilt or regrets. Try and work flexibly to enable one execute good projects, perform better research and carefully manage family, church and personal commitments better and healthier.

## III. Conclusion

The mentoring programs remain a vital tool to improve self-assessment, career awareness, performance, skill acquisition and goal setting style balance if properly adopted by both the mentors and mentees for the purpose of career development and work lifestyle balance. Pain, fatigue, depression, friction and wear with emotional imbalance of parties (mentors and mentees) involved in mentoring programs can be alleviated if there is proper use of modern facilities, self-assessment and support of organization on provision of funding, material and other incentives with social support by professional bodies for mentors and mentees. These could improve the time of contact, love, motivation, dedication and effectiveness of both parties. Thus, enhance the achievement of set goals and target of appropriate skill, experience, knowledge and performance for organization and biomedical professions.

## References

- [1]. Aroundcampus. Benefits of a Mentorship.Aroundcampus.,2017, Retrieved from <https://www.aroundcampus.com/author/aroundcampus>
- [2]. E Bafor. Achieving a healthy work/life balance as a researcher. Author AID.,2017, Retrieved from <http://www.authoraid.info/en/news/details/1223/>
- [3]. ATBanigo; TOAzeez; KINKuma-Udah. Gender Issues in Mentoring Relationships in Biomedical Engineering. NABET South East Zonal Seminar, Abakaliki, Ebonyi State, Nigeria, 2017, pp. 1-8.
- [4]. ATBanigo; TO Azeez; KINKuma-Udah. Challenges of Women in African Biomedical Engineering and Sciences. African Conference on Biomedical Engineering and Sciences (AFROBIOMEDIC 2016), Abuja, Nigeria, 2016, pp.1-23.
- [5]. Brainy Quote. Benjamin Franklin Quotes.,2017, Retrieved from <https://www.brainyquote.com/quotes/quotes/b/benjaminfr383997.html>
- [6]. KGCindy; M Herald. Workplace mentoring boosts careers, skills and retention.,2015, Retrieved from <http://worklifebalancingact.com>
- [7]. JP Carpenter; DP O'Neal; LL Bakken.AC 2012-4953: Mentoring Women Faculty in STEM – a Multi-Pronged Approach. American Society for Engineering Education, 2012, pp. 1–12.
- [8]. Fostering Success for Women in Science & Engineering. 2ndEdition, Advice for Departmental Faculty. Board of Regents of the University of Wisconsin System, 2010, 1-14.
- [9]. V Lewis; CA Martina; MPMcdermott; LChaudron; PMTrief; JGLaguardia; RM Ryan. Mentoring Interventions for Underrepresented Scholars in Biomedical and Behavioral Sciences: Effects on Quality of Mentoring Interactions and Discussions.CBE—Life Sciences Education, 16(ar44),2017, 1–11.<http://doi.org/10.1187/cbe.16-07-0215>
- [10]. EA Locke; KN Shaw; LMSaari; GP Latham. Goal setting and task performance: 1969-1980. Psychological Bulletin, 1981, 90, 125-152.
- [11]. MindTools. Golden Rules of Goal Setting.,2017, Retrieved from [https://www.mindtools.com/pages/article/newHTE\\_90.htm](https://www.mindtools.com/pages/article/newHTE_90.htm)
- [12]. L RightPath. Mentoring, 2017, Retrieved from <http://www.rightpathlifestyle.com/pages/about.html>.
- [13]. A Rolfe.Mentoring for career development.Korea Journal of Medical Education, 2017,29(2), 117–119.
- [14]. GL Warnock. Developing a culture of mentoring.Canadian Journal of Surgery, 2006, 49(3), 164–165.

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