

Mentoring the Newly Employed Science Teachers in Secondary Schools for Effective Service Delivery

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Abstract: The gains of mentoring programmes are substantial for both newly employed science teacher and mentor teachers. This has important implications for professional development of mentor and mentee. It is a veritable decision to be made by schools, education departments, universities and school management. The key players in schools, especially the principals need to have an understanding of the gains of mentoring in the school/educational system and that creating a structure that allows inexperienced mentee science teachers to work with expert mentor science teacher teachers, will ultimately benefit the students of both mentee and mentor teachers and the school community at large.

Key words Effectiveness • Mentoring • Newly Employed • Science and Science Teachers

INTRODUCTION

The primal role of science teaching to every nation cannot be overemphasised. From the developed nations, to the developing and down to the underdeveloped, science is critically needed for stability of such nation. In fact, the extent of the scientific level of the citizenry of any nation makes her developed, developing or underdeveloped. Nigeria, as a nation that is developing cannot but do without a proper repositioning in her scientific endeavour, especially her science education.

However, the extent of science practice and science teaching in any nation rests solely on her science teacher. They must be well groomed and coached to effectively deliver on their duties as moulders of the nation's scientifically inclined citizenry. This duty, the science teacher will fail, if he is not well grounded for such a herculean task. This is the basis for mentoring of newly employed science teachers in secondary schools for effective service delivery. A walk along previous findings show that science teaching and learning in Nigeria (especially in the secondary schools) is far from reaching her height. Festus and [1] has noted that science have become the hallmark for sustainable development in any national economy, but cannot strive ahead without the science subjects like Biology, Chemistry and Physics. These subjects' teachers must be well repositioned for effective service delivery of their endowed duties-science teachers.

Unfortunately, as noted by [2], Biology, Chemistry and Physics, being the basis for every science of a nation have been known to continuously record low students' enrolment, interest and poor achievement levels in all examinations - both internal and external. In their words, this "has come a persisted public outcry as regards the falling standard of science education" [3]. This status cannot be completely divorced from the competency of teachers in these science subjects.

In another consideration, the investigation of students' attitudes towards studying science has been a substantive feature of the work of the science education research community for the past 30-40 years (Osborne, Simon and Collins as cited in [4]. The importance of this investigation is stressed by a persistent decline in post-compulsory high school science enrolment over the last two decades. Students' increasing reluctance to choose science courses in their final years of secondary education has serious adverse implications for the health of scientific endeavour, but also for the scientific literacy of future generations. The endorsement of positive attitudes to science, scientists, and learning science, which has always been a constituent of science education, is increasingly a subject of concern [5]. While this is a growing concern, one cannot completely deny the primal role of science teachers in this decline.

From the foregoing, the significance of science to the quest of the Nigerian state to be among the science inclined nations of the world is at stake. This quest is

expected to bring her to limelight among the advanced nations of the world, but this cannot be the case without a repositioned science citizenry. A scientific citizenry is primarily the product of the science teachers in the secondary schools. It is therefore glaring that while this desire for recognition is quite momentous and critical for every nation, including Nigeria, no nation can reach that height without a repositioned science, technology and industrialization. Suffice it to say that information and communication technologies (which is the brain child of science and technology) enable man as well as nations to timely and efficiently increase their speed of operation, interact in flexible ways, utilize their potentials to become innovative and creative and hence, raise a scientific citizenry [6]. The basis of this virile science and technological base depends on three key subjects in the secondary schools - Biology, Chemistry and Physics. The success of the teaching of these key subjects rest on the shoulders of science teachers in South East, Nigeria and the world over.

It is noteworthy that there is a continual injection of new science teachers into the teaching profession, but how well these new teachers will effectively deliver on their duties and make scientific impressions in the minds of the young learners is another issue of concern. It is therefore on this course that there is the need for schools urgently map out strategies for mentoring of these newly employed science teachers for effective service delivery in the secondary schools. As argued by CIMA (2008), mentoring relates primarily to the identification, encouraging and nurturing of potential for the whole person; It can be a long term relationship, where the goals may change but are always set by the learner (newly employed science teacher). The learner owns both the goals and the process. Feedback comes from within the mentee - the mentor helps them to develop insight and understanding through intrinsic observation, that is, becoming more aware of their own experiences. In this wise, the teaching profession becomes more like a family reunion and less like a workplace. Mentoring is encouraged for a repositioned educational venture.

