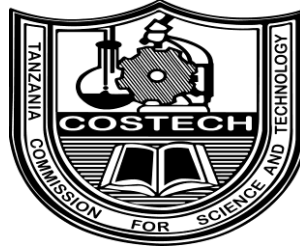


**THE TANZANIA COMMISSION FOR SCIENCE AND TECHNOLOGY
(COSTECH)**



REPORT

**THE SCIENTIFIC RESEARCH PAPER WRITING TRAINING
WORKSHOP HELD FROM 24TH TO 28TH MAY 2021
AT THE AGENCY FOR THE DEVELOPMENT OF EDUCATIONAL MANAGEMENT
(ADEM)**

BAGAMOYO, PWANI

5TH JUNE, 2021

INTRODUCTION

The Tanzania Commission for Science and Technology (COSTECH) is a government parastatal organization under the Ministry responsible for Science and Technology. Established by the Act of Parliament No.7 of 1986 COSTECH is responsible for coordinating and promoting science, technology and innovation for sustainable socio-economic development in Tanzania. Its incumbent task is to build and support a Strong System of Innovation (STI) by specifically dealing with Research and Development (R&D) activities in key national economic sectors such as agriculture and livestock, public health, forestry, fisheries, marine sciences, minerals, industry, energy, and wildlife. Therefore, COSTECH is responsible among many others, to spearhead the development and management of human resources for STI. The principal roles and responsibilities of COSTECH is to acquire, store and disseminate scientific and technology information, and may, for that purpose holds or sponsors workshops, seminars, symposia, conferences, and meetings or publish any news such as papers or journals to promote interest in STI. In its five years' strategic plan (2016-2021), COSTECH has put forward critical strategic issues that included strategies 4 and 5 on Science, Technology and Innovation culture and institutional capacity. These objectives mandate it pursuant to redress the gap in research dissemination expertise.

STATE OF THE ART

For COSTECH to achieve its publication cultural goals, there is a need to redress research productivity measured by number of research results (outputs) published in indexed sources; and research effectiveness or impact, measured by normalized citation impact. On this matter Tanzania fairs very low in East Africa region as well as in global arena. Recently, the Tanzania Commission of Universities (TCU) has made it compulsory for higher learning institutions to incorporate the research package by way of peer-reviewed articles as part of the graduate research output. Therefore, Tanzania scholars have to demonstrate their contribution towards solving science, technology and innovation challenges through research for evidence based solutions, and to disseminate findings.

Similarly, R&D institutions include the publication of the research findings in scholarly forum as part of the career advancement and survival of researchers. In a number of institutions, use publications as a measure of promotion criteria, research productivity, and fundamental marker of accountability of researchers. In 2014, Tanzania counted 15 publications per million inhabitants in internationally catalogued journals, according to Thomson Reuters' Web of Science (Science Citation Index Expanded). This placed Tanzania 10th out of the 15 SADC countries, well behind Namibia (59), Mauritius (71), Botswana (103) and, above all, South Africa (175). The average for sub-Saharan Africa was 20 scientific publications per million inhabitants, compared to a global average of 176 publications. More pertinent is women scientists' participation in science, technology, engineering and mathematics fields. Special full sponsored workshop in research delivery for women scientists is needed to offset the dominance of one gender scientists. Further, data from Thomson Reuters' Web of Science, Science Citation

Index show that Tanzania is also fairing very low in terms of STI indicators like publication (UNESCO Science Report: towards 2030 (2015). At this point in time, Tanzania has bulk of researchers and scholars who have graduated from HEs without having a single article under their profiles. It is a similar case in R&D institutions where most researchers are lacking skills to publish their research findings in scientific journals.

There is clear evidence that a number of research findings in the country are not published in scientific journals or conference proceedings, partially due to challenges in skills of writing quality manuscripts. At the same time, the rate of rejection of manuscripts submitted for publication in peer reviewed journals may be sadly high due to substandard delivery skills. Thus, there is a need to inject specific skills in manuscript development and familiarity with approaches, trends and hiccups in scientific paper writing. The art of scientific writing skills and ethos can be sharpened through active and continued engagement in skills training in research and publication.

The COSTECH has seen a need for investment in research output training to boost research quality and productivity, as well as on training in dissemination of research results to community and policy makers. Individual higher learning educational and R&D institutions have no capacity to conduct regular training of researcher's skills and techniques of scientific paper writing and publishing ethos. Assumption is made that COSTECH should lead these institutions to inspired and take initiative to set fund and programme for scientific publication skills and strategies for the young scientists and graduates.

