







INAUGURAL INTERNATIONAL INTERDISCIPLINARY CONFERENCE

Venue: **Kisii National Polytechnic** Date: 17th - 19th, August-2021

ESTABLISHING A UNIFIED FOUNDATION FOR SUSTAINABLE DEVELOPMENT



CONFERENCE GUIDE & BOOK OF ABSTRACTS



KISII NATIONAL POLYTECHNIC MINISTRY OF EDUCATION STATE DEPARTMENT OF VOCATIONAL & TECHNICAL TRAINING (VTT)

INAUGURAL INTERNATIONAL INTERDISCIPLINARY CONFERENCE

ESTABLISHING A UNIFIED FOUNDATION FOR SUSTAINABLE DEVELOPMENT

> Venue: Kisii National Polytechnic Date: 17th - 19th, August-2021

https://www.knpconference.com/

CONFERENCE GUIDE & BOOK OF ABSTRACTS

TABLE OF CONTENTS

| Guests and Panelist | 1 |
|---|----|
| Governing Council | 4 |
| Conference Programme | 5 |
| Abstracts | 9 |
| Programme of Research Papers Presentation | 9 |
| Abstracts: Economic Sustainability | 22 |
| Abstracts: Environmental Sustainability | 50 |
| Abstracts: Social Cultural Sustainability | 70 |

GUESTS & PANELISTS

GUESTS



PROF. GEORGE MAGOHA EGH, Cabinet Secretary, Ministry of Education



MR. RICHARD NGATIA President, Kenya National Chamber of Commerce and Industry



H.E. HON. JAMES E.O ONGWAE EGH, CBS, EBS, Governor Kisii County



DR. ZEENAT SULAIMAN KHAN Regional Chief Executive Officer (Interim) Aga Khan Health Service, East Africa (AKHS- EA)



HON. HASSAN NOOR HASSAN CAS, Ministry of Education



DR. MARGARET WAWUDA MWAKIMA Principal Secretary, State Department of Vocational and Technical Training (VTT), Ministry of Education.



MS. MAUREEN MBAKA CAS, Ministry of ICT



PROF. DEOGRATIUS JAGANYI Vice-Chancellor, Mount Kenya University

PANELISTS



MR. SAMUEL MATONDA CEO, Kenya National Chamber of Commerce & Industry (KNCCI)



ADNAN MERDIN CEO, Dr. Mattress



MS. SYLVIA BOSIBORI Geospatial Engineer & Head of Business, Hepta Analytics



DR. WALTER OKIBO BICHANGA CEC Lands, Physical Planning and Urban Development



PROF. LINNET GOHOLE Associate Professor -University of Eldoret, School of Agriculture & Biotechnology



MR. MUCHIRI MUNGAI Director Youth in Business



MR. JAMIL SHAMJI Chairperson, Kisii County Municipal Board



GITUKU KIRIKA Financial Services and Payments Expert



EDINAH KANGWANA CEC Administration, Corporate Services and Stakeholder Management, Kisii County



MR. PRAVIN EAZHAWA Director Technical and Vocational Training



EUNICE OGOLO Private Sector Development Lead British High Commission in Kenya.



PROF. KISILU M. KITAINGE Dean School of Education, University of Eldoret.



GIDEON MURENGA

TVET Technical Advisor and Nairobi Regional TVET Coordinator, GIZ **GOVERNING COUNCIL**

GOVERNING COUNCIL



PROF. KISILU M. KITAINGE Chairman



MR. DAVID MWANGI Principal/ Secretary to The Council



ENG. ANDREW NG'ENO Member



MR. NATHAN ORORA Member



MS. ESTHER ASATI Member



MR. JOHN KIMANI GITAU Member



DR. SIMON NYAKWARA Member



MR. TOM OLAN'GO Member/ County Director TVET

CONFERENCE PROGRAMME

CONFERENCE PROGRAMME

Kisii National Polytechnic Virtual International Conference

"Establishing a Unified Foundation for Sustainable Development."

| PRE-CONFERENCE DAY (TUESDAY 17 TH AUGUST, 2021) | | | | | |
|--|---|---|--|--|--|
| TIME | ACTIVITY | RESPONSIBLE | | | |
| 8:00 am -8:30am | Arrival and registration of participants | Secretariat Public Health | | | |
| 8:30 am -1:00pm | Skills Competition | Eng. Samuel Njiru | | | |
| 1:00 pm– 2:00 pm | Lunch Break & Exhibitions | | | | |
| 2:00 pm – 5:00pm | Research presentations & Skills Competition | Dr. Walter Okibo- Research Coordinator | | | |
| | | Mr. George Nyakoe HOD Research- KNP | | | |
| | | | | | |
| CONFERENCE DAY | ONE (WEDNESDAY 18 TH AUGUST, 2021) | | | | |
| TIME | ACTIVITY | RESPONSIBLE | | | |
| 8:00am -8:30am | Arrival and Registration of Participants | Secretariat Public Health | | | |
| 8:30am – 9:30am | Breakaway sessions for Research | Secretariat | | | |
| | presentations | Dr. Walter Okibo- Research Coordinator | | | |
| | | Mr. George Nyakoe HOD Research- KNP | | | |
| 9:30am- 10:00 am | Arrival of Guests and Exhibition Tour | KNP Governing Council and other Protocol Officials | | | |

| 10:00am-11:45am | National anthem Opening praver | KNP Choir KNP Spiritual Leader |
|------------------------|---|---|
| | - F | |
| | OBJECTIVES OF THE CONFERENCE | KNP Principal Prof. Kisilu Kitainge- Chair KNP Governing Council |
| | REMARKS BY LEADERS | H.E. Hon. James E.O. Ongwae EGH, CBS, EBS Governor Kisii County |
| | Government Officials | |
| | OFFICIAL OPENING OF THE CONFERENCE CS Ministry of Education | |
| | Prof. George Magoha, CBS | |
| 11:45 am - 12:30 pm | Keynote Address | Mr. Richard Ngatia- President KNCCI |
| | | |
| 12:30 pm - 1:30pm | PLENARY SESSION 1: The role of TVET in Sustainable Development: Implications for Education and Training. | Session Chair Dr. Kipkirui Langat - Director General- TVETA |
| | Moderator: Mr. Tom Mulati Director TVET-MoE | Panelists: Prof. Deogratias Jaganyi- VC Mount Kenya University Prof. John Akama- VC Kisii University |
| | | Mr. Amos Andama CEC VTC- Kisii County |
| | | GIZ Country Representative |
| 1:30pm -2:30 pm | Lunch Break & Exhibitions | |
| 2:30 pm -3:00 pm | | Dr. Zeenat Sulaiman |
| p p | Keynote Address | Regional CEO Aga Khan Health Services East Africa Ltd |
| 3:00 pm – 4:00 pm | PLENARY SESSION 2: Building synergies for promotion of science, technology, and innovation: How the country can layer as an | Session Chair Mr. Hosea Kili- CEO County Pension Fund |
| | technology, technical, entrepreneurship skills and diversity for attainment of Sustainable Development. | Panelists: Ms. Maureen Mbaka- CAS |

| 4:00 pm -4:45 pm | Moderator: Ms. Sylvia Makario- Founder Hepta Analytics Tea break, Networking and guests leave at their own leisure | Ministry of ICT Gituku Kirika- CEO Pesalink Mr. Adnan Merdin- CEO- Dr. Mattress Mr. Muchiri Mungai- Director Youth Affairs- KNCCI Moderator |
|--------------------------------------|--|---|
| CONFERENCE DAY | TWO (THURSDAY 19 TH AUGUST, 2021) | |
| TIME | ACTIVITY | RESPONSIBLE |
| 8:00 am - 8:30 am | Arrival and registration of participants | Secretariat Public Health |
| 8:30 am -9:30 am | Breakaway sessions for Research presentations | Steering Committee Dr. Walter Okibo- Research Coordinator Mr. George Nyakoe HOD Research- KNP |
| 9:30 am -10:00 am | Tea break, Networking | |
| 10:00am-10:30am 10:30am -11:30 am | Keynote address Topic: Effective and sustainable use of natural resources: safeguarding the environment for future generations through an integrated climate change action plan. PLENARY SESSION 3: Breaking barriers to free trade and regional integration for increased sustainable development. | Prof. Linet Gohole Director University of Eldoret-Town Campus Session Chair Dr. Kevit Desai- PS EAC Panelists: |
| | Moderator: Mr. Samuel Matonda -CEO KNCCI | Dr.Wilfred Marube- CEO KEPROBA Mr. Hassan Noor Hassan- CAS Education Mr. Jamil Shamji- Chair Kisii Municipal Board |

| 11:30am- 12:30pm | PLENARY SESSION 4: Unlocking additional capital and investments for agricultural sustainability: a key approach to sustainable development. Moderator: Mr. Pravin Eazhawa- Director TVET- KNCCI | PanelistsAbsa BankCo-operative BankMr. Isaac Omwenga- CEOWakenya Pamoja SACCOMr. Charles OkerioOmwansa- CEO GusiiMwalimu SACCO | |
|------------------|--|--|--|
| 12:30pm- 1:30pm | Lunch Break & Exhibitions | | |
| 1:30 pm -2:30 pm | Skills Competition Awards & Rapporteurs Report | | |
| 2: 30 pm | CLOSING CEREMONY Closing Remarks Dr. Margaret Mwakima -PS TVET Vote of thanks Closing Prayer | Prof. Kisilu Kitainge- Chair KNP Governing Council | |
| | Tea Break, Networking and Guests leave at | their own leisure | |

BOOK OF ABSTRACTS

PROGRAMME OF RESEARCH PAPER PRESENTATIONS

Lead Judge: Dr. Walter Okibo, PhD

Coordinator: Dr Tom Kabage

DAY ONE: TUESDAY, 17TH AUGUST 2021

- 8.30am -9.00am: Arrival & Registration
- 9.00am 10.30am: Skills Competition
- 10.30am-11.00am: Health Break
- 11.00am 1.00pm: Skills Competitions
- 1.00pm 2.00pm: Lunch Break
- 2.00pm 5.00pm: Research Paper Presentations in Technical Parallel TRACKs

TRACK A: SEMINAR ROOM 304: ECONOMIC SUSTAINABILITY

DAY 1: TUESDAY 17TH AUGUST, 2021.

| Session ch | nair: G | eorge Were | Rapporteur: Silas Momanyi |
|------------|----------------|-----------------------------|---|
| TIME | S/N | Name of Author | Title of Paper |
| | о. | | |
| 2.00pm— | 1 | Tinega A. Kurura, Phd | Modeling of Mechanical Vibrations of |
| 5.00pm | | Kisii National Polytechnic | Shock Absorbers with Application to their |
| | | | Performance in Automobiles Shocks |
| | 2 | Shivambo Amos | Adoption of Solar Energy and Diffusion of |
| | | Sigalagala National | New Solar Technology Products for |
| | | Polytechnic | Domestic and Commercial Use in Kenya |
| | 3 | Bwabi Masombo | Evaluation of Intra-Row Spacing and Treilis |
| | | Kitale National Polytechnic | on the Yield Potential of Indian Spinach |
| | | | (Basella Alba L) in Western Kenya |
| | 4 | Cynthia Chepkoech Koech | Entrepreneurial Hub Centres in TVET |
| | | Jomo Kenyatta University of | Institutions: The Need for Entrepreneurship |
| | | Agriculture and Technology | Education in TVET Institutions to Spur |
| | | | Economic Empowerment of the Youth |

| | 5 | Ezra Mugeni Otibine The Sigalagala National Polytechnic | Application of Chain Ladder Method for X- Insurance in Kenya |
|--|----|---|--|
| | 6 | Finlay N. Nyanyuki Kisii National Polytechnic | Contribution of TVET Institutions in the Creation of Job Opportunities in Kenya: A survey of Kisii National Polytechnic |
| | 7 | George W. Wamalwa & Lucy Makokha Kisiwa Technical Training Institute | Improvised Mpesa Filing Station as an Innovation for Revenue Collection in Kenya |
| | 8 | Hannah Kiaritha, Phd Kabete National Polytechnic | Analysis of Factors Influencing the Financial Performance of Savings and Credit Co-Operatives in the Banking Sector in Kenya |
| | 9 | Beryl Ashiali Helidah Technical University of Mombasa | Strategies for Reducing Youth Unemployment in Kenya |
| | 10 | Herman Munyare & Hannah Kiaritha, PhD Kabete National Polytechnic | Diversification Strategies and the Financial Performance of Bamburi Cement Limited |
| | 11 | Isaac Muya Ngandu Siala Technical Training Institute | The Role of Information Communication Technology on the Performance of Commercial Banks in Kenya: A Case of Commercial Banks in Migori County Rongo Sub-County |
| | 12 | Janet Mokaya, Kisii National Polytechnic | Analysis of Factors Influencing Job Satisfaction for Employees of Kisii National Polytechnic |

TRACK B; SEMINAR ROOM 305; ENVIRONMENTAL SUSTAINABILITY

| Session c | hair: Dr | . Simiyu Judith | Rapporteur: T. Kabage |
|-----------|-----------------|----------------------------|--|
| TIME | S/No. | Name of Author | Title of Paper |
| 2.00pm— | 1 | Betty Oganda | Rehabilitation of Flooded Abandoned Quarry |
| 5.00pm | | The Kisumu National | in Kisumu County for Environmental |
| | | Polytechnic | Sustainability Using Floating Solar |
| | | | Photovoltaic Cell |
| | 2 | Consolata Mutisya, PhD | Adoption and Implementation of the Concept |
| | | The Kabete National | of Green Industrialization among Selected |
| | | Polytechnic | Manufacturing Firms in Kenya |
| | 3 | Elias Waweru Ngotho | Evaluation of the Effects of Zero Energy |
| | | Rift Valley Institute of | Cooler on Tomato Fruits |
| | | Science and Technology | |
| | 4 | Onyango Evans | Human Kinetic Off Grid Green Power Supply |
| | | The Kisumu National | System |
| | | Polytechnic | |
| | 5 | Fred Sifuna Wanyonyi, | Levels of selected Pharmaceuticals in |
| | | Pembere A., Mutua K., | Wastewater Treatment Plants within Lake |
| | | Orata F. | Victoria Region of Kenya, and their |
| | | Sang'alo Institute of | Electrochemical Degradation |
| | | science and Technology | |
| | 6 | Okinda W. Fredrick | Effect of Tractor Wheel Traffic Compaction |
| | | Kisii National Polytechnic | on Selected Soil Physical Properties |
| | 7 | Gladys Jerop | Sustainable Textiles and Fashion |
| | | The Kisumu National | |
| | | Polytechnic | |
| | 8 | Grace Caroline | An assessment of the Legal Framework for |
| | | The Kisumu National | Protection of Food in Kisumu County |
| | | Polytechnic | |
| | 9 | Hellen Nangulu | Effect of Environmental Conservation |
| | | The Kitale National | Practices on Sustainable Tourism |
| | | Polytechnic | Development in Mt, Elgon Region Kenya |

| 10 | Japheth M. Magara Kisii National Polytechnic | Biogas Production from Food Left Overs |
|----|--|---|
| 11 | Kathleen Musungu Coast Institute of Technology | RNA Interference of Microalgae for Improved Biodiesel Production as Energy Source |
| 12 | Lydia Nyawira Mburia Daystar University | The Significance of Microfinance in Growing Green Economy for Environmental Sustainability in Kenya |