Research has indicated that although no particular programme or model can be considered more successful than others, however, successful mentoring programmes do have some common characteristics. [7] show that mentoring has the following characteristics:

- It is a powerful device that will help teachers develop new insights into the profession. This is true for experienced or new teachers.

- It reduces isolation and can build a collegial network among professional colleagues like teachers.
- It helps move the novice teacher from a level of mere survival to initial success when used with beginning teachers. To experienced teachers, mentoring can be a way for professionals to develop a sense of renewed enthusiasm for their jobs and enhanced commitment for the profession of education.

Mentoring in Teaching: Mentoring is the process of taking someone from an undesired point of ineffectiveness to a desired point for effectiveness. The Encarta Dictionary (2008) defines mentoring as someone serving as a guide, counsellor, and teacher for another person, usually in an academic or occupational capacity. They argued that the word originally was applied in Greek mythology. It was applied in the situation where the elderly friend of the hero Odysseus became both a counsellor to Odysseus and a tutor or mentor of his son Telemachus. Additionally, in the *Odyssey* of Homer, the goddess Athena frequently assumes the form of Mentor when she appears to Odysseus or Telemachus. This character became the basis for the modern use of the word mentor. Accordingly, in modern English the tutor's name has become an eponym for a wise, trustworthy counsellor or teacher. Additionally, as noted by Encyclopaedia Britannica (2014), François de Salignac de la Mothe-Fénelon's *Les Aventures de Télémaque* (of 1699), which set the fashion for novels and stories about the education of princes or heroes, is about the trials of Telemachus, who is guided by Athena disguised as Mentor. In this fashion, Athena, the goddess as well as the character "Tutor" became the basis for the application of the mentoring in the modern usage.

Generally, modern usage of the mentoring has been given many definitions and explanations by a host of scholars. [8] showed that mentoring is a one-on-one relationship between a youth and an older, established person, built up over a period of time for the purposes of providing consistent support, guidance and concrete help as the younger person goes through challenging or difficult periods of life or of a profession. In this reasoning, the older science teacher serves as the experienced one who mentors the newly employed science teacher to raise productivity. A school based mentoring occurs when an older science teacher willingly invests time in the development of a younger or newly employed science teacher in order to raise educational attainment. [9] defines mentoring as an interaction with another person that catalyses the process of cognition

and enable one to achieve more than one could achieve alone within a given period. That is the goal of mentoring - to raise achievement. Mentoring is a power free, two - way mutually beneficial learning situation where the mentor provides advice, shares knowledge and experiences, and guides another unto discovery of self and accruing productivity.

The quality of the teacher is first determined by his paper qualification, however, certificates have been known to give more “promises” to the educational handlers. Therefore, while paper qualification must serve as the basis for enrolling any teacher into the teaching profession, the pedagogical standard he/she exhibits through experience on the job and demonstrated ability to raise students’ learning must also be of a serious concern to educational handlers. It has been earlier noted by [10] that teachers’ quality is critical to students’ learning and achievement. Good teachers are those that have a combination of personal attributes, qualification and experience which stand them out for effectiveness. The development of a mentoring relationship between experienced teacher and the newly employed one reinforces confidence in ability to overall growth of the health of science teaching in the south east and Nigeria at large. However, this cannot be the case or seen to be the case without a proper mentoring scheme of the newly employed teachers in the teaching profession.

The importance of benefits to the overall person, school and goal of education makes a critically issue that should not be neglected. Mentoring brings about a total refinement of the new teacher in such a manner that such gets repositioned for the work challenges ahead and a for a successful career life of the newly employed teachers. As presented in the figure below, mentoring is the life-wire of the school’s success.