INTERVENTION

The COSTECH conducted the workshop to strengthen the capacity of young and early career researchers to prepare scientific manuscripts that could be published in reputable international journals. The specific target was for workshop participants to come up with draft manuscripts that would be worked on, polished and submitted to international scientific journals within three months after the workshop. Therefore, the training supports human resource capacity in scientific writing for increased research production so as to enhance socio-economic development of the nation.

The COSTECH, through its department of Documentation and Publication section in liaison with three senior academics and researchers with extensive experience in conducting scientific research and publishing conducted the training. These were Prof. Salome Misana from the University of Dar es Salaam, Prof. Stelyus L. Mkoma from Marian University College and Dr. Ahmad Kipacha from Nelson Mandela African Institution of Science and Technology.

The terms of reference were:

1. To prepare training material that will cover on the understanding of the principles of academic writing and the science of publishing culture and why it is important to publish research results in a peer-reviewed (preferably high impact international journals)
2. To prepare some practical sessions where the trainees will be engaged in reading published scientific articles, identify different writing styles of scientific research article, logically think on research problems and come up with their own styles for writing scientific articles.
3. Create an environment for interactive learning by providing several hands-on activities and/or group discussions along with assignments that will help scholars in addressing many issues in the publishing process.
4. Train how to respond to editorial decisions and the peer-review process
5. Train young researchers and early career professionals on how to avoid plagiarism trap during the preparation of their manuscripts.
6. Become available for three months after the workshop and keep in touch with the trainees to provide them guidance as they write critical sections of their manuscripts for submission in different international journals.

TRAINING METHODS AND OUTCOMES

The scientific training workshop was conducted for five (5) days from 24th to 28th May 2021 and held at Agency for the Development of Educational Management (ADEM) in Bagamoyo, Pwani. Three modules were covered over the day as shown in the training programme (Appendix 1) and was designed to understand challenges and improve all aspects of scientific paper writing and publication processes. The facilitators used different approaches aimed at enhancing the level of understanding of the participants in scientific writing skills. A total of 21 participants from different academic and R&D institutions in the country (Appendix 2) attended and worked on their tentative titles of manuscripts as shown in Appendix 3.

Scientific publications in a reputable and peer-reviewed journal mark research success and are one of important goals for any researchers. In Tanzania few young researchers communicate their findings. Therefore, the organized training programme was conducted successively and generally focused on:

1. the structure of scientific paper, and fundamental styles of writing manuscripts;
2. skills and techniques of formatting content of each section, career professionals, plagiarism, and ethical consideration on scientific writing;
3. practical hands on training to learners on writing scientific papers for journal publications; and
4. All participants with information regarding peer review of scientific paper writing process and its intricacies.

The participants who attended the training programme:

- (i) raised awareness of publication culture to the young scientists;

- (ii) increased number of competent science writers for HEs and R&D institutions in the country;
- (iii) improved the quality of publications and hence will increased quantity of publications in the country;
- (iv) increased the rate of acceptance of their scientific manuscripts to be submitted to peer reviewed journals.

WORKSHOP EVALUATION

In addition, an evaluation exercise was done by the participants by filling in the evaluation forms (Appendix 4) to gauge whether or not the workshop was helpful and if their expectations had been met. Also, participants were asked to suggest topics for further improvement of the training, express how would COSTECH increase the visibility of local journals, attract and promote researchers in Tanzania to publish their findings, identify any challenges faced, and make suggestions/comments for future training. Overall the participants indicated the workshop was very useful and the following are findings/quotations illustrating the level of their satisfaction.

On whether their expectations were met:

Those who were positive said:

- (i) ‘Yes 95%’, ‘Yes by 100%’, and ‘about 80%’
- (ii) ‘I have learnt a lot in scientific paper writing, thanks to COSTECH for such a golden opportunity’
- (iii) ‘I’m more encouraged to publish than I was before’.
- (iv) ‘Much appreciation to the workshop organizers, facilitators and participants. Honestly I have acquired very valuable knowledge and skills and have improved my network’.
- (v) ‘Beyond my imagination’ thanks to COSTECH, our trainers they have given us everything I want to start this publication journey’.
- (vi) ‘Training has made my publication task a bit easier’.
- (vii) ‘I have learnt various techniques of writing styles’.