TRACK C; SEMINAR ROOM 306; SOCIAL CULTURAL SUSTAINABILITY

| Session c | hair: Dr | . Tinega Kurura | Rapporteur: Stella Atuti |
|-----------|-----------------|----------------------------|--|
| TIME | S/No. | Name of Author | Title of Paper |
| 2.00pm— | 1 | Musabi Antony Barasa | Training and Women Participation in |
| 5.00pm | | The Sigalagala National | Development Agenda in Kenya |
| | | Polytechnic | |
| | 2 | Godner Bwari peter | Determining the Compliance of Covid-19 |
| | | Kisii national polytechnic | Mitigation Measures in Kisii Town |
| | 3 | Caroline Musyimi, | The Influence of Provision of Modern |
| | | Coast Institute of | Teaching and Learning Equipment as a |
| | | Technology | means of Improving the Quality of Training |
| | | | in TVET in Kenya |
| | 4 | Geoffrey M. Nyachiro | Perception of Learners and Trainers |
| | | Kisii National Polytechnic | Towards Online Learning: A Survey of Kisii |
| | | | National Polytechnic |
| | 5 | Okemwa D., | Influence of Leave Arrangements on |
| | | Prof. Muturi W, PhD; & Dr. | Commitment |
| | | Atambo W, PhD | of Nurses in Public Hospitals in Kenya |
| | | Jomo Kenyatta University | |
| | | of Agriculture and | |
| | | Technology | |

| | 6 | Grace Kerubo Ogeto | Hindrance of Open-Air Markets to |
|---|----|---|--|
| | | Kisii National Polytechnic | Sustainable Urbanism in Kenya: Case of |
| | | | Five Selected Urban Towns in Kenya |
| | | Prof. Bernard Kipsang Rop | Teaching Practices with Emphasis on |
| | | Jomo Kenyatta University | Evaluation and Competency-Based |
| | | of Agriculture and | Approach |
| | | Technology | |
| | 7 | Eric Omundi | The Career Guidance Aspect in Aligning |
| | | Kisii National Polytechnic | Skills to Meet Labour Market Needs |
| | 8 | Kiberenge Cornelius, | Utilization of Components |
| | | The Kisumu National | Interdependence in School Management |
| | | Polytechnic & | Information Systems in Kenyan Schools |
| | | | |
| | 9 | Alex Nyaribo | Analysis of Mathematics and its Place in |
| | | Kisii National Polytechnic | Sustainable Development |
| | | | |
| - | 10 | Achuodho H., Prof. Pamela | Influence of Smartphone Addiction on |
| | | | Students Learning and Memory: A Case |
| | | Raburu P., Omilo C., & | 5 7 - |
| | | Raburu P., Omilo C., & Juma C. | Study of Bumbe Technical Training |
| | | Raburu P., Omilo C., & Juma C. | Study of Bumbe Technical Training |
| | 11 | Raburu P., Omilo C., & Juma C. Jackline A. Oloo | Study of Bumbe Technical Training Institute Socio-economic Characteristics of Cricket |
| | 11 | Raburu P., Omilo C., & Juma C. Jackline A. Oloo Jaramogi Oginga Odinga | Study of Bumbe Technical Training Institute Socio-economic Characteristics of Cricket farmers in the Lake Victoria Region of |
| | 11 | Raburu P., Omilo C., & Juma C. Jackline A. Oloo Jaramogi Oginga Odinga University of Science and | Study of Bumbe Technical Training Institute Socio-economic Characteristics of Cricket farmers in the Lake Victoria Region of Kenya |
| | 11 | Raburu P., Omilo C., & Juma C. Jackline A. Oloo Jaramogi Oginga Odinga University of Science and Technology | Study of Bumbe Technical Training Institute Socio-economic Characteristics of Cricket farmers in the Lake Victoria Region of Kenya |
| | 11 | Raburu P., Omilo C., & Juma C. Jackline A. Oloo Jaramogi Oginga Odinga University of Science and Technology John H. Gekonde | Study of Bumbe Technical Training Institute Socio-economic Characteristics of Cricket farmers in the Lake Victoria Region of Kenya Prospects of Adopting the Onsite |
| | 11 | Raburu P., Omilo C., & Juma C. Jackline A. Oloo Jaramogi Oginga Odinga University of Science and Technology John H. Gekonde Kisii National Polytechnic | Study of Bumbe Technical Training Institute Socio-economic Characteristics of Cricket farmers in the Lake Victoria Region of Kenya Prospects of Adopting the Onsite Classroom Training Model in Kisii National |
| | 11 | Raburu P., Omilo C., & Juma C. Jackline A. Oloo Jaramogi Oginga Odinga University of Science and Technology John H. Gekonde Kisii National Polytechnic | Study of Bumbe Technical Training Institute Socio-economic Characteristics of Cricket farmers in the Lake Victoria Region of Kenya Prospects of Adopting the Onsite Classroom Training Model in Kisii National Polytechnic: A Case of KEFEP Classes |
| | 11 | Raburu P., Omilo C., & Juma C. Jackline A. Oloo Jaramogi Oginga Odinga University of Science and Technology John H. Gekonde Kisii National Polytechnic | Study of Bumbe Technical Training Institute Socio-economic Characteristics of Cricket farmers in the Lake Victoria Region of Kenya Prospects of Adopting the Onsite Classroom Training Model in Kisii National Polytechnic: A Case of KEFEP Classes |
| | 11 | Raburu P., Omilo C., & Juma C. Jackline A. Oloo Jaramogi Oginga Odinga University of Science and Technology John H. Gekonde Kisii National Polytechnic | Study of Bumbe Technical Training Institute Socio-economic Characteristics of Cricket farmers in the Lake Victoria Region of Kenya Prospects of Adopting the Onsite Classroom Training Model in Kisii National Polytechnic: A Case of KEFEP Classes |
| | 11 | Raburu P., Omilo C., & Juma C. Jackline A. Oloo Jaramogi Oginga Odinga University of Science and Technology John H. Gekonde Kisii National Polytechnic | Study of Bumbe Technical Training Institute Socio-economic Characteristics of Cricket farmers in the Lake Victoria Region of Kenya Prospects of Adopting the Onsite Classroom Training Model in Kisii National Polytechnic: A Case of KEFEP Classes |

TRACK D; SEMINAR ROOM 307; CROSSCUTTING THEMES / VIRTUAL PRESENTATIONS

| Session chair: DR. Geoffrey Munga | | R. Geoffrey Munga | Rapporteur: Orucho Vincent |
|-----------------------------------|-------|---------------------------|---|
| TIME | S/No. | Name of Author | Title of Paper |
| 2.00pm- | 1 | Gerishom Wafula Manase | Educational Inequality during Covid -19 |
| 5.00pm | | & Judith Gahuya Akaranga; | Open and Distance |
| | | Shamberere Technical | E-Learning (ODel) in Kakamega County |
| | | Training Institute | |
| | 2 | Beatrice Nyareki | Training Challenges Faced by Trainees |
| | | Kisii Nationa Polytechnic | during COVID- 19 Pandemic Period: A |
| | | | Case Study of Kisii National Polytechnic |
| | 3 | Deborah Nyaboke Atambo | Contribution of Selected Factors to Low |
| | | Jaramogi Oginga Odinga | Boy-Child Retention in Public Day |
| | | University of Science and | Secondary Schools in Nyamira Sub |
| | | Technology | County, Kenya |
| | | | |
| | 4 | Eliud Opot Odindo | Preparedness of TVET Institutions to |
| | | The Sigalagala National | Incorporate Online Learning During Covid- |
| | | Polytechnic | 19 Pandemic: A Case of Sigalagala |
| | | | National Polytechnic |
| | 5 | Isaiah Ong'ong'a | Anti-COVID Tag |
| | | The Kisumu National | |
| | | Polytechnic | |
| | 6 | Chepn'getich Marygoretty | Consequences of the Covid-19 Pandemic |
| | | Technical University of | on Street Families in Kenya |
| | | Kenya | |
| | 7 | Peter Muchiri & John | Exploring the Impact of COVID 19 on |
| | | Musyoka | Teaching and Learning in TVET |
| | | Thika Technical Training | Institutions: A case study of Thika |
| | | Institute | Technical Training Institute |
| | 8 | Marjorie Truphosa Amunga | Leaky - Type Vaccine Model: Simple HIV- |
| | | Friends College Kaimosi | Aids Epidemic Vaccine for Kenya |

DAY TWO: WEDNESDAY, 18TH AUGUST 2021

8.00am -8.30am: Arrival & Registration

8.30am – 9.30am: Research Paper Presentations in Technical Parallel TRACKs

DAY 2: WEDNESDAY 18TH AUGUST, 2021 TRACK A: SEMINAR ROOM 304; ECONOMIC SUSTAINABILITY Session chair: Dr. Mokua Tom Rapporteur: Makori Richard TIME S/No. Name of Author Title of Paper 8 300am- 1 Judith Simivu. PhD Entrepreneurship Training and Employment 9.30am The Kitale National Practice by TVET Graduates in Western Polvtechnic Kenya 2 Jenner Akwale Utilization of Intellectual Property System in Jomo Kenyatta University Income Generating Units in Jomo Kenyatta of Agriculture and University of Agriculture and Technology, Technology Kenya 3 Atsali Joel Amunga, Effect of Deshooting on Yield of Butere Technical and Watermelons Vocational College 4 Dr. Tom Mokua Kabage Performance Management as a Tool for (PhD). Control and Productivity: An Evaluation of Kisii National Polytechnic Institutions of Higher Learning in Kenya John Chomba 5 Design and Fabrication of Maize Thresher The Nyeri National Polvtechnic 6 Kenneth Malunga ICT in Food Security: The Advancing Role of Siala Technical Training Food Management Information System Institute

TRACK B; SEMINAR ROOM 305; ENVIRONMENTAL SUSTAINABILITY

| Session chair: George Nyakoe | | orge Nyakoe | Rapporteur: Godner Bwari |
|------------------------------|-------|----------------------------|--|
| TIME | S/No. | Name of Author | Title of Paper |
| 8.30am— | 1 | Robert Magare | Optical properties of CdxNi1-xS thin films |
| 9.30am | | Coast Institute of | deposited by chemical bath deposition |
| | | Technology | |
| | 2 | Ngado Robert Otieno | Recycling Aquaculture Systems (RAS) |
| | | The Kisumu National | |
| | | Polytechnic | |
| | 3 | Mogaka M. Ronald | Effect of Partially Replacing Cement Using |
| | | Siala Technical Trainining | Sewage Sludge Ash in Concrete |
| | | Institute | |
| | 4 | Lucy Makokha & Osborne | Influence of Public Participation on |
| | | Opicho | Conservation of Water Projects in Kenya: A |
| | | Kisiwa Technical Training | Case of Koica Phase I Water Project in |
| | | Institute | Bungoma County |
| | | | |
| | 5 | Muhia Ngaruiya | Thermal Compensated Solar Water Heater |
| | | Coast Institute of | from Recycled Motor Vehicle Radiators |
| | | Technology | |
| | | | |
| | 6 | Murunga G., Phd, Opicho | The Effect of Urbanism on Conservation of |
| | | O. & Abisai T. | Forests in Kenya: Acase of Kakamega |
| | | Kisiwa Technical Training | Forest, Kakamega County |
| | | Institute | |
| | 7 | Stellah Kemunto Atuti | Use of Biotechnologies for Waste |
| | | Kisii National Polytechnic | Management, Environmental Sustainability |
| | | | and Food Security |
| | 8 | Thomas Esirenyi Mahindu, | Enhancing Environmental Awareness |
| | | Aldai Techical.Training | through Comprehensive Curricula: |
| | | Institute | Education and Training for Sustainable |
| | | | Environment. |

| Session | Session chair: M. Charles | | Rapporteur: Grace Ogeto |
|---------|---------------------------|----------------------------|--|
| TIME | S/No. | Name of Author | Title of Paper |
| 8.30am— | 1 | Onsomu Richard & Masai | Factors Influencing Access to Maternal |
| 9.30am | | Phidis. | Health Care Services Provided by |
| | | The Kitale National | Endebess Sub- County Hospital, Trans- |
| | | Polytechnic | Nzoia County, Kenya |
| | | | |
| | 2 | Rodah Sitati1 & Dr. | Free and Compulsory Education Policy: |
| | | Selpher K. Cheloti (PhD) | Effects and Implications on TVET |
| | | The Kabete National | Institutions in Kenya: Case of The Kabete |
| | | Polytechnic | National Polytechnic |
| | | | |
| | 3 | Muriuki S. & Magut D. | Retraining TVET Trainers in Kenya for |
| | | Nairobi Technical Training | Changing Global Trends and Dynamics |
| | | Institute | |
| | 4 | Nyang'or T & Ongete E | Impact of Inclusive Education on Children |
| | | The Kisumu National | with Special Needs in Kisumu County, |
| | | Polytechnic | Kenya |
| | | | |
| | | | |
| | 5 | Orucho V., Ochoi C &, | Antibiotic Resistance of Streptococcus |
| | | Nyangau M | Pneumonia Serotypes in Kisii, Kenya |
| | | Kisii National Polytechnic | |
| | | | |
| | 6 | Vinden S., PhD, Flinn C & | Strengths in Digital Teaching and Learning |
| | | Carson T. | in TVET |
| | | Vancouver Island | |
| | | University | |

TRACK C; SEMINAR ROOM 306; SOCIOCULTURAL SUSTAINABILITY

7

AwuondoWillys for the Deaf

Depression and Associated Factors among St Joseph's Nyangoma TTI Special Trainees in Special Training Institutions

TRACK D; SEMINAR ROOM 307; SOCIAL-CULTURAL SUSTAINABILITY/ VIRTUAL PRESENTATIONS

| Session c | hair: Dr . | Tinega Kurura | Rapporteur: Charles Moraro |
|-----------|-------------------|------------------------|---|
| TIME | S/No. | Name of Author | Title of Paper |
| 8.30am— | 1 | Otieno K, Odula A, | Conceptual Approach to Sustainable Urban |
| 9.30am | | Waseni L & Nyanumba A. | Development: A Case Study of Eldoret |
| | | The Eldoret National | Town |
| | | Polytechnic | |
| | 2 | Wamocho Leonard | Evaluating Local Food Consumption |
| | | Kingasha & Miriam | Behaviors in TVET Institutions, Case study |
| | | Wakasa | of The Kitale National Polytechnic, Trans- |
| | | The Kitale National | Nzoia County, Kenya |
| | | Polytechnic | |
| | 3 | Maureen Inyangala | Effect of Digital Preservation of Information |
| | | Ngaira | on Academic Libraries: A Critical Review |
| | | University of Nairobi | |
| | 4 | Judy Githaiga & Norah | Professional Development of Technical |
| | | Nyakira | Vocational Education and Training (TVET) |
| | | Kiambu Institute of | Trainers in Kenya: Status and Way Forward |
| | | Science and Technology | |

DAY 3: THURSDAY 19TH AUGUST,2021

| TRACK A: SEMINAR ROOM 304; ECONOMIC SUSTAINABILITY | | | |
|--|-------|----------------------------|--|
| Session chair: George Nyakoe | | eorge Nyakoe | Rapporteur: Peter Omwoyo |
| | | | |
| TIME | S/No. | Name of Author | Title of Paper |
| 8.30am- | 1 | Kimutai Kevine | Level of Awareness and Effect of Online |
| 9.30am | | Coast Institute of | Jobs on Joblessness among Graduates in |
| | | Technology, Kenya | Kenya |
| | | | |
| | 0 | | |
| | 2 | Nyakoe George M. | Employability of IVEI Graduates |
| | | Kisii National Polytechnic | |
| | 0 | | |
| | 3 | Marangu P., Rukari S. & | Optimizing a Trapezoidal Open Channel |
| | | Kinoti C. | Fluid Flow for Maximum Discharge |
| | | Meru National Polytechnic | |
| | | | |
| | 4 | Richard Makori | Sustainable One Metre Raised Vegetable |
| | | Kisii National Polytechnic | Garden |
| | | | |
| | | | |
| | 5 | Nyanumba S., Odula A., | Food Security in West Pokot County, Kenya: |
| | | Waseni L., & Otieno K. | The Influence of External Interventions on |
| | | The Eldoret National | Household Economy in the Semi-Arid |
| | | Polytechnic | Region |
| | | | |
| | | | |
| | | | |

DAY 3: THURSDAY 19TH AUGUST,2021

| TRACK B: SEMINAR ROOM 304; ENVIR | CONMENTAL SUSTAINABILITY |
|----------------------------------|--------------------------|
|----------------------------------|--------------------------|

| Session chair: Finley Nyanyuki | | inley Nyanyuki | Rapporteur: Alex Nyaribo |
|--------------------------------|-------|----------------------------|--|
| | | | |
| TIME | S/No. | Name of Author | Title of Paper |
| 8.30am- | 1 | Moraro Charles | Enhanced light absorption of kales and |
| 9.30am | | Kisii National Polytechnic | spinach Pigment for Dye Sensitized Solar |
| | | | Cells |
| | | | |