Mentoring breeds a line of benefits for the newly employed science teacher (mentee), the experienced science teacher (mentor), school, education and the society at large. The following are some of these benefits as stated by CIMA (2008), United States Office of Personnel Management (2008), University of Wolverhampton Business School (2009/10):

Benefits of Mentoring for the Mentor:

- Renews their enthusiasm for the role of expert;
- Obtains a greater understanding of the barriers experienced at lower levels of the organization;
- Enhances skills in coaching, counselling, listening, and modelling; ? Develops and practices a more personal style of leadership;



Fig. 1: Holistic impact of mentoring practice
Source: www.nursing.ucalgary.ca

- Demonstrates expertise and shares knowledge, and;
- Increases generational awareness.
- The satisfaction of knowing that they have made a difference to someone else
- The intellectual challenge of working on issues that they do not have direct personal responsibility and that may take them into unfamiliar territory
- An increased skills base and reputation
- A chance for them to re-assess their own views and leadership style
- A chance to discover and work with the talent of the future
- By explaining best practice concepts to others, may help to reinforce them once more for themselves
- An opportunity to share their knowledge, skills and experience
- A chance to challenge and be challenged - mutuality
- Learning new ways to develop others; an integral part of the Managers job

Benefits of Mentoring for the Mentee (Newly Employed Science Teacher): As a result of having a mentor, the newly employed science teacher:

- Makes a smoother transition into the science-teacher-workforce;
- Furthers his/her development as a professional;
- Gains the capacity to translate values and strategies (learnt theoretically in the school) into productive actions;
- Complements ongoing formal study and/or training and development activities;
- Gains some career development opportunities from mentors;
- Develops new and/or different perspectives about students, fellow teachers and the etching profession;
- Gets assistance with ideas relevant for effective teaching;

- Demonstrates strengths and explores potential, and;
- Increases career networks and receives greater agency exposure.
- Improves competency for effective career in teaching.

The Benefits for the School/Organisation:

- *Easier recruitment and induction of teachers:* Mentoring help new recruits to become accustomed to the work environment more easily. New science teachers become settled more quickly and therefore more productive within a short time.
- *Improved Employee Motivation:* This is critical for school activities and for students' achievement.
- *Management of the School's Corporate Culture/professional Ethics:* Mentoring enables the entire school to have a cooperate culture and stick to it. It also guarantees a better adherence to the ethics of the teaching profession.
- *Improved Communications among Co-Teachers:* Open communication channels, encourage team work and productivity.
- *Staff Retention:* Mentoring helps to keep good people, to maintain competitive advantage and for overall wellbeing of the school community.

In light of the foregoing, mentorship remains a tool for developing the pedagogical and content knowledge of newly employed science teachers [11]. Accordingly, Nest argued that mentoring plays an important role of continuous professional development programmes in the improvement of the newly employed teachers' classroom practices and by inference and extension, their learners' achievements (2012).

Mentoring and Science Teacher Career Stages:

The teacher of science and in extension, every other teacher passes through certain levels or stages in his career as a teacher. Each of this stage is characterised by special attributes. However, the early stage of the science teacher's professional life tends to be of great challenge to young teachers. [3] argues that teachers' career stages influence their attitudes and beliefs. The early stages being the great determinant the total career of the science teacher, it is there most important to guide such at the early stage. [3] defines and identifies five stages of teachers' career development from the beginning to their retirement. Every stage being integrated to each other, and the first being the pivot. These career stages are hereunder briefly discussed:

Career Entry Stage (1-3 Years in the Profession): In this stage, the newly employed science teachers try to survive and discover their profession. Like a toddler, the new world around is a bundle of confusion and difficult to be understood without a guide, so it is with a newly employed teacher in the teaching profession. It is at this very critical stage that rigorous mentoring is every essential in career development. A mishap in this stage will continue to resonate in the life of professional life of the teacher until retirement. Such needs a guide to bring about perfection in the teaching profession.