Some gave the following advices and others showed reservations as follows:

- (i) ‘Support by (incentivize) local editors to fast track journal publication in a year’.
- (ii) The training has exposed weakness and ignorance about many areas of publication formatting and writing of publishable papers.
- (iii) ‘The management of most institutions do not value the importance of the writing workshop, therefore they do not provide support’.
- (iv) Such training should be continuous to enhance capacity building /build confidence in writing publishable findings in a reputable journal’.
- (v) COSTECH has to spearhead promotion of research and publication culture in the country.

On topics for improvement of the training:

- (i) Additional training on how to review papers.
- (ii) Qualitative and quantitative data analysis.
- (iii) Graphic and data presentation, and argumentation skills.
- (iv) More training on the use of different software and how to interpret findings.
- (v) Workshop training on use of modeling, simulations, computational approaches in various fields.
- (vi) How to cite references - citation and referencing techniques and skills.
- (vii) International collaboration

On challenges they faced during training:

- (i) Time limitation for active learning, material usefully.
- (ii) Lack of financial support from institution to attend the training: accommodation and transport.
- (iii) Training had parallel sessions working on improving manuscript and gaining skills on scientific paper writing. The time was not enough.
- (iv) Searching materials and information, and selection of journal appropriate to my field was a challenge. This needs to be emphasized.
- (v) Internet connectivity/accommodation challenges
- (vi) Not able to review and edit my manuscripts per session as instructed by facilitators.

On comment for the future training:

- (i) 'More training be conducted as it promotes publishing'.
- (ii) 'Review paper writing process need to be considered in the future training'.
- (iii) COSTECH should provide financial support especially to young scientist e.g. Accommodation and bus fare support to participants from country side.
- (iv) Selection of good venue for quality projection during sessions.
- (v) Strengthening internet connection. WIFI was too slow.
- (vi) Training be conducted in 2 phases: (1) equipping participants with relevant skills in scientific writings (2) presentation of participant final manuscripts, reviewing and submission during the training.
- (vii) Training on how to select reputable peer reviewed journals and identification of predatory journals.
- (viii) COSTECH should support costs of publication (waiver, grants or incentives) to participants of the training workshops.

On how COSTECH will increase the visibility of local journals

- (i) Establish database of the local journals and advertise them on COSTECH website and social media accounts.
- (ii) Encourage and promote each institution to establish her own international journals.

- (iii) Engaging HEs and R&D institutions in collaborating research and encourage researcher to publish on local journals.
- (iv) Establish newsletter
- (v) Organize workshop for capacity building to reviewers and editors of the local journals.

On how COSTECH will attract and promote researchers in Tanzania to publish their findings:

- (i) ‘By continuing conducting the scientific paper writing programme with additional topics such as referencing’
- (ii) Awards to notable researcher culture of publishing /continuity of system of training
- (iii) Social science and pure science research forum
- (iv) Funding researcher, support access of tools, subscriptions to journals, and in paying publication fee.
- (v) Provides small grants for writing and publishing the research findings
- (vi) ‘Conduct workshops on scientific paper writing at least twice annually and support not less than 30 participants’
- (vii) Conduct outreach services to the specific institutes on what COSTECH can offer on publication process
- (viii) Encourage joint scientific research among HE and R&D institutions and strengthen linkages.
- (ix) Establish competition and awards to trained researchers who publish their papers.
- (x) Establish network of young researchers, COSTECH and mentors (trainers)

SUMMARY AND CONCLUSION

The above remarks illustrate the general level of satisfaction of the participants with regard to the workshop’s content to be interesting and relevant. The training and evaluation have indicated the need for the workshop. The youngest researchers and early career professionals working in HEs and R&D in Tanzania are still having difficulties in writing scientific papers. Also lack of skills in publishing their findings in reputable peer-reviewed journals was the feedback from the participants’ evaluation. These difficulties were largely due to lack of adequate training in conducting scientific research, critical thinking and academic writing skills in their institutions.

The COSTECH under its Directorate of Knowledge Management via Documentation and Publication section has to continue pursuing a path to vigorously bring together under one roof both HEs and R&Ds young researchers. The aim is to spearhead publication culture by specifically conducting a workshop to impart skills on publishing research findings at least twice annually for three years consecutively. This would implant the culture and change the profile of the publication rate to a competitive platform of sciences that will have impact and raise the country STI profile that can be captured by international agency such as UNESCO G0-SPIN STI indicator.

COSETCH cannot continue to be a by stander, it has to vigorously organize impromptu intervention such as targeted training of young researchers from a pool of scientists in various disciplines in research and development institutions, universities, industry and international research organizations, with re-skilling in scientific writing to improve their productivity.