DAY 3: THURSDAY 19TH AUGUST,2021

| TRACK C: SEMINAR ROOM 306; SOCIOCULTURAL SUSTAINABILITY | | | | |
|---|-------|------------------------|---|--|
| Session chair: Dr. Mokua Kabage | | Dr. Mokua Kabage | Rapporteur: Okong'o Dismass | |
| TIME | S/No. | Name of Author | Title of Paper | |
| | 1 | Onyango Nicholas | Forging Strategic Cross Border Partnerships | |
| | | The Kisumu National | between TVET Stakeholders for Sustainable | |
| | | Polytechnic | Regional Economic Development | |
| | | | | |
| | 2 | Tom M. Oswago | Effect of Work Environment in Technical and | |
| | | The Kitale National | Vocational Institutions on Employee | |
| | | Polytechnic | Productivity: Case of Kitale National | |
| | | | Polytechnic | |
| | | | | |
| | 3 | Protus A. Lumiti Susan | Relationship between Employee Practices | |
| | | Wekesa, Mary Omondi | and Performance of Non-Governmental | |
| | | JKUAT | Organizations in Kenya | |

DAY 3: THURSDAY 19TH AUGUST,2021

| TRACK D: SEMINAR ROOM 307; CROSSCUTTING SUSTAINABILITY | | | |
|--|-------|----------------------------|--|
| Session chair: Grace Ogeto | | race Ogeto | Rapporteur: Moracha Rosemary |
| TIME | S/No. | Name of Author | Title of Paper |
| 8.30am- | | | |
| 9.30am | 1 | Mary Koigi | Upgrading Textile Training for Job Creation |
| | | Kisii National Polytechnic | and Sustainable Development: A Tracer |
| | | | Study of Clothing and Textile Graduates of |
| | | | Kisii National Polytechnic |
| | 2 | Samwel Muriuki & Magut | A Review of the Fourth Industrial Revolution |
| | | Dominic | (4IR) and its Implication on the World of |
| | | Nairobi Technical Training | Work and Skills Acquisition |
| | | Institute | |

Abstracts

Economic Sustainability

Economic Sustainability

ECS-1

Modeling of Mechanical Vibrations of Shock Absorbers with Application to their Performance in Automobiles Shocks

Tinega A. Kurura, Phd kururaa@gmail.com Kisii National Polytechnic

ABSTRACT

Vibration is essentially an oscillatory motion. There is a force that initiates the vibratory motion. The research involves improving the shock absorber by using variable external disturbance force, spring and damper to come up with variable shock absorber model which adjusts depending on the shock. Using Matlab software, a response of the system to a harmonic disturbance of variable automotive weight and to an impulse excitation is found. The objective of the study is to determine the effects of both the distribution of spring-supported automotive weights and the shock absorber thickness on vibrations of the mounting points of the shock absorber. The equation governing vibratory motion of shock absorber is solved using Finite difference method with a central difference scheme. The effects of both the distribution of spring-supported automotive weights and the shock absorber thickness on vibration are discussed and presented graphically. Four default various values of automotives weights and thickness are used in the study. The other variables in the governing equation are held constant while varying automotives weights and shock absorber thickness studied. The findings are that, an increase in automotives weights leads to an increase in the impulse excitation of the shock absorber. It is also found that an increase shock absorber thickness leads to a decrease in vibrations. The study provides insights knowledge that is important in elimination of vibrations in automotives in order to improve both the comfort and the safety of the passengers. For the shock absorber to absorb the varying shock effectively, we recommend that the automotive owner and manufacturing industries to maintain the required automotive weights by avoiding overloading to reduces the stiffness of the shock absorber and also make thicker shock absorber spring by using wire of varying coil diameter.

Key Words: Finite Difference Method, Central Difference Scheme, Vibration Damping, Automotives Weights, Shock absorber Thickness

ECS-2 Adoption of Solar Energy and Diffusion of New Solar Technology Products for Domestic and Commercial Use in Kenya

Shivambo Amos Sigalagala National Polytechnic amosshivambo@gmail.com

ABSTRACT

Energy conservation refers to processes and efforts that are put in by the governments and people to reduce the rate of energy consumption in working environments. Energy sustainability includes strategies that can enhance100% energy conservation, through adoption, diffusion and implementation of renewable energy conservation technologies. This paper focuses on effective strategies that can help Kenya achieve high energy efficiency index. To achieve these, the research proposes the need for Kenyan commercial sectors and households to adopt efficient technologies that conserve the energy. The paper suggests adoption of such technologies and highlights efficient methodology that can help the country conserve energy in industries or homes and any other places of domestic and commercial use. I propose full deployment and implementation of solar photovoltaic systems for heating, communication and lighting can contribute to achieving energy sustainability objectives. This research paper therefore, intents to describe energy efficiency, and explains why solar energy is better than the use of other forms of energy. It also gives a recommendation on the adoption and diffusion of new solar energy technologies that can be used to achieve such energy efficiencies in the near future. In my study I have adopted optical modeling methodology, an exhaustive and fast numerical simulation of renewable energy technologies. This research methodology is adopted so as to exclude all unfavorable parameter combinations for the experimental energy conservation technologies to be adopted and also help in guiding my search for new techniques and materials. Using this methodology, I dive into the need for Kenya to conserve its energy through adoption of solar technologies such as: Advanced window controls, Next-gen insulation, reflective roofing technology, high-tech thermostats technology, wireless outlet controls technology, electricity use monitor technology, and solar panel technology. We argue that although there may be barriers that can overcome its adoption of solar energy, there is high need to incorporate completely and balance the generation of electricity intermittent character based on diffusion of solar technologies.

Key words: Energy, Renewable Energy, Conservation, Solar

Evaluation of Intra-Row Spacing and Treilis on the Yield Potential of Indian Spinach (Basella Alba L) in Western Kenya

Bwabi Masombo bwabimasombo@gmail.com Kitale National Polytechnic

ABSTRACT

Indian spinach is a highly nutritious indigenous leafy vegetable besides medicinal benefits as compared to other leafy vegetables. Locally known as 'Enderema' in Luhya has the potential to alleviate malnutrition among communities in Western Kenya. Production is limited due to competition for land area with other crops, lack of skills in value addition, unavailability of seed and inappropriate husbandry practices. In order to promote production, an experiment was conducted to evaluate treilis and spacing effect on yield. Three types of treilis and spacing were evaluated. A one season experiment was laid in a Randomized Completely Block Design (RCBD) with three replicates in two sites in Busia and Bungoma counties. All plots were applied with Farm yard manure and Mavuno planting fertilizer (N P K Cao Mg S) after soil analysis. Data was collected and subjected to analysis of variance at (P < 0.05) using SAS Mixed linear model version 2012. The parameters measured included Plant height, Number of leaves, Number of branches at 60, 74 and 88 Days after Transplanting (DAT) and Vine diameter and Dry matter at 88 DAT respectively. Analysis of variance indicate that (treatment 8) combination of treilis and spacing of 20 cm by 30 cm at 88 DAT gave the highest yield. From the present study a recommendation on spacing of 20 cm by 30 cm with Treilis was made. It is also recommended that a long term experiment on the same is conducted to ascertain the best combination and optimum DAT for dry matter accumulation.

Key words: DAT, Dry Matter, RCBD, SAS, Spacing, Trellis

Entrepreneurial Hub Centres in TVET Institutions: The Need for Entrepreneurship Education in TVET Institutions to Spur Economic Empowerment of the Youth

Cynthia Chepkoech Koech cynthiacerl.koech@gmail.com Coast Institute of Technology

ABSTRACT

The study sought to develop a framework for capacitation of actual involvement of Technical Vocational Education and Training (TVET) students in entrepreneurial activities before, during, or immediately after graduation. Studies reveal that TVET students, after graduation from their institutions, do not have adequate knowledge and capital to set up and run successful businesses. Usually, TVET institutions in Kenya do not offer good mentorship, training, or experience in entrepreneurship to their students during their studies, creating a group of fresh graduates without any entrepreneurial skills. The study investigates the consequences of introducing entrepreneurial hub programs to impart entrepreneurship skills to TVET students before and after graduation, with successful participants being eligible for grants to start and run their businesses. In this study, a pilot program got to run at the Coast Institute of Technology (CIT), where forty students and ten trainers got involved in an entrepreneurial skills development program. The study involved both theory and practicum sessions. Participants got educated on relevant business skills and then got a budget to set up and maintain a business for a given period. Out of the forty students, 25 got entrepreneurship training, and financial support, while the other 15 did not get training nor financial support. They were required to acquire financial knowledge on their own. After the study, all the participants with entrepreneurship training exhibited a more significant interest in entrepreneurship, displaying impressive business skills. The participants set up sustainable businesses, kept them running, and recorded profits during the test period. The participants without training did not all exhibit entrepreneurial expertise. Without sufficient financial support, all business ideas and plans collapsed, usually within the first few weeks. Consequently, the study concludes that entrepreneurship training is necessary for all TVET institutions, as it prepares students for entrepreneurial life after school.

Key words: Entrepreneurship Education, TVET, Gender Equality, Entrepreneurship Hub Centers

Application of Chain Ladder Method for X- Insurance in Kenya

Ezra Mugeni Otibine ezra.mugeni@yahoo.com The Sigalagala National Polytechnic

ABSTRACT

In this paper the x-insurance means any line of business that a given insurance company can undertake. In this paper, firstly, the history of chain ladder method which is one of the reserving methods is mentioned. Then, the concepts used in claims reserving are described. Finally, chain ladder method is studied and the reserves for the outstanding claims are estimated with respect to the hypothetical data of claim payments which are taken from x-insurance. In summary other methods like inflation adjusted chain ladder method and loss ratio method are mentioned in the paper.In addition other methods are described in summary like Separation technique, Average

Cost per claim method, the loss ratio and Bornheutter-Ferguson method, Operational time model and the bootstrap method. In application, firstly, the produced premium amounts for x-insurance between 2011to 2018 are investigated according to the hypothetical data obtained. Then a reserving method which is calculable easier is developed with respect to the figure of claim payments in 2011 and 2012 against to the chain ladder method to estimate reserve for outstanding claims. Finally, the estimates obtained from both chain ladder method and the developed method are compared with the actual values published for example in the insurance regulatory authority website.

Key words: Reserving methods, Chain Ladder method, Outstanding claim, Reserve and Run- Off Triangles

Contribution of TVET Institutions in the Creation of Job Opportunities in Kenya: A survey of Kisii National Polytechnic

Finlay N. Nyanyuki nyafiki@mail.com Kisii National Polytechnic

ABSTRACT

In the recent years, there has been an upsurge in youth unemployment in Kenya. Despite Technical and Vocational Education and Training (TVET) institutions' endeavor to offer skill-oriented courses to their trainees, the youth unemployment problem still remains a big challenge. This study sought to determine: (i) the extent to which TVET institutions provide relevant practical skills to trainees and (ii) whether there exists a relationship between the practical skills attained and the innovative capability of the trainees. The study adopted a survey design targeting 250 third year diploma students taking practical oriented courses and their respective 50 lecturers in Kisii National Polytechnic. Stratified technique was used to draw respondents into the sample. A questionnaire on a four-item likert scale was administered to the respondents. Data was analyzed using percentages and Karlpearson's coefficient of correlation. Results were presented using tables and graphs. The findings revealed that to some extent, TVET institutions provided relevant practical skills to trainees. However, there was a mismatch between the practical skills attained and the innovative capability of the trainees. Trainees were able to demonstrate the practical skills learnt but were not innovative enough to apply such skills in creation of employment opportunities. In conclusion, TVET institutions in Kenya have not been fully utilized in the creation of job opportunities in as much as they are offering relevant practical skills to trainees. The study recommends that stakeholders should initiate and run revenue generating programs in TVET institutions to enable trainees gain adequate experience for smooth school-to-work transmissions. It further recommends for the government to channel more funds through TVET institutions to promote job creation among the youths. The study recommends the policy makers to use these findings as a basis for the alignment of the TVET curriculum towards competency-based curriculum in order to meet the employers' needs.

Key Words: Practical Skills, TVET institutions, TVET curriculum, Competency Based Curriculum, Youth Unemployment

Improvised Mpesa Filing Station as an Inovation for Revenue Collection in Kenya

George W. Wamalwa & Lucy Makokha lucymakokhan@gmail.com Kisiwa Technical Training Institute

ABSTRACT

The purpose of this study was to come up with an innovative way of an M-pesa filling station to boost revenue collection in Kenya. This innovation was guided by the following objectives; to increase government income collection from tax and stamp duty, to increase voluntary compliance to tax payers, to promote an efficient, effective and modern tax system which is in line with international best practices; to enhance tax administrations' professionalism and efficiency through human resource development and information communication technology, to help create business and investment friendly environment through efficient and competitive tax environment and lastly to enhance treaty network on avoidance of Double Taxation Agreement(DTA), Bilateral Investment Treaty(BIT) and Tax Information Exchange Agreement(TIEA). The innovation was fabricated from microcontrollers, global system mobilization and the mobile phone. The target group was the buyer, the government tax agent and the seller. The system is operated by the lighting point where upon payment of the fuel amount, the system first deducts the government tax amount, the seller's amount before the pump serves the client. Upon receiving the amount sent, the system activates automatically to control the fuel pump using the microcontroller to delay the time. The innovation has shown its ability to enhance tax collection from clients fuelling from filling station. The study recommends that the government to adopt the improvised MPESA filling station to maximize on its' tax collection.

Key Words: Improvised, Mpesa, Filling Station; Innovation: Revenue Collection
Analysis of Factors Influencing the Financial Performance of Savings and Credit Co-Operatives in the Banking Sector in Kenya

Hannah Kiaritha, Phd hanakiaritha@gmail.com Kabete National Polytechnic

ABSTRACT

Co-operatives in Kenya are important players in the social economic development. They provide an important framework for mobilization of savings. Co-operatives contribute immensely to the well-being of its members and to the country at large. In Kenya, fifty one percent of all registered SACCOs are non-operational; however, all SACCOs in the banking sector in Kenya are operational despite the many employment perks given to staff. This study sought to establish the influence of competition from commercial banks, internal politics, operation costs, saving culture and investment policies on the financial performance of SACCOs in the banking sector in Kenya. This study adopted a descriptive and quantitative research design. The target population was Co-operatives in the banking sector in Kenya. Stratified sampling and simple random sampling was used to obtain the sample items. A Likert scale questionnaire was used to gather primary information and a secondary data collection used in gathering secondary information regarding sheet was Co-operatives' performance. Information was sorted, coded and input into the statistical package for social sciences (SPSS) for production of tables, descriptive statistics and inferential statistics. The results indicated that there was a positive relationship between financial performance and competition from commercial banks, internal politics, operating costs, saving culture and investment policy of SACCOs in the banking sector in Kenya. The study concluded that all the variables under study are statistically significant in explaining the financial performance of SACCOs in the banking sector in Kenya. The study recommends that SACCOs should manage the operating costs, competition, and internal politics; promote a saving culture and also have a sound invest policy to enhance their financial performance. Other studies could be carried out using other factors to establish their effect on the financial performance of SACCOs in the banking sector.

Key Words: Financial performance, SACCOs, Saving Culture, Operating Costs, Investment Policy

Strategies for Reducing Youth Unemployment in Kenya

Beryl Ashiali Helidah ashialiheldah@gmail.com

ABSTRACT

The youth who form a critical mass of the Kenya population are unemployed. Efforts have been made to alleviate the problem of youth unemployment in Kenya. However, these strategies and efforts have come under intense scrutiny in the recent years with the ever rising unemployment rates. This study is set to critically examine the existing strategies and efforts to alleviate unemployment among the urban youth with the view of making recommendations on how best the strategies can be implemented. The study also aimed to suggest other viable strategies to help reduce unemployment problem. The study was divided into various distinct sections. A situational analysis was carried out to provide an in-depth understanding of the research problem. The base data collected was analyzed to help in the formation of the research problem. During the research proper, the study population was segmented into strata to represent the various sub-groups in the population. A sample for the study was randomly drawn from the study population. Data was collected through the use of focus groups discussion and interviews from the research findings, it is clear that the problem of unemployment and especially among the urban youth has grown to greater proportions. The existing strategies have not been effective enough to combat youth unemployment. The policy deficiencies are aggravated by the general lack of skills and job apathy among the youths, and the general decline in the national economic growth. The study recommends ways through which the existing strategies and specifically the national youth policy and the poverty eradication plan, car be enhanced and be effectively implemented to create adequate need for concerted and deliberate efforts to encourage investment activities as this will expand the economy and trickle effects would result in job creation. The education system should be re-oriented to make it relevant to the job market needs. The emphasis should be on skills acquisitions and not merely to pass exams. The charges should be made at all levels of education.