Stabilisation Stage (4-6 Years in the Profession): The science teacher, in this stage show their commitment to the profession by both improved teaching, interest in professional bodies and repositioned teaching approaches. This stage will be most effective in the teacher's professional life of the teacher if he has had a rewarding influence from mentor at the early stage, otherwise, the gains of this period may be less than expected if the early stage was mismanaged. The science teacher needs a little mentoring at this stage to help him stay on track. The mentoring in this stage is far from early stage. In this stage, mentor should assume more the role of a trusted counsellor and confidant to the mentee (the new science teacher).

Divergent Stage (8-18 Years in the Profession): In this professional stage of the science teacher, the teacher is now stable and at home in teaching. He learns about himself and develop new methods of teaching. At this stage, he is no longer a newly employed person. He learns also the need to be a mentor to another person, who becomes a greater challenge for him to improve more on self in order to assist the incoming newly employed. In this professional stage, he still has trusted counsellors who are now older but serve more on the capacity of trusted comrades in the profession. The teacher at this stage must also become a good mentor to another newly employed science teacher.

Second Divergent Stage (19-30 Years in the Profession): This is a tempting period in the teaching profession. As Nest pointed out that some teachers relax in this stage; they assess themselves; assess others; criticise the system, administration, colleagues, etc. A proper early mentoring stage would have taken care of the abnormalities in this stage. A mentored teacher will now see challenges and think of best ways to solve them in his

friendly atmosphere while a badly mentored or un-mentored teacher will now be a bane to the profession. This calls for proper mentoring at the early stage to forestall this later development.

Disengagement (Up to 50 Years of Experience): At this professional stage, teachers gradually separate from their profession. As Hien puts it, some other teachers find it a time of bitterness [5], while others see it as a time of rest after a long meritorious service to humanity - the former applies to teachers who were not mentored in their early professional stage while the latter applies more to the mentored teachers at the early stage, they have come to see the teaching, not just in the light of employment, but as a life time serve that contributes meaningfully to the development of the young minds, the families, the society and the nation at large. In fact, at this stage of profession, children who were once students to them have become more like friends in the society and fellow comrades in the teaching profession.

Mentoring is therefore a necessary tool for both developing the career life of the new teaching and sustaining such interest of the profession until retirement and death. There comes the need for a repositioned mentoring in the career development of the science teachers to bring about effective service delivery that will be both beneficial to the learner, teacher, community and the nation.

Challenges of the Newly Employed Science Teacher: the Need for Mentoring: The contemporary teaching profession is one with lots of peculiarities that actually make it so distinct from the years past. The quality of the teacher must be much better than that of the previous centuries if the teacher must make indelible inputs in the life of the learners of today. The contemporary teaching environment comes with it unprecedented challenges which must be surmounted for effective growth of the teaching venture. Challenges are pedagogical, social, psychological and otherwise. These challenges are of most concern to the newly employed teacher who must, of necessity deliver on his call. Let us briefly outline some of these challenges the newly employed science teacher must face and be overwhelmed by them, if they be without mentoring:

- *Fitting into the New Environment:* Figuring out how to be part of a new work culture can be very frustrating. The newly employed science teacher is lost in this environment without a mentor.