RECOMMENDATIONS

The trainers team is suggesting the following to COSTECH for future training:

1. COSTECH has to solicit fund from stakeholders to continue organize scientific trainings and workshops.
2. Reserve and facilitate (sponsor) the accommodation to all participants to easy the logistics and keeping time for the programme schedule.
3. Support gender equity and raise number of female scientists with competence in writing scientific papers in high ranked outlets.
4. Visit HEs and R&D institutions to meet both young researchers and administrators for conducting awareness campaign of publication culture including conducting regular joint session on scientific writing ‘summer’ clinics.
5. COSTECH as organizers should issue certificates of attendance to trainers and trainees.

ACKNOWLEDGMENT

The trainers wish to express their gratitude and appreciation to COSTECH for entrusting them with the task of providing mentorship to the young and early career researchers in writing scientific research papers for publication. It is believed that many similar workshops to come, and are more than willing to continue with the mentoring task. The demand for such training is high in improving the publication record of young scholars and researchers in Tanzania as also suggested by the workshop participants.

The workshop training team submits the report:

1. Prof. Salome Misana Chairperson

Signature: ...



Date: 13th June 2021.

2. Prof. Stelyus L. Mkoma Member
3. Dr. Ahmad Kibacha Member

APPENDIX 1: WORKSHOP TRAINING PROGRAMME

TIME	MONDAY 24-05-2021	Facilitator	TUESDAY 25-05-2021	Facilitator	WEDNESDAY 26-05-2021	Facilitator	THURSDAY 27-05-2021	Facilitator	FRIDAY 28-05-2021	Facilitator
08:00-09:00 09:00-09:15	Arrival Opening and Welcome	ALL	Principles of scientific paper writing, why and types of publications	Prof. Mkoma	Participants Presentation of the own draft Manuscript	Prof. Mkoma	General structure of the scientific paper: Conclusion	Dr. Kipacha	How to respond to editorial decisions	Dr. Kipacha
09:15-10:00	Introduction of participants and Workshop objectives Group Photo	COSTECH & Prof. Mkoma	General structure of the scientific paper: Introduction	Dr. Kipacha	Participants Presentation of the own draft Manuscript	Prof. Mkoma	General structure of the scientific paper: Abstract	Prof. Misana	Exercise: Submission of individual manuscript to journal of choice	Prof. Misana
10:00-10:30	BREAK									

10:30-14:00	Expectation and brainstorming. How to plan and start writing scientific paper	Prof. Misana	General structure of the scientific paper: Methodology	Prof. Misana	General structure of the scientific paper: Results and Discussion	Prof. Misana	Exercise: Review own draft manuscript as per journal guidelines	Prof. Mkoma	Exercise: Submission of individual manuscript to journal of choice	Prof. Mkoma
14:00-15:00	LUNCH									
15:00-17:30	Aspects and critical sections of Scientific paper	Dr. Kipacha	Research ethics and plagiarism	Prof. Mkoma	Exercise: Review own draft manuscripts as per journal guidelines	Dr. Kipacha	Submission process of a paper and peer-review process	Prof. Misana	Evaluation of workshop training	Dr. Kipacha

APPENDIX 2: LIST OF PARTICIPANTS

S/N	NAME	E-MAIL	INSTITUTION
1.	Dr. Betty David Mntambo	betty.mntambo@out.ac.tz betty.mntambo@yahoo.com	OUT - Morogoro
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5.	Mr. Charles Henry Mpemba	charlesmpemba@gmail.com	TALIRI - Naliendele
6.	Mr. Cyprian G.Mtweve	cmtweve@nimr-mmrc.org	NIMRI - Mbeya
7.	Ms. Doreen Mwara Anande	doreenmwara@gmail.com doreen.anande@meteo.go.tz	TMA – Dar es Salaam
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10.	Mr. George Mbyazita Karwani	george.karwani@gmail.com	TARI -
11.	Ms. Hafsa Maulid Seif	chuchahafsa@yahoo.com hafsa.seif@gst.go.tz	Geological Survey of Tanzania - Dodoma
12.	Mr. Kabuni Thomas Kabuni	kabuni.kabuni@gmail.com	TALIRI -
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S/N	NAME	E-MAIL	INSTITUTION
17.	Mr. Kelvin Nzilano	kelvinluka@yahoo.com	MUCO
18.	Mr. Damian Sambuo	damiansambuo548@gmail.com	MUCO
19.	Mr. Victor Shirima	evishi5@gmail.com victor.shirima@mocu.ac.tz	MUCO
20.	Mr. Frank Massive	frank.masige25@gmail.com	NEMC
21.	Mr. Masoud Salehe	masoudsaleh77@yahoo.com	TARI- Kihinga, Kigoma
22.	Mr. Willian V. Kikoti	valentino.kikoti@gmail.com	TARI - Mabuki