Key Words: Unemployment, Youth, Population, Skills, Job Apathy

Diversification Strategies and the Financial Performance of Bamburi Cement Limited

Herman Munyare & Hannah Kiaritha, PhD munyareherman@gmail.com Kabete National Polytechnic, Kenya

ABSTRACT

The need for the improved financial performance and continuous survival of cement manufacturing firms has caused firms to diversify into other business lines. The main objective of this study was to establish whether diversification strategies have any influence on the financial performance of Cement manufacturing industry and specifically Bamburi cement limited. Diversification strategies in Kenya are being increasingly used by distressed firms like Cement manufacturing firms for improving competitiveness of companies through gaining greater market share, broadening the portfolio to reduce business risk and for strategic positioning. The study adopted a descriptive survey design. The target population of the study was employees in the senior management level of Bamburi cement limited this is because they are deemed to be more linked with the immediate operations of the diversification strategies in the company. The sampling frame of this study was derived from the database of the ministry of industrialization and enterprise development and Nairobi securities exchange reports. Purposive sampling was used in selecting the respondents from their respective cement manufacturing firms'. A Likert scale questionnaire was used to gather primary information while a secondary data collection sheet was used for collecting secondary information regarding firm performance. Information was sorted, coded and input into the statistical package for social sciences (SPSS) version 23.0 for production of graphs, tables, descriptive statistics and inferential statistics. The study found that diversification strategy was positively related to financial performance of Bamburi cement. The correlation of 45.6 was found to be moderate between diversification strategy and financial performance of Bamburi cement. The study recommends that Bamburi cement firm should offset the risk of doing business. Through expanding, a firm is not dependent on a limited number of products, locations, or markets in order to survive. A company may pursue this diversification in reaction to a change in the market.

Key Words: Diversification Strategies, Financial Performance, Bamburi Cement

The Role of Information Communication Technology on the Performance of Commercial Banks in Kenya: A Case of Commercial Banks in Migori County Rongo Sub-County

Isaac Muya Ngandu muyangandu@gmail.com

ABSTRACT

Commercial Banks is one of the achievements as a country we are proud of, but this pride has changed to a worry for every time a person thinks on all the processes and the quieng to encounter any time you went there. This problem had been due to poor performance of the employees who lack skills on Technology and innovation. The objectives of this study are; to determine the role Information Technology in transfer of cash, to determine the role of Information Technology in creation of new market opportunities and to determine the role of Information Technology in 24hr-ebanking. The research questions of the study are; what is the role of Information Communication Technology in transfer of cash? What is the role of Information Communication Technology in creation of new markets? What is the role of Information Communication Technology in the 24hr-ebanking system? The research design of the study was case study design and it targeted a total of 32 employees of Kenya Commercial Bank and Cooperative Bank Rongo town. The study used convenient and census sampling procedures. The data collection sources were secondary and primary sources and the data collection instruments was closed ended like scale questionnaires. Data was analyzed by the use of descriptive data analysis technique. The response rate was 79%, most of the respondents affirmed that Information and Communication Technology is greatly helpful in; transfer of cash, creation of new market opportunities and ensuring a 24hr-ebanking system. From the findings of the study, the findings of the study recommend that commercial banks should highly incorporate Information Communication Technology in their operations so as to increase on their performance.

Key Words: Technology, skills, innovation, commercial bank, employees

Analysis of Factors Influencing Job Satisfaction for Employees of Kisii National Polytechnic

Janet Mokaya, janetmoraa2009@gmail.com Kisii National Polytechnic

ABSTRACT

Organizations try to ensure that employees are satisfied at the work place. High level of job satisfaction among employees is associated with increased employee performance and high levels of work output and achievement of the goals of the organization. This study purposed to evaluate the factors influencing job satisfaction for employees of Kisii National Polytechnic and was guided by three objectives; to determine the effect of job security on job satisfaction for employees of KNP; to establish the role of reward and recognition on job satisfaction for the employees and to determine the role of career progression on job satisfaction for these employees. The study used a descriptive survey design and used stratified random sampling to sample as respondents 37 out of the 108 non-teaching employees of Kisii National Polytechnic. A questionnaire was used to collect data. Findings reveal that all three variables investigated have an effect on job satisfaction and therefore play a role in influencing job satisfaction for employees of KNP. The correlation indices between Job security, Career Progression and Reward and Recognition respectively on Job Satisfaction are 0.420, 0.409 and 0.494 implying a positive moderate correlation. The study findings are expected to inform the management of Kisii National Polytechnic on measures to take to ensure job satisfaction for employees. This will help enhance employ retention and reduce costs of recruiting, selecting and training new employees. The findings will also help the management to ensure improved employee performance.

Key Words: Job Satisfaction, Job Security, Reward and Recognition, Career Progression

ECS-13 Utilization of Intellectual Property System in Income Generating Units in Jomo Kenyatta University of Agriculture and Technology, Kenya

Jenner Akwale jenner.akwale@jkuat.ac.ke Jomo Kenyatta University of Agriculture and Technology

ABSTRACT

Technological development and innovation in universities have been recognized for the key role they play in a country's economy. Intellectual property System (IPS) such as patents, copyrights and trademark have in the recent decade increasingly caught attention across the globe. Universities in Kenya are expected to innovate, utilize IPS and spin-out inventions through Income generating Units (IGUs) so as to diversify revenue. This study purposed to contribute to the growing field of IPS, and the first objective was to explore the identifiable IPS in the IGUs at Jomo Kenyatta University of Agriculture and Technology (JKUAT). The second objective was to investigate the institutional infrastructure supporting IPS at IGUs in JKUAT and the third aim was to find out the adoption level of IPS in IGUs at JKUAT. These objectives were addressed in conceptual and empirical nature based on questionnaires, IP statistics, interview and JKUAT policies. In connection to the objectives, the study found out that IGUs in JKUAT have low level of IP awareness, poor institutional infrastructure and low level of adoption of IP contribution to further loss of revenue for JKUAT. Most of the IGUs were found to have low level of IP awareness which affected the level of adoption of the IPS. The main reasons emerging from the study for this low level of IP awareness are insufficient institutional infrastructure and lack of a customized strategy in protection, generation and commercialization of IP. The IGU and IP policies in JKUAT were found not to be synchronous hence leading to low level of IP adoption. Universities should not just view the IGUs as a revenue stream but primarily as a mechanism put forward to enhance utilization for IPS for societal benefits. Accordingly, there needs to be greater emphasis on sensitizing staff on the significance of the IPS, communicating the IP policy to staff and clients, setting up IP institutional infrastructure in the form of functional TTOs, and having a customized IP strategy suitable for all IGUs.

Key Words: Intellectual Property System, Income Generating Units, Research, Innovation

Effect of Deshooting on Yield of Watermelons

Atsali Joel Amunga, atsali20@gmail.com Butere Technical and Vocational College

ABSTRACT

Watermelon (citrusllus lanatus) is a vital vegetable crop consumed locally and worldwide for its fleshy fruit. Despite its worldwide demand, the fruit is facing a lot of constraints in its production which negatively affects both the consumers and the farmers. The major challenge in melon farming is the production of more male flowers than female flowers with a current ratio of 7.1. This study aimed to evaluate the influence of deshooting of the axillary bud on female flower production. The experienced was carried in a greenhouse conditions at Butere Technical and Vocational College. Kakamega County, In Kenya. The experimental design was a randomized complete design (RCD) with watermelon plants with deshooting of the bud and others without deshooting to act as the control and replicated four times. The experiment was carried out for four months. Data collected during the experimental period included sex ratio, number of fruits biomass, fruit weight, and yield. Analysis of variance (ANOVA) was performed using SAS statistical software, and mean separation was done using Tukey's LSD at a 0.5% level of significance. The findings of the study showed that deshooting was effective in increasing the number of fruits by 70%. The results revealed the deshooting of axillary bud as an effective agronomic practice to increase female flowers in watermelons. Therefore, this can be recommended for growers as a strategy to increase yield and more returns.

Key Words: Watermelon, Flower Production, Deshooting, Axillary Bud, Green House.

Design and Fabrication of Maize Thresher

John Chomba john4chomba@gmail.com

ABSTRACT

Design and the development of maize threshing machine is the focus of this paper. Maize threshing machine was designed based on engineering design approach with the aid of software (CAD) and values, and was later fabricated at Nyeri National Polytechnic Workshop using suitable materials, considering the material properties such as Hardness, ease of machining, tensile strength, availability, durability and the cost. The machine is electrically operated by an electric motor with power rating of 3.5 kW, speed of 2800 rpm and torgue of 14.92 Nm. Kernel losses and damages were found to be very negligible. It threshes 75 times as fast as hand threshing. The design presented in this paper is aided with computer software (AutoCAD) to give the accurate and precise results. Maize shelling machine was developed to separate the cob from the grains and grid the maize cobs with appropriate engineering design factors. The efficiency of the machine is benchmarked against the commercially available maize shelling machines. It has an average threshing capacity of 450 kg/hr, its shelling efficiency is 93 % and breakage is very insignificant, as well as losses. The machine can help to substantially reduce the human labour and stress involved in shelling maize and also reducing the time used for shelling and gridding operation on farms. There is no doubt that the machine will ease the long-term problem of maize shelling especially for the rural farmers.

Key Words: Designing, Material Properties, Machine, Maize Shelling

Entrepreneurship Training and Employment Practice by TVET Graduates in Western Kenya

Judith Simiyu, PhD judisimiyu@gmail.com The Kitale National Polytechnic

ABSTRACT

Entrepreneurship is one of the most popular courses taught in many institutions across the world. The subject has the ability to enhance new business venture creation by TVET graduates. There is a linkage between entrepreneurship training and employment practice among TVET graduates which can contribute to socio-economic development. The aim of the study was to establish the extent to which TVET graduates in Western Kenya secure employment or engage in business ventures after acquiring the skill. The main objective of the study was to find out how entrepreneurship training contributes to employment practice among TVET graduates in Western Kenya. The study was guided by Planned Behaviour Theory. The theory was ideal for understanding how graduates can use the knowledge attained in entrepreneurship training to start new business ventures. The study employed a descriptive qualitative case design. Data collection was conducted through interview guides. Validity and reliability were tested by experts and Cronbach's alpha. Data analysis was done by use of narration. Interviews with sampled respondents reveal that entrepreneurship course is relevant in providing the necessary skills needed to start business ventures among graduates. The findings reveal that entrepreneurship training contributes immensely to employment practice among TVET graduates in Western Kenya. The findings are hoped to benefit stakeholders in TVET Institutions in Kenya such as students and policy makers in relevant institutions. It is recommended that entrepreneurship curriculum should be amended in order to address the current needs of TVET graduates for socio economic development.

Key Words: Employment Practice, Entrepreneurship Training and TVET Institutions

ICT in Food Security: The Advancing Role of Food Management Information System

Kenneth Malunga malungaon@gmail.com Siala Technical Training Institute

ABSTRACT

Food wastage is one of the major issues that need to draw the attention of society as this issue requires proper planning and steps to manage its consequences. This study offers analyses and system architecture for a solution that would provide for the implementation of a proper food management system based on four approaches: food selection, preparation, presentation and preservation. In a world where millions of people suffer from a shortage of food or cannot tell if they will be able to feed themselves the next day or at the end of the day, a proper food management system should be in place. Reducing food waste is a key sustainability challenge for the food service industry. The study is presented in the context of analysis of an application of the API standard for gathering and accumulation of agricultural produce data, which allows the forming of open system architecture. The tasks and reciprocity of principal components of the system (food selection, preparation, presentation and preservation) is reviewed in the context of application. The solution is tested in practice in the work process of a restaurant system of a learning institution where consumers are many. The findings prove the reciprocity of food management systems in areas that share similar models such like occasional gatherings that require food to be served during the gathering. The main aim of this system analysis is to provide for an extensive spectrum of efficient methods and tools for food management. The system is an implementation of a wide range of waste management initiatives in the food sector. The concept discussed here could help practitioners to become more aware of the factors that drive the adoption of food waste innovations.

> Key Words: Food management, Food Wastage, Information System, Sustainability

Level of Awareness and Effect of Online Jobs on Joblessness among Graduates in Kenya

Kimutai Kevine kevinekimutai@gmail.com Coast Institute of Technology, Kenya

ABSTRACT

The study sought to understand the level of awareness, and impact, of online jobs on joblessness among the graduates in Kenya. The objectives of this study were to identify the online jobs Kenyan youth are doing during Covid-19 Pandemic and to identify the challenges Kenyans involved in digital jobs face. The study also sought to identify and recommend ways in which the government and policymakers in the education sector can support online work to encourage more tech-savvy Kenyans to adopt these types of jobs and reduce the rate of unemployment in the process. A two-phased data collection process was used to gather study data. In the first phase, 50 questionnaires with open-ended questions were distributed to students at the Coastal Institute of Technology. The responses obtained from the questionnaires were used to develop pre-formulated questions for semi-structured interviews involving 10 participants purposively sampled for the study. The 10 interviewees were all involved in online work in some way. The results revealed that many tertiary-level educated young people in Kenya are aware about online jobs. Academic writing, article writing, and blogging were the online jobs known to most of the respondents in this study. Low internet speeds, unreliable electricity supplies, poor information technology skills and lack of training and/or mentorship in online work were identified as the main challenges deterring many young people from enrolling in online jobs. The study recommends for more support from the government and education policymakers including introduction of IT training at all levels of education, lowering internet costs, increasing internet connectivity and speeds, and facilitating easy and safe transferability of money from international payment gateways like PayPal to Mpesa will increase the uptake of online jobs, thereby reducing joblessness in Kenya.

Key Words: Covid-19, Joblessness, Kenyan Youth, Gig Economy, Digital Jobs

Upgrading Textile Training for Job Creation and Sustainable Development: A Tracer Study of Clothing and Textile Graduates of Kisii National Polytechnic

Mary Koigi koigimary@yahoo.com Kisii National Polytechnic

ABSTRACT

The clothing technology training plays an important role to enhance the growth of textile industries. A key concern for the trainers and the employers is whether the skills imparted meet the industry needs. To ensure quality education in apparel training innovative approaches between trainees, trainers and industry should be embraced. The main goal of this study was to review if the skills offered meet the industry needs and whether it leads to gainful employment. The study adopted a descriptive study that employed both qualitative and quantitative methods. The data was collected from 4 textile industries, 2 uniforms shops, 10 local tailors, 4 clothing technology trainers and 80 former Kisii National Polytechnic clothing technology graduates. The data was collected using questionnaires, interviews through telephone and visits to the industries. Majority of the graduate trainees confirmed the skills they had acquired could not match the skills required in the industries nor for selfemployment. 70% of the trainees opted to train as technical teachers or instructors since they could not access jobs in the textile industry. 11% in self- employment and 19% are jobless. The industry questioned the quality of training and stated there is need for the curriculum developers to develop a course with industry in mind. The study concluded that there exists a gap between the training and the textile industry, thus the graduates are not fulfilling their expectations. The study recommends that, the tertiary institutions need to upgrade the training by finding out the industries and self- employment needs, embrace apprenticeship and collaborate with industries.

Key Words: Textile Industry, Graduate Trainees, Self- Employment

A Review of the Fourth Industrial Revolution (4IR) and its Implication on the World of Work and Skills Acquisition

Samwel Muriuki and Magut Dominic samsallyseven@gmail.com Nairobi Technical Training Institute

ABSTRACT

The world is experiencing a new Industrial Revolution building on the evolution of the digital revolution (the Third Industrial Revolution). The new Industrial Revolution is the fourth Industrial Revolution (4IR). This Fourth Industrial Revolution with its rapid growth is characterized by a blend of technologies that blurs the lines between the digital, physical and biological realms and that disrupts the way things have always been done in the past. It is moving at an exponential pace, witnessing the emergence of innovative technological trends such as artificial intelligence, the Internet of Things, robotics, blockchain technology, 3D printing, nanotechnology, and others with applications as diverse as the technologies themselves. A wide range of new breakthroughs in the digital (Artificial Intelligence), in the physical (new materials) and in the biological realms (bioengineering) are powering this fourth Industrial revolution. The fourth industrial revolution is developing at an extremely fast pace and is forcing organizations in all sectors to re-examine the way they transact business. It is systemic, and is, and will greatly affect processes in the business sector, governments as well as the society as a whole. It marks a significant shift in the way work is carried out and products produced. It is transforming the labor market, leading to demand in new professional skills and competencies and the digitalizing of jobs done traditionally by the workforce. This revolution will require will require workers and trainees to possess relevant skills which can be useful in this new dispensation. This paper explores the emergence of the fourth industrial revolution and its implications on the world of work and acquisition of skills.