- *Gaining trust from fellow teachers:* Gaining trust of others is a difficult thing for every new teacher in the teaching environment. It takes time to gain the trust of others to follow your ideas. A mentor will serve as the first port of call in filling in this divide.
- *Fear of Making Mistakes (Especially in Teaching):* New teachers are careful not to make any mistake in what they teach and do, however, they make a lot of mistakes in trying to avoid them. Mentors must be there as support in managing this mistakes maturely.
- *Use of Instructional Materials:* New science teachers often get confused on the right instructional material to use at a given time as well as how to use identified ones effectively. The science practical activities become a herculean task since the laboratory is more like a different world. This creates a vacuum which only an experienced teacher can fill through mentoring.
- *Classroom Control and Management:* A meaningful class control and management is necessary for a rewarding experience in teaching. New teachers are either too loose (in order not to offend any student) or too authoritative (in order not to be looked down upon). The experience teacher creates a thin but sharp line between friendliness and discipline as it relates with his relationship with students.
- *Time Management:* A 40-minute teaching period is either too much for nervous new teacher or too small for over confident new teachers. Mentors who serve as moderators have the duty of identifying this and counselling appropriately.
- *Professional Ethics:* Every profession has her ethics. Poor knowledge or understanding of these professional ethics creates a pigeon-holed new science teacher who becomes more of a problem to the school than a solution bringer. It is through the activities of the newly employed teachers that the school will be like to receive complaints and sanctions from the parents, community, supervisory bodies and the society at large. and It is the duty of the school to assign mentors to such newly employed A well-positioned mentoring scheme is prima to curbing these ugly trend among newly employed science teacher for effective adherence to the teaching ethics to bring about the gains of education.

A more permanent solution to the problems above is only possible by mentoring. This is the case because mentoring creates a scenario for tackling the above

identified challenges of the newly employed science teacher. [4] opines that it is clear that implementing a mentorship programme in any organisation or school has benefits for participating individuals as well as the organisation or school itself. [7] points out these roles that mentoring will play in huddling the aforementioned challenges of the newly employed science teacher:

- *Professional Competency:* Mentors benefit by applying cognitive coaching skills with their mentees such as listening, asking inquisitive questions, providing non-judgmental feedback which will be of general benefit in handling the aforementioned challenges.
- *Reflective Practice:* This provides mentors with opportunities to validate the experience they have gained over the years. These are then communicated to the newly employed teacher for an effective teaching experience.
- *Renewal of Commitment:* Mentees and mentors' commitment to the teaching profession is strengthened in the mentoring process.
- *Psychological Benefits:* Mentoring enhances the self-esteem and feelings of empowerment of both the mentors and the mentee. This is good for the overall growth of the science education.
- *Collaboration:* Collegial interaction strengthens relationships and competencies of teachers in the teaching profession.
- *Contribution to School Leadership:* Mentor training and experiences can build mentors' capacity for leadership through structured professional development including training and experience in classroom observation and coaching skills.

It has also been contended by [8] that mentoring, as assisted performance, benefit teachers in constructing a professional practice. The authors explored the possibilities and challenges of mentoring as an assisted performance as a tool to reform classroom practice in a study. In their study, they assumed that mentoring has significant potential and benefits to support teacher learning because it is consistent with two important tenets from sociocultural perspectives of learning: (a) All knowledge, and theories are situated in and grow out of the contexts of their use. In other words, mentoring occurs in the context of teaching, close to the classroom (or even in it). (b) With the support of an experienced

person [mentor], working in a mentee's zone of proximal development, teachers can learn to perform beyond their independent performance level.

Obstacles to Mentoring: Mentoring, though it is very beneficial to both mentor and mentee, yet there are obstacles militating against its success [1] has identified obstacles or concerns of mentor teachers that could undermine the quality of a mentoring programme. The following are four basic obstacles of mentoring programme:

- Lack of time for meetings and classroom visits.
- Other responsibilities interfering with mentor responsibilities.
- Mismatch between the mentor and the mentee teacher, concerning the teaching assignments and teaching ideology.
- Lack of managerial support.

It is hoped that with proper time management, harmonious relationship and full managerial support; the above obstacles of mentoring can be overcome for a productive mentoring practice in schools.

CONCLUSION

Mentoring practice is fundamental in teaching and learning. It is a well-known fact that mentoring is a powerful device that will help teachers develop new insights into the profession and as such, become better in their service delivery in the teaching and learning process. Mentoring programmes are both beneficial to experienced or new teachers as it reduces isolation and can build a collegial network among professional colleagues like teachers. More so, mentoring programmes help to move the novice teacher from a level of mere survival to initial success when used with beginning teachers.