APPENDIX 3: LIST AND TITLE OF MANUSCRIPT

S/No	NAME OF PARTICIPANT	PAPER TITLE
1.	MS. HAFSA M.SEIF	Copper mineralization in the Mwapwa District, Dodoma Region, Tanzania
2.	MR.VICTOR EMILIAN SHIRIMA	Persived Critical Success Factors for the performance of Primary Agriculture Marketing Co- operative Societies in Tanzania
3.	MR. CYPRIAN MTWEVE	Anti- Tuberculosis Drug Induced Liver Injury Among TB/HV co-infected patients in Mbeya and Songwe Region, Tanzania
4.	MS. DOREEN MWARA ANANDE	Impact of projected urban expansion on rainfall and temperature in Dar es Salaam during the rainy period Impact of projected urban expansion on rainfall and temperature during rainy season in Dar es Salaam, Tanzania
5.	DR. BETTY MNTAMBO	Land tenure security and Urban Agriculture: Focusing on the vegetable cultivation in Morogoro Municipality Tanzania.
6.	MR. EVOD J. RIMISHO	Sustainability use of natural resource: Determinants of willingness for a fisherman accepting compensation to stop fishing A case of Tanzania fishermen in Lake Victoria.
7.	MS. AMINA B. BURILO	Fertility and hatchability of horasi chicken ecotype eggs collected under farmers condition in Shinyanga and Tabora Region, Tanzania
8.	MR. WILLIAM V. MBASA	Effect of planning Density and canopy management on Cashew under landscapes of south- Eastern , Tanzania
9.	MR. WILLIAM V. KIKOTI	Improving access to market information for smallholder indigenous chicken farmers: A case of Misungwi District, Mwanza Region, Tanzania
10.	MR. KABUNI THOMAS KABUNI	The effect of scrotal circumstance on pregnancy rates in Mpwapwa breed cattle during September- November 2020 breeding season at TALIRI Mpwapwa farm in Tanzania.

S/No	NAME OF PARTICIPANT	PAPER TITLE
11.	MR. CHARLES MPEMBA	Growth and feed utilization Potential of Horas: chicken Ecotype during starter and grower phases
12.	MS. VICTORIA GOWELE	Decreasing Anaemia and Vitamin A Deficiency among school children in Rural Tanzania: Results of an integrated home gardening Intervention.
13.	MS. ANNA MNYAMPI	Productivity of Rubber Plantation in Tanzania Rubber Plantations at Kihuhwi and Kalunga as Case study.
14.	MS. UPENDO TITI	Does gender matter in variety preference? Evidence from smallholder common bean farmers in Tanzania.
15.	MR. EMMANUEL KOMBA	The effects of stereotypes totue Current Attitude towards HIV and AIDS and its Association with Risk Behaviors
16.	MR. GEORGE KARWANI	Variation in Nutrient use efficiency under varying Soil conditions in Maize growing areas in Northern zone, Tanzania East - Africa
17.	MR. REVOCATUS BAHITWA	Genetic variability for yield, yield components and mosaic disease in bio-fortified cassava populations.
18.	MR, KELVIN L. NZILANO	Influence of Entrepreneurship Education in Entrepreneurial Career Intention among Technical Graduates in Dar es Salaam, Tanzania.
19.	MR. DAMIAN SAMBUO	Contract fishing in Africa and Inputs Materials for Artisanal fishers: The analysis of impact factors around lake Victoria
20.	MR. RAYA J. A. NUNDU	Responses of newly released bush common bean varieties (<i>Phaseolus vulgaris</i> L) to different plant densities in Kagera region, Tanzania
21.	MR. FRANK M. MASIGE	Awareness and challenges related to ethical guidelines for laboratory research animals in Tanzania.

APPENDIX4: EVALUATION FORM

1. Where your expectations met? If yes to what extent.

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2. Suggest topics or areas for further improvement of the training.

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3. Mention the challenges you faced in the training.

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4. How would you like COSTECH to increase the visibility of local journals.

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5. How would you like COSTECH to attract and promote researchers in Tanzania to publish their findings.

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6. Any other comments for future training.

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