Key Words: Technology, Industrial Revolution, Skills, Work, Digital

Forging Strategic Cross Border Partnerships between TVET Stakeholders for Sustainable Regional Economic Development

Onyango Nicholas nic.onyi@yahoo.com The Kisumu National Polytechnic

ABSTRACT

An economic study of the Asian tigers, presents a success story, an impressive transformation from a fragile agricultural economy to a magnificent and robust industrialized economy. The big secrete behind this success story can be traced to their labour market. A further audit of the structure of this labour force unveils an army of workers, well-trained and fully equipped with practical skills as dictated by their real industrial needs. These countries massively invested on TVET / TVET training curriculum closely connected to production and business labour use and they are currently reaping full benefits. Whereas the Asian experience has created a working model, many African nations have attempted to replicate the same with little or no success. Castro & Alfthan (2000) observed that the adaptation of TVET by different countries cannot follow a single blue-print and this is due to the different roles and styles of operation, cultures and economic circumstances under different social requirements. African countries must therefore establish their own unique 'Partnerships' so as to fully enjoy the relevance of TVET both for the employers and job seekers. In the context of TVET the term partnership can be best defined as the co-ordination mechanisms, linkages, bridges as well as co-operation between the TVET training providers and the stakeholders such industries, businesses, NGOs, community groups, or private providers The purpose of this paper was therefore to investigate the factors influencing strategic partnerships and actions need to be taken to forge, promote, stimulate and sustain those partnerships between TVET providers and Industry for sustainable economic development of the local economy.

Key Words: TVET, Co-ordination Mechanisms, Partnerships, Stakeholders, Industries, Strategies

Employability of TVET graduates in Kenya

Nyakoe George M. eduspect@gmail.com Kisii National Polytechnic

ABSTRACT

The level of unemployment of youth globally is on a worrying trend with the rate of absorption of youth into the labour market far below the rate of graduating them from institutions of learning. In Kenya, efforts to curb unemployment levels among the youth are yet to bear significant results. This study assessed the employability of TVET graduates in Kenya with a view of establishing how fast the graduates find employment and to what extent the employment is in line with the training and skills received. The study used survey design for the 2017 graduating cohorts of 12 public TVET institutions. The study population was 4856 trainees and Fisher's sampling formula was used to come up with a sample size of 356 which was proportionally distributed across the selected institutions and courses. The study found out that uptake of the graduates into the job market differed according to the course with plumbing and masonry graduates being the fastest to get employment at 66% and 62% respectively in the first three years after graduation whereas business management graduates came out as the slowest to get employment with only 12% having got employed in the three years since 2017. The study also found out that 16% of the graduates are in employment that is not in line with their training and skills. This study concludes that the absorption of TVET graduates into the labour market is low and measures need to be taken to ensure increased employment of the graduates. The study recommends that TVET trainees be trained the basics of job searching. It also recommends removal from the TVET curriculum of a number of courses which are no longer needed in the job market.

Key Words: Youth Employment, Labour Market, TVET Trainees

Optimizing a Trapezoidal Open Channel Fluid Flow for Maximum Discharge

Marangu P., Rukari S. & Kinoti C. philipkarobia@yahoo.com Meru National Polytechnic

ABSTRACT

The suitability of a trapezoidal channel with a segment base in drainage design system is being investigated. Water if not properly drained can create destruction. This is caused by poor drainage in the existing road network systems. This affects severely economic development of our country. Thus, the provision for adequate drainage is of paramount importance in road design and cannot be over emphasized. Our study has investigated the optimum trapezoidal open channel fluid flow with a view of maximizing discharge. In this paper, we have used analytical methods to solve the equations to determine the optimum trapezoidal channel design that maximize discharge for steady uniform flow. The results of the study show that the maximum discharge is achieved when hydraulic radius is half the level of the free surface of the fluid from the channel bed, (y/2). Further, the results show that the wetted perimeter is minimum and area is maximum at the optimal discharge.

Key Words: Discharge, Top width, Area, Wetted Perimeter, Hydraulic Radius, Chezy's Equation, optimization and open channel.

Performance Management as a Tool for Control and Productivity: An Evaluation of Institutions of Higher Learning in Kenya

Dr. Tom Mokua Kabage (PhD), kabageto@gmail.com, Kisii National Polytechnic

ABSTRACT

Performance management is a very important tool for control and productivity in organizations. For meaningful and sustainable productivity to be witnessed, organizations need to have robust systems of managing their performance. Productivity and performance in institutions of higher learning in Kenya has been in guestion and a concern to many for some time now. This study therefore sought to find out how institutions of higher learning in Kenva manage their performance and productivity in the face of the ever-evolving field of performance management in the context of this rapidly changing world. The following objectives guided this study: 1) To find out the extent to which these institutions embrace the modern tenets of performance management. 2) To find out the relationship between performance management systems in these institutions and productivity. 3) To establish the challenges facing performance management systems in these institutions and what can be done to mitigate their negative effects. Descriptive survey research design was used to interrogate performance management systems. The study was done in 6 public institutions of higher learning. Cluster, then Simple random sampling technique was used to select six institutions and 60 respondents who participated in this study. A questionnaire and an interview guide were used as the main instruments for data collection. Data collected was analyzed using descriptive statistics. The study established that public institutions of higher learning to a large extent do not embrace robust systems of performance management. A strong relationship between performance management and productivity was established. These institutions face a number of challenges which compromise their overall performance and productivity. Some intervention measures to improve performance management systems in these institutions have also been suggested by this study.

Key Words: Performance Management, Productivity, Performance Appraisal.

Effect of Work Environment in Technical and Vocational Institutions on Employee Productivity: Case of Kitale National Polytechnic

Tom M. Oswago oswagotom@gmail.com The Kitale National Polytechnic

ABSTRACT

The work place environment is the most crucial factor in keeping an employee satisfied in today's business world. Today's workplace is constantly changing. Therefore, different, diverse and physical environment as aspect of work environment has directly affected the human sense and subtly changed interpersonal interactions and thus productivity. Ambient features in office environments, such as lighting, temperature, existence of windows, ventilation suggest that these elements of physical environment influence employees' attitude, behaviors, satisfaction and productivity. The main purpose of this research is to investigate the effect of physical work environment on employees' satisfaction and productivity: a case of Kitale National Polytechnic. The target respondents are the 331staff with sample size of 35 who are drawn from the employees using stratified random sampling technique. Descriptive study design was used. Data was analyzed using descriptive statistics that is frequencies and percentages. The results of this study provide important evidence of the effect of the physical work environment on employees' satisfaction and productivity. The study links the physical work environment such as sound, lighting, colour, temperature, workspace, design, layout of equipment and tools with employees' satisfaction and productivity. The findings also revealed that the most satisfied and most productive employees at the Kitale National Polytechnic are those who have the highest level of convenient physical environment. It is therefore recommended that more attention be given to the physical work environment alongside other factors that influence employee satisfaction and productivity. Further research should be carried out for a broader perspective on the relationship between employee productivity and work environment.

Key Words: Productivity, Employees' satisfaction, Environment, Workplace.

Relationship between Employee Welfare Practices and Performance of Non-Governmental Organizations in Kenya

Protus A. Lumiti Susan Wekesa,Phd, Mary Omondi,Phd lumiti.protus@students.jkuat.ac.ke Jomo Kenyatta University of Agriculture and Technology

ABSTRACT

Performance is a key pillar to the accomplishment of the goals of all organizations, whether private, public or non- profit. Employees are the intellectual assets of the organization and they are an avenue to achievement of competitive advantage. An employee welfare service in an organization is vital in fostering employee motivation and improving their productivity. In view of this, the main goal of this research was to determine the relationship between employee welfare practices and performance of non-governmental organizations in Kenya. The study was guided by four objectives namely: to establish, determine, evaluate and assess the relationship between employee welfare practices and performance of non-governmental organizations in Kenya. The study utilized survey design using both qualitative and quantitative approaches. In this study, purposive, stratified and simple random sampling technique was used to arrive at a sample of 355 respondents who comprised senior managers, middle level managers and operational employees out of the targeted population of 14,323 employees of NGOs working in Nairobi County. The primary data collection tools were questionnaires supplemented by an interview schedule; while secondary data was obtained from reviewed journals, published books and articles. Data analysis was done using Statistical Packages for Social Sciences Software version 23. The study utilized multiple linear regression and structural equation model. The findings of the study were that: employee welfare practices had a positive and significant relationship with performance of NGOs in Kenya. In addition, there was also a linear relationship between the independent variables and the dependent variable and the study concluded that there was a relationship between the predictor variable and the dependent variable of the study. The study recommended that management of NGO boards in Kenya should come up with a comprehensive policy document on employee welfare practices in order to enhance performance of NGOs in Kenya.

Key Words: Welfare practices, Economic, Recreational facilities, Counseling, Social Support .

Sustainable One Metre Raised Vegetable Garden

Richard Makori makoririchard16@gmail.com Kisii National Polytechnic

ABSTRACT

Food Security has been a topic in both developed and developing countries for many years now. All efforts from governments and individuals to enhance food security are encouraged. Most methods and techniques fronted have to do with embracing technology on one hand and using cheap and easy to develop ways to ensure improved harvest. The sustainable one metre raised vegetable garden uses waste materials including grass, fallen leaves, and banana peels among others. This project therefore helps reduce waste from the environment making it easier to manage waste. The one Metre raised vegetable Garden is a constructed portable garden and used for growing any kind of vegetables. This project enables increased harvest of vegetables and hence enhances food security. The one Metre raised vegetable Garden is constructed using locally available materials such as cement bags, chicken wire, used pieces of timber and metal bars. After construction, it is then filled with soil mixed with manure, farmyard or compost together with the collected waste materials. It is at this point that vegetable seedlings are planted and water added. The results show that vegetables grown in one Metre raised vegetable Garden are of good quality, enhanced quantity, need minimal weeding, have low maintenance costs and can serve the family for prolonged periods of more than two years. This project also is very economical in use of space and is proposed for both urban and rural homesteads.

Key Words: Food Security, Vegetable Garden, Waste, Environment

Food Security in West Pokot County, Kenya: The Influence of External Interventions on Household Economy in the Semi-Arid Region

Nyanumba S., Odula A., Waseni L., & Otieno K. asugashem@gmail.com The Eldoret National Polytechnic

ABSTRACT

West Pokot County is a semi-arid region. The inhabitants face many livelihood risks threatening the household food security. This is because of the failure of the environment to support adequate food production in the area. In the past the region has experienced constant droughts and famines leading to food crisis, thus subsequently hampering the development in the region. This study focused on the external interventions with regard to food security. External sources mainly came from NGOs and the Government to supplement the economy of households. This entails the provision of relief food as well as medicine for the community, school fees, and boreholes. The objective of the study was to examine the influence of external interventions to the Pokot household economy. A survey of 140 households was done and data analysed using descriptive statistics. The study found out that relief food showed a greater percentage of households that disagreed (62.8%) than those that agreed (12.1%) over the fact that relief food assisted households during drought periods. The government of Kenya has also extended its interventions to the marginal areas. Findings show that a large percentage of households received relief food (81.4%) from the government during the starvation period. Though this was not sufficient enough for the households, it was evident that the Kenyan government at least has not neglected its people. The inhabitants have also received support from the government in terms of educating and sensitizing the people on livestock development (55.0%) and crop activities (52.9%). Thus, it can be culminated that the benefits provided to the Pokot community, have to a less extent assisted them economically, though the food crisis is persistent. At the same time the external assistance has developed a dependence syndrome among the people. This has only increased the incidence of food insecurity. Finally, it is recommended that the inhabitants living in low potential areas diversify the means of food security through irrigation, grain storage, livestock keeping and marketing. This will solve the problem of food shortage during the prolonged drought.

Key Words: Food Security, External Intervention, Households, Government

Abstracts

Environmental Sustainability

Environmental Sustainability

ENS-1

Rehabilitation of Flooded Abandoned Quarry in Kisumu County for Environmental Sustainability Using Floating Solar Photovoltaic Cell

Betty Oganda bettyabisa10@gmail.com The Kisumu National Polytechnic

ABSTRACT

There are dozens of flooded, closed or abandoned guarry sites in Kenya. They pose major environmental, safety and health hazards due to ground subsidence, drowning, suicide and toxic minerals dissolved into soil and groundwater. They also act as breeding grounds for mosquitoes hence causing the spread of Malaria. This results in local economic slump and aggravation of it by the phenomenon known as the "doughnut effect" (inhabitants move from the affected areas). It has become a serious environmental problem impeding water and soil conservation, balanced development of the unused land, loss of lives and water pollution. To address these issues, there is need to turn these environmental and social disasters into opportunities. The proposed technological system of rehabilitating the flooded sites by installing floating solar photovoltaic will help to open up new opportunities for scaling up solar generation capacity, promote abandoned mine land reclamation and environmental restoration and also minimize cases of death. A floating solar PV system on flooded abandoned mine if established, may be considered an efficient reuse option for abandoned mines.

Key Words: Rehabilitation, Abandoned Flooded Mines, Float Voltaic Cell

Adoption and Implementation of the Concept of Green Industrialization among Selected Manufacturing Firms in Kenya

Consolata Mutisya, PhD Meetephantus1@gmail.com The Kabete National Polytechnic

ABSTRACT

The purpose of this study was to evaluate the level of adoption and implementation of the concept of green industrialization among selected manufacturing companies in Kenya. This was done based on the following indicators: top management commitment, environmental policy, green design, green manufacturing, and employee training and involvement. A cross-sectional survey design was used in the study. The population for the study was manufacturing firms in Kenya. The manufacturing sector in Kenya is divided into nine regions including: Athi River, Coast, Eldoret, Nairobi and surrounding area, Naivasha, Nakuru, Nyanza/Western, Nyeri, and Thika and surrounding area. This study focused on the manufacturing firms within Nairobi and surrounding area. The manufacturing sector in Kenya is divided into 14 sub-sectors namely: building, mining and construction; chemical and allied; energy, electrical and electronics; fresh produce; food and beverage; leather and foot ware; metal and allied; paper and board; pharmaceutical and medical equipment; plastics and rubber; services and consultancy; textiles and apparels; and timber, wood and furniture. Stratified sampling technique was used to categorize the targeted manufacturing firms into sub-sectors. A total of 28 firms were targeted by the study (2 from each sector) out of which 27 firms participated. The study found that there is less emphasis on employee training and involvement in green industrialization by manufacturing firms in Kenya. The findings further revealed that there is lack of goodwill by top management in adoption and implementation of green manufacturing concept as evidenced by limited support and monitoring. On the other hand, manufacturing firms in Kenya were keen on green manufacturing, green design and adherence to environmental policies even though a lot still has to be done.

Key Words: Green Industrialization, Green Manufacturing, Green Design, Environmental Policy

Evaluation of the Effects of Zero Energy Cooler on Tomato Fruits

Elias Waweru Ngotho elwangongotho027@gmail.com Rift Valley Institute of Science and Technology

ABSTRACT

Vegetable famers in developing countries lose more than 50% of the crop through postharvest losses. Small-scale farmers in developing countries cannot afford high tech crop preservation methods like refrigeration. Low-cost technology seems to be the solution to the huge post-harvest losses. In this study, a low cost zero energy cooler with pumice as the evaporative pad was used to store tomatoes for ten days. The objective of this study was to evaluate the effect of a zero-energy evaporative cooler on quality parameters of tomatoes. The tomatoes (commando F1 variety) were harvested red ripe and stored in the cooler. The quality parameters evaluated were; pH, brix, firmness and colour. The data in both the cooler and room condition was collected on 1st, 4th, 5th, 6th, 7th, 8th, 9th and 10th day. The cooler used was a cuboid structure with a metallic frame 240 cm × 240 cm × 200 cm (high) with a pumice wall of 15cm. During the experiment, the pumice was kept wet by perforated PPR pipes drawing water from an elevated water tank. At a confidence level of 95% (x=0.05) and using one way ANOVA, the study revealed the P-Values for PH, Brix, Firmness and colour as; 0.12,0.04,0.34 and 0.12 respectively. The study shows that there is significant influence on preservation of PH, Brix, and colour, however, there was no significant difference in the firmness of the tomatoes in the cooler and in the room condition (P-value= 0.34). The shelf life of tomatoes was 9 days and 5 days in the cooler and room condition respectively. Thus, based on the research finding, the zero-energy cooler is recommended for preservation of the following quality parameters of tomatoes: PH, Brix and colour. In addition, the zero-energy cooler promised a longer shelf life for the tomatoes. Being environmentally friendly, low cost and use of locally available material, zero energy coolers seem to be a solution in maintaining the quality of perishable agricultural products.