The gains of mentoring are already to be highly positive and productive as it does not only benefit the newly employed science teacher but also the old teachers and the school at large. The experienced teachers utilise this medium to develop their professionalism as they cultivate a sense of renewed enthusiasm for their jobs and enhanced commitment for the profession of education. The new teacher is enlightened and guided and the teaching grows. The school on her part benefits from the stability in teaching achieved through cordial relationships and improved teacher delivery. Mentoring

must therefore be taken as a serious activity to bring about the needed benefits it brings in the educational venture.

Recommendations:

- Newly employed science teachers should make themselves available for mentoring exercises as they are very beneficial for social stability of schools.
- Acceptance of employment by new teachers should carry the acceptance to work under a mentor for a stipulated period of time for proper integration into the science teaching.
- The schools should put plans rolling to set up mentoring programmes in the school and map out strategies to ensure that these programmes are taken seriously.
- School administrators should see the need to instil the attitude of mentoring in all staff so as to foster growth of the teachers in the different levels. This can be achieved when mentoring programmes and mapped out and made a school programme for all.
- Mentors and mentees should understand that their role as teachers places the future of the nations in their hands and as such, must work together as a team to promote common best practices in the teaching and learning venture.
- The government should, as a matter of urgency direct, through the Ministries of Education that mentoring programmes should be enshrined in all schools so that the gaps between the experienced teacher and the inexperienced may be filled up.

REFERENCES

1. Ali, A.R., M.E. Toriman and M.B. Gasim, 2014. Academic Achievement in Biology with Suggested Solutions in Selected Secondary Schools in Kano State, Nigeria. *International Journal of Education and Research* Vol. 2 No. 11 November 2014. Retrieved from www.ijern.com
2. Ann, R., 2016. Mentoring Works. *Korean J. Med. Educ.*, 28(3): 315-316. Australia: Umina Beach,
3. CIMA. 2008. Mentoring and coaching. Topic Gateway Series No. 50. Retrieved August 17, 2018 from www.cimaglobal.com/mycima.

4. Cunnigham, B., 2005. Mentoring Teachers in Post Compulsory Education: A guide to effective practice. University of Wollongong, Australia. Malabar. Kreiger. David Encyclopædia Britannica (2014). Mentor. Encyclopædia Britannica Ultimate Reference Suite. Chicago: Encyclopædia Britannica.
5. Festus, C. and O.A. Ekpete, 2012. Improving Students' Performance and Attitude towards Chemistry through Problem-Based-Solving Techniques (PBST). *International Journal of Academic Research in Progressive Education and Development* January 2012, Vol. 1, No. 1 ISSN: 2226-6348. Retrieved September 19, 2018 from www.hrmars.com Microsoft Encarta (2009). Mentor (Mythology). Microsoft Encarta Encyclopedia Premium DVD. Microsoft Corporation.
6. Microsoft Encarta, 2009. Mentoring. Microsoft Encarta Encyclopedia Premium DVD. Microsoft Corporation.
7. Nest, A.V.D., 2012. Teacher mentorship as professional Development: experiences of Mpumalanga Primary school natural science teachers as Mentees. University of South Africa.
8. Nwafor, C.E. and O.O. Oka, 2016. Effects Of Computer Assisted Instruction On Junior Secondary School Students' Achievement In Basic Science. *International Journal of Scientific & Engineering Research*, Volume 7, Issue 10, October-2016 ISSN 2229-5518.
9. Olu-Ajayi, 2013. Effects of Mentoring on Low-performing Biology students in South west Nigeria. An unpublished Ph.D thesis. Ekiti State University, Ado-Ekiti J. Osborne, S. Simon and S. Collins, (2003) Attitudes towards science: a review of the literature and its implications. *International Journal of Science Education.*, 25(9): 1049-1079. Richard, E. & Lopez, E. Ed.S (2012). Teachers as Mentors for Students "At Risk". The University of Southern Mississippi.
10. United States Office of Personnel Management (2008). Best Practices: Mentoring. 1900 E Street, NW Washington, DC 20415.
11. University of Wolverhampton Business School (2009/10). A Managers' & Mentors Handbook on Mentoring. www.emccouncil.org.uk.