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Centre for Mathematics, Science and Technology Education in Africa (CEMASTEА) is a public institution under the Ministry of Education (MOE). The Centre is mandated to build the capacity of mathematics and science teachers for effective teaching and learning. The CEMASTEА's Research and Development (R&D) bulletin provides information and updates on research related activities for a given year. In this issue, updates and information are given for 2018. For more information or questions please contact the Coordinator, R&D at rdcoordinator2015@gmail.com

Training Quality Index and Lesson Study Practice Index

Research and Development department is mandated to monitor all forms of training including determination of the Training Quality Index (TQI) for each of the training. In response to the need to provide adequate and timely service to our customers, Service Delivery Index (SDI) is also determined. In 2018 several trainings were conducted by CEMASTEА involving Secondary School teachers that included National in-service education and training (INSET), ICT training, STEM training, and County INSET. In addition, CEMASTEА staff supported Secondary school teachers in selected counties to implement Lesson Study. TQI was determined for all the trainings conducted as well as the Lesson Study Practise Index. Table 1 shows the indices obtained from the evaluation data collected based on a scale of 1 to 5 where 1- Very Poor, 2- Poor, 3- Fair, 4- Good, 5- Very Good.

Table 1: Training Quality Index for 2018 and 2017

Training	2018	2017	Deviation
Sec National INSET	4.3873	4.2945	0.0928
Sec County INSET	4.2440	4.1194	0.1246
ICT training	4.4415	-	-
STEM training	4.3744	-	-

Note that no training was mounted for Primary school teachers either at National or County level due to limited funding in 2018. In addition, TQI for ICT training and STEM training were calculated for the first time in 2018. For this reason, the TQIs for these trainings become the baseline indices.

Based on the data in Table 1, the TQI for both the Secondary National INSET and County INSET improved. Table 2 shows SDI for training organised and conducted by

CEMASTEА. These indices were obtained from the evaluation data collected based on a scale of 1 to 5 where 1- Strongly disagree, 2- Disagree, 3 Not sure, 4- Agree and 5- Strongly agree

Table 2: Service Delivery Index for 2018

Training	2018
Sec National INSET	4.4552
ICT training	4.2748
STEM training	4.3028

Note that SDI was calculated for the First time in 2018. For this reason, the SDIs for these trainings are the baseline indices.

As mentioned, CEMASTEА staff supported teachers as they implemented Lesson Study in selected counties as follows selected counties that included: Mombasa, Kilifi, Makueni, Kajiado, Nyandarua, Nyeri, Embu, Nakuru, Busia, Kisumu, Elgeyo Marakwet and Vihiga. The practice of Lesson Study in these counties was evaluated using the Lesson Study Practice Tool where each of the four stages of Lesson Study namely, Problem identification, Lesson planning, Lesson implementation and Debriefing were rated on a scale of 1-5 where 1 = Very poor, 2 = Poor, 3 = Fair, 4 = Good and 5 = Very good.

The Lesson Study Practice Index was obtained from data for all the stages of Lesson Study as well as subjects (i.e., Mathematics, Biology, Chemistry and Physics) was 4.7158.

Monitoring and Evaluation of County INSET

Just like in previous years, the 2018 INSET for secondary teachers was conducted in April and August in 74 INSET centres of all the 47 counties. Monitoring and Evaluation

(M&E) of the INSET was undertaken by CEMASTEAs staff as well as selected officials from the Ministry of Education (MOE), the Teachers Service Commission (TSC) and County Trainers. This was done to Determine the number of teachers trained as well as establish the quality of facilitation by



Figure 1: Teachers conducting activities during County INSET

County Trainers and management of the INSET by the County Teacher Capacity Development Committees (CTCDC). A total of 6655 teachers out of the expected 7408 mathematics and science teachers were trained during County INSET. This number represented a percentage turn up of 89.84%. which was an improvement from the percentage turn up of 83.9% for 2017. Of the teachers who attended INSET 5114 were males while 1541 were females. There is still gender disparity in the INSET attendance.

The findings of the M&E exercise showed that there was an improvement in the overall quality of facilitation compared to 2017. The overall mean score for quality of facilitation was 4.12 compared to those of 2017 and 2016 which were 3.98 and 3.91 respectively. Most of the County trainers were found to have good facilitation skills. This could have contributed to the high overall mean score for the quality of facilitation.

The quality of management of INSET was equally good. The overall mean score for the management of INSET was 4.14 which was an improvement from the scores for 2017 and 2016 rated at 3.95 and 4.00 respectively. The mean scores for quality of facilitation and management of INSET were obtained from the data collected based on a scale of 1 to 5 where 1- Very Poor, 2- Poor, 3- Fair, 4- Good, 5- Very Good.

Conference Attendance and Presentations

In 2018, three research papers were written and presented in conferences as follows:

1. Dr. Grace Orado, Coordinator of R&D Department attended and presented a paper entitled **“In school but not learning for almost a quarter of the time”** during the 1st Annual International Conference on Decolonising Education at University of Embu held on 6-8, June 2018.
2. Dr. Njoroge Mungai Deputy Coordinator, R&D and Njeri Mburu of Physics Department attended and presented a paper titled **“Teachers and learners voices in a teaching learning environment: A case study of a school in Kisii”** during the 1st Annual International Conference on Decolonising Education at University of Embu held on 6-8, June 2018.

3. Mr. Kizito Makoba, Dean Biology Department and Mrs. Amina Sharbaidi, Deputy Dean, Biology Department attended and presented a paper titled **“Place-based learning: Connecting classrooms to the real world”** during an International Conference on Curriculum for Sustainable Learning (ICCSL) held on 28 – 31, May 2018 in Entebbe, Uganda.

Research Resources

In 2017, CEMASTEAs secured access to online journals and has continued to pay subscription fees for these resources. Access to these journals will still be available to users in 2019. To access content in these journals simply type the link shown as follows and browse

- African Journal of Research in Mathematics, Science and Technology Education and African Journal of Science, Technology, Innovation and Development from <http://www.tandfonline.com/>
- All journals and periodicals from www.jstor.org

Note: These journals are accessible only from CEMASTEAs

On-going Researches

There are two on-going researches as follows

1. Teachers’ ideas about the use of 5E instructional Model in teaching Biology
2. Teachers’ perceptions, understanding and use of professional portfolios

Publications

We reported in the last issue of the Bulletin series that a manuscript of a book titled **“Lesson Study: A practical guide for implementation”** had been accepted for publication.

Well, the Jomo Kenyatta Foundation published the book in 2018. Figure 2 is a photo showing the Director CEMASTEAs, Mr. Stephen



Figure 2: Mr. Stephen Njoroge, Director CEMASTEAs, receiving copies of the book on Lesson study

Stephen Njoroge, HSC (second from left) who is also one of the authors receiving copies of the book from a representative of the JKF Publishers. In the photo are three of the other authors of the book from Left, Mr. Kizito Makoba, Dr. Grace Orado and Mrs. Gladys Masai. The other authors, not in the photo are Ms. Nancy Nui, Mr. Makanda, Mr. Jacob Amimo and Mrs Mary Kariuki. More books by CEMASTEAs will be hitting the market soon.

Centre for Mathematics, Science and Technology Education in Africa (CEMASTEAs), P. O. Box 24214 00502, Karen-Nairobi, Kenya
 Phone: +254-20-2044406; +254-0780 797648; +254-0706 722697
 E-mail: director@cemastea.ac.ke,
 Website: <http://www.cemastea.ac.ke>