Key Words: Zero Energy Cooler, Tomatoes, Quality, Temperature, Relative Humidity

Human Kinetic Off Grid Green Power Supply System

Onyango Evans eonyango2001@yahoo.com The Kisumu National Polytechnic

ABSTRACT

Industrial development has no doubt led to increased prosperity and development around the world, however it has unfortunately also led to a massive depletion of natural resources and environmental degradation. The consumption of fossil fuels, on which industrial development has been largely based on has been identified as a major cause of climate change. The impact of climate change on the global ecosystem has been so significant that it's now considered as a threat to our very own existence. To mitigate against these threats and also to safeguard on the gains in human welfare achieved over the past decades, it's imperative that alternative and affordable means of fueling industrial development be identified and employed. Alternative / renewable energy sources can be defined as energy sources that do not cause or limit net emissions of carbon dioxide and thus largely avoid the environmental impacts associated with the combustion of fossil fuels. The most common sources include solar energy. wind power, bio-energy, hydropower, geothermal energy, wave and tidal power, and waste-to-energy convertors. However, the unpredictable nature of these alternative energy sources has been the major impediment to their efficient and effective deployment and use. We propose an innovative means of scavenging for electrical energy from human kinetic motion/ energy. To achieve this we capture and convert the resultant force of human weight (that is normally transferred to the ground by footsteps) into useful mechanical torque. Electrical energy is thereafter produced in the coupled electric generator. This device has been built, tested and found to be suitable for use in crowded places such as airports, train and bus stations, theaters, stadiums, learning institutions, churches and mosques.

Key Words: Human Kinetics, Alternative Power, Tidal Power, Climate Change, Green Energy

Levels of selected Pharmaceuticals in Wastewater Treatment Plants within Lake Victoria Region of Kenya, and their Electrochemical Degradation

Fred Sifuna Wanyonyi¹, Anthony Pembere², Gershom Kyalo Mutua³, Francis Orata³

sifunafredie@yahoo.com

1. Sang'alo Institute of science and Technology

2. Jaramogi Oginga Odinga University of Science and Technology

3. Masinde Muliro University of science and Technology

ABSTRACT

The presence of pharmaceutical active compounds (PhACs) such as Sulfamethoxazole (SMX) and Diclofenac (DCF) in aqueous environment presents a potential toxicological risk on living organisms. Although electrochemical oxidation processes have been widely studied for PhACs degradation, a comparative study of supporting electrolyte in the oxidation process has not been well established. In this study, the electro-oxidation capacities of Na₂SO₄ and Potassium Phosphate buffer supporting electrolytes were tested and compared for destruction of the SMX and DCF on Platinum (Pt) electrode and Graphite Carbon electrode in aqueous medium. The PhACs suitability for electrochemical oxidation was tested by cyclic voltammetry (CV) technique performed in the potential range -1.5 to +1.5 V versus Aq/AqCl which confirmed the electro-activity of the selected PhACs. The degradation and mineralization were monitored by UV-Vis spectrophotometry and HPLC. 0.1 M Na₂SO₄ supporting electrolyte was found to be more effective for mineralization of sulfamethoxazole and diclofenac than the 0.1 M phosphate buffer supporting electrolyte. The results showed that 0.1M Na₂SO₄ supporting electrolyte was 15 % to 30 % more efficient in electrochemical degradation of both SMX and DCF on the Pt and Carbon electrodes than potassium phosphate buffer. The Pt electrode showed better performance in the degradation of the two PhACs while under the same conditions than the carbon electrode with both 0.1M Na₂SO₄ and 0.1 M Potassium Phosphate buffer supporting electrolytes. The SMX and DCF degradation kinetics best fitted the second-order reaction, with rate constants ranging between 0.000389 to 0.006 mol²L⁻²min⁻¹ and correlation coefficient (R²) above 0.987.

Key Words: Human Kinetics, Alternative Power, Tidal Power, Climate Change, Green Energy

Effect of Tractor Wheel Traffic Compaction on Selected Soil Physical Properties

Okinda W. Fredrick*, Samwel Nyakach, Daudi M. Nyaanga Department of Agricultural Engineering, Egerton University *Corresponding author: wetaba@kisiipoly.ac.ke

ABSTRACT

The increasing use of agricultural machines in most mechanized farming fields have led to amplified levels of soil compaction. Since wheel traffic compaction is still underestimated, this research aimed at determining its effect on bulk density, porosity, infiltration rate, hydraulic conductivity and cone index. The study was carried out in Egerton University Tatton Farm, Kenya under a shed. 27 plots under completely randomized experimental design was adopted with three application weights of 1.72 KN, 5.15 KN and 8.09 KN and three compaction treatments; traffic on rows (TR), traffic between rows (TB) and traffic on entire row (TE). Weight applied significantly increased bulk density and cone index but decreased infiltration rate, hydraulic conductivity and porosity. Bulk density increased by 17%, 15% and 8%, cone index increased by 44%, 10% and 7%, porosity decreased by 25%. 23% and 36% for the three depths after the three weight treatments were applied respectively. Application of the three treatment weights caused a steady decrease in infiltration rates from 0.047 cm/min, 0.031 cm/min to 0.018 cm/min respectively in 60 minutes while hydraulic conductivity decreased from 65.2 cm/day, 50.98 cm/day, and 34.05 cm/day to 13.95 cm/day. TE had the highest bulk density as compared to TB and TR. Analysis of variance (ANOVA) indicated that both change in weight applied, traffic location and depth had a significant effect on bulk density, cone index, porosity, hydraulic conductivity, infiltration rate, at 5% level of confidence. This suggests that decreased and controlled traffic could be a promising way for lessening soil compaction effects.

Key Words: Wheel Traffic, Compaction, Soil Physical Properties.

Sustainable Textiles and Fashion

Gladys Jerop gladys.jerop@kisumupoly.ac.ke The Kisumu National Polytechnic

ABSTRACT

Rapid increase of textile waste into our land fill has raised a need to find best ideas and solution on how we can safe guard , prevent and conserve our enviroment. Textile waste dumped into our land fills leads to production of harmful emmissions ,water and land pollution ,climatic changes thus creating hazardous living enviroments . waste from fabrics can be converted into useful product to create a sustainable fashion and textile, economical securities, healthy living surrounding and enlighting/educating the society. The sustainable fashion and textile projects will reduce enviromental pollution hence creating clean enviroment. This will not only create a condusive living enviroment but will increase economical securies by creation of job opportunies and educating people on creative craft work that are income generation. From household items, industrial cutoffs, plastic, fabric waste and any flexible material that remain after the original use or construction can be recycled into a material. Cartons can be converted into storage containers, cut offs to make floor coverings, bags and clothings. Advancing technology and economical development has increased production of more waste which has threatened our living world due to lack of improper disposal of waste product .This reasearch will mainly focus on convertion of textiles waste into useful products that could be used in our household and also can be sold out as way of earning a living. The project is pocket friendly because will be using readily available materials in our enviroment and the production process need less machineries and more man power. In turbulance periods people will be in a great position to make money using available resources therefore meeting their daily needs and earn a living. This will also benefit learning in educational centers ,learner will get extra knowledge on zero waste of products and will equip them with craft knowledge. They will be more busy and productive thus less time for idling and doing immoral activities in our societies. From waste products will generate attractive decorative and useful products that could be for export and locally used in our home country.

Key Words: Sustainable, Textile Waste, Recycling, Enviroment, Exports.

An assessment of the Legal Framework for Protection of Food in Kisumu County

Grace Caroline kisumunationalpolytechnic@yahoo.com School of Hospitality, The Kisumu National Polytechnic

ABSTRACT

Food laws in Kenya are designed to protect safety and to assist consumers. The aim of this study was to assess the Legal Framework for Protection of Food in Kisumu County. Specifically, the study sought to examine the Legal Framework for Protection of Food processing, to assess the Legal Framework for Protection of Food handling and to identify the Legal Framework for Protection of Food storage. The policy on food management stresses the need for the government to set up standards for food management. This study adopted descriptive research design. The target population comprised of the food regulatory agencies and the respondents were senior and middle management staff. Likert scale questionnaire was the main instrument of the study administered to the respondents to gather quantitative data while senior management interviewed qualitative data gathered. Data analysis was carried out through descriptive statistics and presented in tables and charts to bring out the meaning out of the data. The study established that there was duplication of roles within the regulatory agencies. The study concluded that the provisions for protection of food in Kenya are found in a number of laws, but the bulk of provisions were contained in the Public Health Act Cap 242, and the Meat Control Act Cap 356 of the laws of Kenya. The study recommends that the Legal Framework be consolidated to facilitate expeditious application and adoption of food legislation.

Key Words: Legal Framework, Food handling, Food processing, Food storage

Effect of Environmental Conservation Practices on Sustainable Tourism Development in Mt, Elgon Region Kenya

Hellen Nangulu nanguluh@gmail.com The Kitale National Polytechnic

ABSTRACT

Sustainability has become an important concept in relation to tourism planning and development. Stakeholder theory and Participatory and Empowerment model were used to underpin the study. Therefore, the purpose of the study was to determine the effect stakeholders' initiatives on sustainable tourism development in Mt Elgon region. The specific objectives was to determine effect of environmental conservation practices on sustainable tourism development, Explanatory research design was adopted, employing cross sectional survey with the use of questionnaires for household's heads and interview schedule guide for KWS staff. Target population was the 3192 households and 5 Kenya Wildlife Service (KWS) management staff in Mt Elgon National Park. Sample size was 210 households and 2 KWS staff and purposive and random sampling technique was employed respectively. The validity and reliability of the instruments was done through consultation of experts and Cronbach Alpha coefficient calculated at 0.70 respectively. Pilot study was done in Isukha Central, Shinyalu, in Kakamega County. Using SPSS, descriptive statistics for mean and standard deviation and inferential statistics for Pearson product moment Correlation (PPMC) coefficient and regression analysis were used for data analysis. Research findings revealed that environmental conservation practices ($\beta 2 = 0.186$, p=0.007) had a significant effect on sustainable tourism development. The study recommended that the government should develop a clear policy that could quide environment conservation for sustainable development

> Key Words: Conservation, Practices Sustainable Tourism Development, Stakeholders

ENS-10 Biogas Production from Food Left Overs

Japheth M. Magara japhetmagara@gmail.com Kisii National Polytechnic

ABSTRACT

Biogas is produced when organic matter is degraded anaerobically. This study is geared to make use of food left overs dumped at landfills from Kisii hotels and surrounding institutions to produce biogas which can be used in heating and production of electricity. The biogas produced will reduce the overdependence of expensive conventional forms of heat sources which have led to global warming. The direct release of methane gas, which is a greenhouse gas, released from landfills is managed by producing it in a bio digester and then burning it hence reducing global warming. Landfills in Kisii town are increasing every day due to the growing population and this poses danger to the environment and a need to do waste management. Food leftovers from Kisii town hotels and the surrounding institutions is one of the major sources of waste that is daily deposited as a land fill. Food leftovers is classified as one of the degradable solid waste, which when mixed with water and in favorable conditions can be used to produce biogas, a green type of energy for heating or electrical purposes. A sample study of five hotels and two institutions was conducted. Using this quantity, the range of the amount of biogas that can be produced per week was calculated. To determine its economic value, the study determined a common bio digester design which provides the favorable conditions necessary for the production of biogas. The major sources of heating currently used are charcoal, electricity, firewood and LPG gas. The cost of heating that is incurred by the hotels and the institutions were as well obtained from their records and then the cost effectiveness comparison was done and it was ascertained that they will do much savings if they do biogas production from those food left overs. The study recommends to the county Government and individual managers of the institution to adopt this production of biogas from food leftovers to reduce energy costs, create employment, reduce environment degradation and reduce global warming.

Key Words: Biogas, Food Leftovers, Environment and Global Warming

RNA Interference of Microalgae for Improved Biodiesel Production as Energy Source

Kathleen Musungu Coast Institute of Technology katynach2@gmail.com

ABSTRACT

Reliance on fossil fuels has been a major cause of environmental pollution. The global situation has continually deteriorated due to the dependence on these fossil fuels leading to global warming from fossil fuels. Microalgae have been projected to be the alternate source of fuels. Microalgae have attracted recent attraction due to their fast growth, on dependence on arable land and the fact that that they consume gases that are potential for greenhouse gases emission. However, the challenge has been obtaining microalgae species that have a faster growth level at the same time with a high amount of lipid content production. The objective of this research was to perform genetic engineering of microalgae towards enhancing the pathway for lipid production of suitable microalgae strains. The rationale here is that with the RNA interference technology, the lipid content production is enhanced with the ultimate goal of large scale production of Biofuel through transesterification is possible in order to meet the energy demands of world. The objective of the study was to select suitable microalgae strain to bioprospect for RNA interference and to optimize the selected microalgae strains for lipid production. The chief targets for manipulation in microalgae for biofuel production are genes that regulate lipid metabolism, which includes lipid biosynthesis and catabolism, as well as pathways that modify the length and saturation of fatty acids. Selected microalgae strains were cultured in vitro providing the appropriate laboratory conditions such as Temperature, lighting and nutrients. Walne and F/2 media were used for selection of microalgae. The lipid content from the microalgae was determined before and after RNA interference. Microalgae strains recommended for RNA interference were Coscinodiscus and Oscillatoria species It was therefore established that RNA interference technology can be used to increase the lipid level in microalgae for more lipid production with potential for conversion to biodiesel. This Technology could hold prospects at large scale production of biofuel that could meet the Global energy demands which is environmentally friendly.

Key Words: Microalgae, RNA interference, F/2, Walne, Biofuel.

Influence of Public Participation on Conservation of Water Projects in Kenya: A Case of Koica Phase I Water Project in Bungoma County

Lucy Makokha & Osborne Opicho lucymakokhan@gmail.com Kisiwa Technical Training Institute

ABSTRACT

This study purposed to investigate the influence of public participation on performance of water projects in Kenya with special interest to Korea International Cooperation Agency (KOICA) phase I water project Bungoma County. This study sought to determine how public participation in KOICA phase I water project identification influences its performance in Bungoma County, To examine how public participation in the planning of KOICA phase I water project influenced its performance in Bungoma County, To assess how public participation in the implementation of KOICA phase I water project influences its performance in Bungoma County. To establish how public participation in monitoring and evaluation of KOICA phase I water project influences its performance in Bungoma County. Descriptive research design was used in the study. The sample size of 123 household heads was selected using 10% as postulated by Gay, 10 water service provider top managers and 10 water users' association chair persons were selected using purposive sampling totaling to 143 respondents. Questionnaires and interview schedules were used as instruments for data collection. Reliability of the data was realized through a pilot study while expert opinion was sought to enhance the validity of the research instruments. SPSS software was used to analyze the data. APA tables were used in data presentation. The study found that public participation in project identification, public participation in project planning, public participation in project implementation and public participation in project monitoring and evaluation had positive correlations which meant that the more public was involved or participated in the project, the more KOICA phase I water project performed well.

Key Words: Public Participation, Conservation, Water; KOICA.

EN S-13

The Significance of Microfinance in Growing Green Economy for Environmental Sustainability in Kenya

Lydia Nyawira Mburia lydiamburia@gmail.com

ABSTRACT

Green finance refers to financial products and services that benefit the natural environment and serve green policy goals such as climate change mitigation as well as improving the livelihoods and quality of life of the population. Green products and services have advanced environmental sustainability and promoted product re-use and recycling, environmental protection and innovation. The research objective was to elucidate the significance of microfinance in growing green economy in Kenya for environmental sustainability. The literature review elaborated divergent views such as green economy financing policy and capital structure and firm ownership were all strongly linked. Access to green financing enabled the MSE owners to cover some or all of the cost of capital equipment. expansion and renovation of buildings. The target population in this research was 400 respondents that were 200 NEMA officers and 200 Ministry of Devolution and National Planning. This study adopted a descriptive survey design via desktop review and administration of questionnaires to 400 respondents. The research took place at the Ministry of Devolution and National Planning in Nairobi County in collaboration with NEMA by administering questionnaires to the officials from NEMA and Ministry of Devolution and National Planning for this paper. Green finance comprises a triple bottom line approach that benefitted the natural environment and serve green policy goals such as climate change mitigation. The researcher recommended adoption of green financial products in bolstering sustainable natural resource management, uptakes of green financial products and more government incentives in terms of financing green economy.

Key Words: Green Finance, Green Economy, Environmental Sustainability

Thermal Compensated Solar Water Heater from Recycled Motor Vehicle Radiators

Muhia Ngaruiya ngaruiyamuhia@gmail.com Coast Institute of Technology

ABSTRACT

Solar water heating is the technology of intercepting thermal radiation from the sun for the purpose of raising the temperature of water for various uses. Challenges are always there related to the cost and efficiency of these Solar Energy Devices (SED). A cheap and fairly steady solar power harvester for domestic water heating is hereby proposed. The prototype solar harvester will be easy and cheap to fabricate. It will consist of an assembly of a few disposed of motor vehicle radiators embedded on clay material to take advantage of "thermal inertia" of clay which is of higher Specific Heat Capacity than glass and other metallic substrates used in ordinary collectors. The earthen clay will act as a thermal compensator during interludes of low solar intensity thus increasing the efficiency of the collector. In the absence of such a compensator modification, a cloudy interlude would result to cooling of water in the reservoir thus reducing the efficiency of the system. This water heater will be an active SED in which convention currents of water will be enhanced using a pump operated by a solar panel to drive water into an insulated, polished reservoir. The advent of electrical and hybrid vehicles will see many obsolete cooling radiators, making the proposed water heater cheaper to construct and thus encouraging the use of renewable energy. The Thermal Compensator will enable the optimum temperature of water in the storage tank to be attained much faster during a day of fluctuating solar intensity. Characterization of the modified solar water heater will be done to determine its efficiency in comparison with existing devices. The expectation is that there will be a good improvement compared with other similar devices.

Key Words: Thermal Compensator, Specific Heat Capacity, Thermal Inertia, Solar Energy Device
ENS-15

The Effect of Urbanism on Conservation of Forests in Kenya: Acase of Kakamega Forest, Kakamega County

Murunga G., Phd, Opicho O. & Abisai T. Kisiwa Technical Training Institute godfreymurunga12@gmail.com

ABSTRACT

The purpose of this study was to investigate on the influence of sustainable urbanism on conservation of forests in Kenya, with special reference to Kakamega County Forest. This study sought to establish the influence of urbanization planning on conservation of Kakamega County Forest, influence of urbanization approval on conservation of Kakamega County, how population surge influence conservation of Kakamega County and lastly how intervention measures influence conservation of Kakamega County. Descriptive research design was used in the study. The target population consisted of 110 participants. The sample size of 110 respondents was selected through census sampling. Questionnaires and interview schedules were used as instruments for data collection. A pilot study was conducted to test the reliability of the data collection tools while expert opinion was sought to enhance the validity of the research instruments. Data was analyzed through the use of a computer software SPSS. The study findings were presented using APA tables. The findings of the study showed that urbanization planning, approval, population surge and mitigation measures influenced the conservation of Kakamega Forest, Kakamega County Forest. The study recommended that urbanization planning authorities to carry out regular reviews of physical development plans and developing critical policies to curb on uncontrolled urbanization. There is also need for enforcement of urbanization approval regulations related to expansion of new development projects. The study also recommends the establishment of Kakamega metropolitan to ease population surge and lastly there is need of involvement of all stakeholders in the development of mitigation measures towards the conservation of Kakamega County forest.

Key Words: Urbanism, Conservation, Kakamega Forest, Intervention Measures

Key Words: Urbanism, Conservation, Kakamega Forest, Intervention Measures

ENS-16

Optical properties of CdxNi1-xS thin films deposited by chemical bath deposition

Robert Magare robmagare@gmail.com Coast Institute of Technology

ABSTRACT

Energy resources are being depleted; solar energy shows potential ways of meeting the escalating demands of energy for the future. In this research CdxNi1-xS films were prepared glass substrates by chemical bath deposition method and the effects of surface passivation on the optical properties against volume of nickel dopants was investigated in the 300-1100 nm wavelength range determined by were UV-VIS-NIR Spectrophotometer. Chemical Bath Deposition method was also employed in depositing SnS films onto FTO glass substrates for electrical optimization of the films. Also, the thin films on glass substrates have electrically been characterized using a Keithley 2400 Source Meter and by a SRM-232 surface resistivity meter. In this work, CdS was doped with Ni ions by varying its concentration to produce CdxNi1-xS with an intention of lowering its minority carrier recombination by using chemical bath deposition of CdxNi1-xS is based on the ion-to- ion model. Average Transmittance was averagely 69.5 %, with a reflectance of below 24 % across UV-VIS-NIR region. An energy band gap range of 2.55 - 3.49 eV and 2.82-3.50 eV for as-grown samples and annealed samples respectively while for passivated samples, the band gap energy range of 2.85 - 3.21 eV which was attributed to an increase in Cd2+ and Ni2+ ions. Optical conductivity ranged between 3.72 x 1011-2.32 x 1012 S-1. The values of optimized thin films compare well with values that have obtained by other researchers as depicted in literature. It was concluded that the films were suitable for optical applications especially for wide energy band gap applications especially window layers in PV technology.

Key Words: Surface Passivation, Annealing, Optical Conductivity, Energy Band Gap

ENS-17 Recycling Aquaculture Systems (RAS)

Ngado Robert Otieno engabbotngado99@gmail.com The Kisumu National Polytechnic

ABSTRACT

Fish has become one of the most expensive types of food among the citizens of Kenya and beyond due to the deterioration in the economy. Environmental changes such as global warming, depletion of the fish breeding areas and water pollution are some of the reasons why there is a reduction in different species of fish and other aquatics. For these reasons, there is need of using the latest technology in agriculture to ensure there is enough food to feed the increasing population within Kenya and the sister countries. The RAS is a new technology in agriculture (fishing industry) that utilizes locally available resources such as plastic containers, sand for filtration among others. Recycling systems involves some closed set of units (chambers) where fish is kept in one or more units and the water treatment done on separate chamber. It is highly dependent on the renewable power supply, has water has to be pumped through the available fish chambers for constant flow. As water flows through the filtration and treatment chambers, particulate matter is filtered out and air introduced in the set up. This closed system controls the temperature, salinity, oxygen and anything that may cause harm to the fish. Recycling Aquatic system (RAS) is an environmentally friendly because very little new water is introduced that can be used to replace water that evaporated. The residue from the filtration chamber is also disposed of in a responsible manner. Recycling aquatic system has both the hardware and software for the control purposes. The software is able to automatically control the functionality of the system as well as communicating with the user. The system has a number of sensors that are able to monitor the following: pH level of water, temperature level, Ammonia as well as replenishing the fish feeds.

Key Words: Aquaculture, Recycling, Systems, Biological, Filtration

ENS-18

Effect of Partially Replacing Cement Using Sewage Sludge Ash in Concrete

Mogaka M. Ronald mogakaronald@gmail.com Siala Technical Trainining Institute

ABSTRACT

Sewage sludge is a by-product of wastewater treatment plant. Due to the urbanization and growth of population, the amount of sewage sludge has increased rapidly over the years and is expected to increase further. This may affect the environment. Currently, the sewage sludge is disposed through land filling, ocean disposal, land application and agriculture use. Recent research has found that current disposal methods posed environmental issues such as water, air and air pollution. Disposal of sewage sludge has become the financial burden of wastewater treatment companies. The department in charge of sludge management has predicted that tons of sewage sludge is generated annually with maximum cost of management per year. Among the methods of the disposal of sewage sludge, land disposal is the cheapest way as it enables crops to be grown on poor land. Sludge has the biggest proportion as compared to the other by-products generated during the process of sewage treatment, and it is found out that it contains heavy metals in its composition. Besides that, insoluble matter is also found in sewage sludge such as organic matter, pathogens, nutrients, and metal. Sewage sludge also contains soluble substances such as minerals, salts and organic chemicals. Incineration became one of the alternative solutions for the disposal of sewage sludge. The principal component of sewage sludge after going through the high temperature incineration such as SiO₂, CaO, Al₂O₃, are the components of ordinary cements. The residue is practically inert and odourless, diverse solutions. With the current rate of urbanization, it is expected that the demand of cement will increase further.

Key Words: Sewage Sludge Ash, Cement, Concrete, Urbanization

ENS-19

Use of Biotechnologies for Waste Management, Environmental Sustainability and Food Security

Stellah Kemunto Atuti stellaatuti1@gmail.com Kisii National Polytechnic

ABSTRACT

Most of the countries depend on Agriculture to run their economies. Kenya is not left out as three guarters of its population depend on Agriculture. Waste management is problematic worldwide including in Kenya as witnessed across the counties. Waste can be managed in a smart way Vermiculture technology involving earthworms. through Other biotechnologies include; Phytoremediation and bioremediation which clean up the soils and water bodies to ensure production of chemical free safe food in both quality and quantity without recourse to chemically grown foods which have adverse effects on human health. In this study earthworms were multiplied in 1:1 mixture of cow dung and decaying leaves kept in cement tank or wooden box, then a nucleus culture was introduced into the mixture at the rate of 50 worms per 10 kg of organic wastes occasioned with sprinkling of water. In 1-2 months, the worms multiplied 300 times that could be used for large scale composting. The study concludes that Vermiculture, Bioremediation and Phytoremediation will ensure waste and chemical management and is a highly economical way of crop production of chemical free safe food, replaces costly chemical fertilizers improving water and soil health. This study recommends that these biotechnologies be embraced in Kenya to positively impact the Agculture-industry and improve standards of living, produce safe food, cut on costs of production, boost the economy, enhance food security, enhance environmental sustainability and create employment for Kenyans.

> Key Words: Vermiculture, Bioremediation, Phytoremediation, Waste Management, Food Security

ENS-20 Enhancing Environmental Awareness through Comprehensive Curricula: Education and Training for Sustainable Environment

Thomas Esirenyi Mahindu, esirenyi@gmail.com Aldai Techical.Training Institute

ABSTRACT

A sustainable environment should be one of the key concerns of any Government, private sector as well as individuals of the society. This research intends to provide a sustainable measure through development of a comprehensive curricula and syllabi for learning institutions to create awareness of a sustainable environment. The main objective of this research is to Investigate and advocate for a syllabus that learners can acquire knowledge, skills, practices and attitudes towards sustaining better environment. The research is a case study of Aldai technical training institute. Questionnaires and interview schedule were used to gather data from 50 trainees and18 trainers from different areas of specialization in TVET education. The findings indicated that despite having a variety of courses and units, much has not been achieved by the education sector to create awareness of environmental sustainability. Also, college graduates and other institutions did not value benefits of a good environment. The study revealed that the initiative of creating syllabi that create awareness was not given priority since the existing curricula promoted other needs like education for employment rather than educating young learners on how to attain a better environment. Also, environmental management authorities and bodies failed to enforce environmental policies in learning institutions. findings and the following The research concurred with the recommendations were arrived at; the government formulate a curriculum with news units that cater for environmental awareness and that all bodies involved in regulating environment such as NEMA to monitor and assist the education sector in delivering environmental awareness.

Key Words: Environmental Awareness, Learners, Curricula, Syllabi

Abstracts Social Cultural Sustainability

Social Cultural Sustainability

SCS-1

Educational Inequality during Covid -19 Open and Distance E-Learning (ODel) in Kakamega County

Gerishom Wafula Manase & Judith Gahuya Akaranga; mulayiwanje@gmail.com Shamberere Technical Training Institute

ABSTRACT

When COVID- 19 was announced early 2020, its impact on the education sector could not be estimated, world over. On March 13, 2020, the first case was confirmed in Kenva. The time when face to face learning was to resume became unpredictable. The government of Kenya decided to abruptly close schools and learning institution due to Covid-19. The Ministry of Education decided that learning was to continue at home using various strategies. Primary school pupils were to access education via the radio programmes while secondary schools were to access learning through television (TV). Colleges and Universities were to adopt Open, Distance e-Learning (ODeL) also known as Online Learning. There were unestimated inequalities to access education. The purpose of the study was analyse the educational inequality during Covid-19 open, distance and e-learning in Kakamega County. The null hypothesis of the study was that all learners equally benefited from Open, Distance and e-Learning (ODeL) in Kakamega. The alternative hypothesis was that the learners did not equally benefit from (ODeL) Kakamega County. A qualitative situational analysis was used. Many inequalities were found to disadvantage learners from rural settings. The socioeconomic background of the learner had a lot of influence. There is need for state and non-state to reach to parents in rural areas to encourage their children to learn while at home. There is need for a policy to help ensure that the digital content is relevant to the curriculum and to reach the rural learners. The mode of evaluation, when and how it should be done needs to be streamlined.

Key Words: Covid-19, Education Inequality, ODeL, Rural Areas

Training and Women Participation in Development Agenda in Kenya

Musabi Antony Barasa musabiantony12@gmail.com The Sigalagala National Polytechnic

ABSTRACT

Women continue to be marginalized and pushed out of major development decision as if they are lesser important human beings. Efforts to increase women participation by government through creation of Women representative positions More alarming, is the fact that vices such as sexual abuse, domestic violence and genital mutilation are deeply rooted in majority of our Kenyan community's culture. Experts and researchers have also clashed and given different opinions on what exactly determines women participation in community development projects. Therefore, this study assessed the determinants of women participation. Specifically, it analyzed Education and training and its influence on women participation in community development projects with emphasis on their participation behavior. The study targeted 100 women. Purposive sampling techniques was used due to the unique and dynamic nature of women with a sample size of 40. Research design used is explanatory research design due to the cause effect nature of Training and Education on Women participation. Questionnaires was be used. Validity of instruments was be tested by discussing them with specialists while reliability was be tested using Cronbach alpha so as to find the consistency of data. Pilot testing was done to determine reliability of research instruments. Data was analyzed by use of SPSS and presented by tables for easier communication. In conclusion, training increases women participation in development agenda in Kenya. This study recommends boosting efforts by government in addressing inequality and inclusivity of women. This study shall contribute to the existing debate, harmonize the conflicting findings by scholars and reveal in a nut shell what exactly influences women participation behavior.

> Key Words: Training and Education, Women Participation, Development Agenda

Training Challenges Faced by Trainees during COVID- 19 Pandemic Period: A Case Study of Kisii National Polytechnic

Beatrice Nyareki beatricen@kisiipoly.ac.ke Kisii Nationa Polytechnic

ABSTRACT

There are many types of human coronaviruses including some that commonly cause mild upper-respiratory tract illnesses. Covid-19 is a new disease, caused by a novel (or new) coronavirus that has not previously been seen in humans. The pandemic has claimed more than 100,000 lives' world-wide with more than 2,000 people succumbing to the disease in Kenya alone. Despite the invention of vaccines much resistance has been experienced even among the most elite and vulnerable groups based on unfounded rumors related to the vaccine. Learning in most institutions was suspended for a better part of the year therefore expanding trainees' academic calendar. Trainees in Kisii National Polytechnic were not exceptional, they too had to bear the challenges each as they unfolded hence the purpose of this study is to identify training challenges faced by trainees during Covid 19 pandemic period, a case study of Kisii National Polytechnic. The objectives of the study were to identify training challenges in Kisii National Polytechnic during Covid 19 pandemic period, to establish efficacy of training measures implemented by the polytechnic during Covid 19 pandemic period and to find out how different genders were affected by the training methods introduced during Covid 19 pandemic period. The study was informed by the Self Efficacy Theory by Albert Bandura (1986), and targeted a population of 10,060 trainees in 10 academic departments. A sample size of 368 trainees was obtained. Questionnaires were used to collect data. Validity of questionnaires was ensured by expert judgment. Quantitative and gualitative data analysis was done using descriptive statistics and null hypothesis tested at 95% level of confidence. Findings revealed that during Covid 19 pandemic, some trainees had poor or no internet coverage, there was lack of electricity in most home, others lacked finances to purchase bundles, most of the trainees had smart phones but did not know how to log into the e-learning platform, both male and female trainees said that there was a lot of work at home. For effective learning, the study recommended that the Polytechnic to assist trainees purchase bundled to support e-learning while at home and strengthen Wi-Fi coverage in college. The Polytechnic to ensure proper co-ordination of E-lessons and upon admission, ensure that all trainees have smart phones or laptops.

Key Words: COVID-19, Challenges, Institution, E- learning.

Teaching Practices with Emphasis on Evaluation and Competency-Based Approach

Prof. Bernard Kipsang Rop ropben@jkuat.ac.ke Jomo Kenyatta University of Agriculture and Technology

ABSTRACT

Having adequate confidence is essential for effective performance of any task. In this paper, confidence is treated as a psychological feeling that gives students courage to face challenges in a leaning environment with positive expectations linked to performance in examinations. In fact, adequate confidence is most needed for attaining good results from practical assignments and for achieving best results in final examinations. Evaluation based teaching that is emphasized in this paper, was considered as one of the practices that are good for confidence building. The practice can be applied in competency-based curricula, to yield good examination results and eliminate examination cheating. It allows typical summative evaluation to be carried out in stages while the syllabus is being covered. The evaluation-based teaching practice, as a unique stimulus was applied to the course unit named Fundamentals in Soil Mechanics that is offered to degree students pursuing Bachelor of Science in Applied Geology during second semester of third year. A set of past papers for end of semester examinations that had been offered for previous eight semesters and a copy of model answers for one of the semesters were availed to the students, class size 14 for the students to; Appreciate complete coverage of the syllabus that is done during setting of final examinations, distinguish different levels of leaning that are tested as noted for questions that were set among other objectives. The end of semester examination results for the class that was subjected to evaluation based envisaged good teaching methods, as new stimulus, were compared with results for previous groups of similar class size that undertook the same course unit but had not been exposed to same method. Test of hypothesis based on student's t distribution was also carried out using results for continuous assessment and summative evaluation for the class that had been subjected to the stimulus and conclusions drawn forthwith. It was concluded that the practice, if applied to other classes would enable students to have an overview of the syllabus content up to evaluation level right from day one thereby triggering their eagerness to acquire knowledge. Repeated exposure to final past paper questions will increase students' skills in problem solving and decision making thereby generating adequate confidence for passing final examinations.

Key Words: Teaching Practices, Evaluation, Performance, Competency

Based Curricula

The Influence of Provision of Modern Teaching and Learning Equipment as a means of Improving the Quality of Training in TVET in Kenya

Caroline Musyimi, caromusyimi@gmail.com Coast Institute of Technology

ABSTRACT

This study explores the influence of modern teaching and learning equipment on improving vocational education quality and employment rates and its long-term effect on the Kenya's journey to achieve industrialization by the year 2030. The study adopted a cross-sectional survey research design. Stratified random sampling was used to sample 172 students. Data was collected using questionnaires and analysed through the theoretical lenses of globalization and vocationalism. The results show that the provision of modern equipment has improved Kenyan TVET classrooms to meet industrial standards and allowed development of essential skills. Also, there has been improved collaboration between TVET institutions and local industries exposing TVET students to the real labour market while still in college. The findings of this study further revealed that the government of Kenya has increased its efforts in revitalizing the TVET institutions with modern teaching and learning equipment to improve the quality of training, however, there were cases in some institutions which received equipment but were yet to use them. This was occasioned by lack of a ready curriculum. This study thus recommends that: TVET teachers are key stakeholders in the integration of technology in the learning and training process, and should be involved in the decision-making process; MOE should ensure that before equipping an institution there is a ready curriculum. To achieve the ministry needs to consult widely with educational and industry stakeholders before making decisions on which learning and teaching resources are to be supplied to each and every TVET institution. Also, the study relied mainly on the information given by students and researcher observation. The study recommends future studies to include a survey to teachers and interview the college heads and other educational stakeholders so as to get wider view of the real situation in the TVET colleges.

Key Words: Technical Vocational Education and Training, Teaching and Learning Equipment, Vocational Education Quality, Industrial Standards

Utilization of Components Interdependence in School Management Information Systems in Kenyan Schools

¹Kiberenge C, Dr.Wanami S², Dr. Dimo H³. Kiberengec@gmail.com The Kisumu National Polytechnic University of Eldoret

ABSTRACT

Many Kenyan schools have computerised their management by acquiring School Management Information Systems (SMIS) to support decision making. However, many schools continue to struggle in sharing and accessing information that is already in their possession. In this light, this study examined the utilization of interdependence of components in SMIS in public secondary schools in Bungoma County, Kenya. It determined the types of SMIS in schools and the extent teachers access analysed information that has been generated by various components of SMIS. Breiter and Light's conceptual framework on transforming data into knowledge underpinned this study. This study was a descriptive survey research. The study population was 27 secondary schools, which had timetable management system, results management system and classroom management system. A sample of 33.3% (9) schools was randomly selected. Two more schools were randomly selected for a pilot study. Principals of the selected schools were interviewed while thirty per cent of teachers completed questionnaires. Descriptive statistical methods were used to analyse data. The study established that most SMIS were purchased as off-the-shelf software. It found that due to lack of networked systems, integrity of stored data was compromised and electronic sharing of data and information amongst academic departments in schools was not fully realised. This study concluded that majority of teachers had access to information generated in MIS and were able to make informed decisions based on available information on stand-alone computers. The study recommended that schools should endeavour to develop their own SMIS that are tailored for their specific needs. Schools can achieve this by contracting competent software developers in the area of education.

Key Words: Technology in Kenyan Schools, School Management Information System, Secondary Schools, Information Communication Technology

Contribution of Selected Factors to Low Boy-Child Retention in Public Day Secondary Schools in Nyamira Sub County, Kenya

Deborah Nyaboke Atambo deborahatambo@gmail.com Jaramogi Oginga Odinga University of Science and Technology

ABSTRACT

In the last decade, debates about gender and schooling have taken a surprising turn. Currently in many parts of the world, there has grown a worrying trend on boy-child's low retention in public secondary schools and in many learning institutions. This study therefore attempts to fill the information gap by exploring the contribution of selected factors to boy-child retention in public day secondary schools in Nyamira Sub County, Kenya. Specific objectives for the study were to find out: the contribution of house hold factors; school-based factors; community-based factors to boy child retention in public day secondary schools and the mitigation measures. The study used mixed methods research approach. Krejcie and Morgan sample size determination table was used to select a sample of 28 principals, 28 chair persons of PA and 28 HODs guidance and counseling,42 class teachers and 321 students selected through stratified random sampling, 2 QASOs were picked out through purposive sampling. Questionnaires, Interview schedule and document analysis guides were used to collect data which was analysed and coding done before data analysis. The study employed the split-half method to establish the reliability of the questionnaire which was found to be 0.649. The validity of the instrument was established by expert judgement of supervisors. Quantitative data was analysed using descriptive and inferential statistics while thematic analysis was used to analyse gualitative data. The study established that there was a strong correlation between the identified factors and the boy child retention. In order to improve boy child retention in public day secondary schools, there was need for parents to improve their parenting practices, teachers to provide unconditional love and counselling services to the boy child and the government to establish and implement policy on boy child retention. A study on the role of parents on boy child education would expound the present study.

Key Words: Boy-child, Retention, Public Secondary Schools

Influence of Leave Arrangements on Commitment of Nurses in Public Hospitals in Kenya

Denis Okemwa, denisokemwa2@gmail.com Prof. Willy Muturi1, PhD; Dr. Wallace Atambo1, PhD Jomo Kenyatta University of Agriculture and Technology

ABSTRACT

The purpose of this study was to determine the influence of leave arrangements on commitment of nurses in public hospitals in Kenva. The objectives of the study were: to determine the influence of annual leave arrangements on commitment of nurses in public hospitals in Kenya, to establish the influence of maternity leave arrangements on commitment of nurses in public hospitals in Kenya. A sample of 364 nurses was drawn from the target population of 1217 nurses using proportionate simple random sampling. Spill over theory, social exchange theory, and the Three component model informed this study. Descriptive survey research design guided the study. Semi-structured questionnaires were used to collect data. Data were analysed through descriptive, correlation and regression analysis. The study established; a positive correlation coefficient of 0.620, regression model; Commitment= 17.089+0.942 Annual Leave +1.126 Maternity Leave. indicating that there is a positive linear relationship between leave arrangements (annual & maternity) and commitment and that maternity leave has more influence on commitment than annual leave arrangements. A coefficient of determination (R square) = 0.384 indicating that 38.4% of the variation in level of nurses' commitment of the nurses can be explained by the variations in the adequacy of leave (annual & maternity) arrangements holding other factors constant. The study concludes that adequacy of leave arrangements (annual leave & maternity leave) significantly influences the level of commitment of nurses in public hospitals. The study recommends enhancement of leave arrangements so as to significantly improve the levels of commitment of nurses in public hospitals in Kenya.

Key Words: Annual Leave, Maternity leave, Leave arrangement, Commitment, Nurses

Hindrance of Open-Air Markets to Sustainable Urbanism in Kenya: Case of Five Selected Urban Towns in Kenya

Grace Kerubo Ogeto graceogeto4@gmail.com Kisii National Polytechnic

ABSTRACT

For the past four decades, Kenya has experienced many rapidly growing town characterized by informality, congestion and frequent evictions coupled with loss of property and hostility among the involved actors. The country's population has become increasingly urbanizing and this therefore calls for urban management institutions to plan well to manage this transition. Open air markets are essential for socioeconomic development if Kenya is to realize Sustainable Development Goal (SDGs) and achieve her vision 2030. The focus for this study was explore challenges hindering urban governance to be sustainable. The study was guided by the following objectives: to evaluate challenges hindering sustainable urbanism, to explore the institutional policy framework and financial implications and to find out the role of politics and vested interests in open air markets. This study adopted Sustainable Livelihood Approach (SLA). Urban towns were purposively picked from five counties and a sample of 20 people were randomly selected from open air markets users and county management team overseeing implementation of county plans and the welfare of open-air markets. Engaging evaluative field survey this study used interactive interview schedules, questionnaires, observation and Focus Group Discussions (FGDs) to collect primary data and review of documentaries for secondary data. The data collected was analyzed using descriptive statistics in simple percentiles, tables and graphs. The findings clearly indicated numerous challenges experienced in the efforts to implement strategic plans for sustainable urbanism. Plans implementation faced hurdles due to initial poor planning, open air market hustlers, corruption, land grabbing and corruption. In conclusion urban towns must be well planned to avoid loss of livelihood. This study recommended that all stakeholders employ appropriate approaches of conflict resolution and peace building.

Key Words: Sustainability, SLA, Urbanizing, Policy framework, SDGs

Preparedness of TVET Institutions to Incorporate Online Learning During Covid-19 Pandemic: A Case of Sigalagala National Polytechnic

Eliud Opot Odindo eliudodindo2017@gmail.com The Sigalagala National Polytechnic

ABSTRACT

Schools and tertiary institutions around the world had to be closed indefinitely due to the rising tensions from the spread of COVID-19. This exposed the vulnerability of systems of education in Kenya both private and public institutions; which relied majorly on conventional mode of learning (face -to -face). The only remedy to ensure that learning was not disrupted was to opt for an online learning platform. This study seeks to assess the readiness of public TVET institutions in Kenya to adopt online learning to ensure continuity of learning; a case study of Sigalagala National Polytechnic. The readiness will be pegged on staff training, availability of relevant technology, internet bundles for both trainers and trainees and the overall view of online learning. Data will be collected by use of closed online questionnaires in the attempt to limit physical interactions. The questionnaires will be submitted through a WhatsApp application which will be responded to by the trainees and the trainers from different departments. A random sampling technic will be used to select two (2) students and two (2) trainers from ten (10) departments within the target population. Data will be analyzed guantitatively using statistical package for social sciences SPSS. The result of the study will be presented using charts and tables.

Key Words: TVET Institutions, COVID-19, E- Learning, ODEL, Online Learning, LMS

The Career Guidance Aspect in Aligning Skills to Meet Labour Market Needs

Eric Omundi omundie@kisiipoly.ac.ke Kisii National Polytechnic

ABSTRACT

This paper assesses the influence that career guidance has on students' ability to choose courses to pursue in Technical Institutions. It explores the practice of educational guidance at basic education level and its impact on career related decision making for these students. The main assumption of this presentation is that a fitting career path must be based on one's talents (giftedness), abilities and interests. Are trainees at TVET well guided to make informed career decisions? What factors inform career choice decision making for these trainees? These are the main questions this study will aim to answer. The study aims at establishing a coherent and holistic guidance system for learners and teachers. The paper reviews literature and analyses findings of Research studies on the practice of career guidance with the aim of coming up with recommendations that will improve career guidance and help reduce the mismatch between TVET training and labour market skill demand. The main conclusion of this study is that career guidance is wanting in terms of content, frequency of instruction and level of individual attention accorded to the learners. The fact that learners hardly depend on career guidance to make career choice decisions is also brought out in the presentation. The paper recommends that training of career guidance teachers be enhanced at all levels of the education system and be designed to include both educational and vocational guidance. It also recommends that career guidance be made a constant and interactive programme for all students. The paper strongly emphasizes on the learners' giftedness to inform the process of career quidance.

Key Words: Career guidance, TVET, Technical Institutions, Talents, Abilities, Interests.

Perception of Learners and Trainers Towards Online Learning: A Survey of Kisii National Polytechnic

Geoffrey M. Nyachiro mariitageof@gmail.com Kisii National Polytechnic

ABSTRACT

With the rise of COVID 19 cases in the country, the president on his 15th state address on Covid 19 suspended physical learning in all learning institutions from basic education to higher education. This led to the ministry of education through department of Vocational and technical training (VTT) directing all TVET institutions to undertake the training online so as to cover the curriculum as per the stipulated time, given that the external examinations date will not change. In response to this directive, Kisii national polytechnic resulted taking their classes online using the already available learning management system. The main focus of this paper is on the perception of trainers towards online teaching and learning. More specifically, this paper aims at identifying challenges the trainers are facing in the teaching and learning process. Moreover, the objective of this paper is to identify the level of readiness of trainers towards online teaching and learning. This paper also analyses perception issues from a learners' perspective. This study uses a qualitative exploratory research method and a mixture of focus group and face-to-face semi-structured interviews to obtain data to investigate the perception of the trainers when conducting teaching and learning. Using a mixed-method research online methodology, a random sample of five (5) Heads of departments HoDs) will be selected from the ten (10) academic departments, 80 out of 200 trainers and 400 out of about 4000 learners. Trainers Questionnaires and HoDs Interviews were used to collect data. Quantitative data will be analysed using percentages and F-test while qualitative data analysed using thematic approach. The findings of the study will guide policy makes on the perception of learners and trainers toward e-learning and therefore seek ways to improve training for a better and well equipped TVET graduate. The recommendation arrived at will be useful not just to Kisii National polytechnic but TVET institutions across the country.

Key Words: Perceptions, E-learning Instructional Design, Challenges

Analysis of Mathematics and its Place in Sustainable Development

Alex Nyaribo alexnyaribo20@gmail.com Kisii National Polytechnic

ABSTRACT

Mathematics is a language in its own right. It is an intellectual achievement of great sophistication and beauty that reflects the power of deductive reasoning. The globalisation of markets, the spread of information technologies and the premium paid for workforce skills all emphasize the essential requirement for proficiency in mathematics. Research reports about inadequate teaching, poorly designed curriculum and poor performance in examinations fuel fears that students are deficient in requisite mathematical skills demanded by the society. How well Kenyan college students are learning mathematics and what ought to be done about it are matters for every citizen to ponder. Boosting performance in mathematics proficiency is now the concern from many guarters: college administrators, teachers, students and employers. Developing proficiency in teaching mathematics needs changes in mathematics curriculum. teaching methods, learning materials, facilities and assessment. Therefore, mathematics teachers need to relate the teaching and learning of mathematical concepts to life experiences of the students. Application of mathematical concepts can be related to real-life events even making a hit movie. This makes students appreciate the relevant real-world uses of mathematics. The connection aspect of teaching and learning mathematics helps students understand how mathematics topics are connected to other subjects even literature. The purpose of teaching and learning mathematics is to transfer of knowledge from the classroom to real-life applications. This is possible in mathematics, as application of mathematical concepts to real-life situations is the beauty and essence of the subject. These teaching and learning strategies are aimed at enhancing mathematical proficiency in college graduates who are studying various types of trades. There is a growing numbers of mathematics teachers and researchers that are able to see strong gains and connections in students' performance and interest by adopting contextual teaching and learning practices.

Key Words: Mathematics, Performance, Teachers, Real Life, Curriculum

Determining the Compliance of Covid-19 Mitigation Measures in Kisii Town

Godner Bwari peter godnerbwaripeter@gmail.com Kisii national polytechnic

ABSTRACT

Globally, the number of newly reported cases continues to grow. The COVID-19 pandemic has affected Kenya's economy in several ways due to noncompliance to covid-19 regulations. They include social distance of 1.5m, hand washing/sanitizing and wearing of masks. A cross-section study design was conducted to determine compliance of covid-19 regulations so as to prevent the spread of the disease. The study intended to know the compliance to covid-19 mitigation measures and reasons for noncompliance. The sample size was 295 and questionnaires were used to gather diverse information. The data was entered into excel worksheet. verified by ensuring that the study identities were matching the data in the questionnaires and prior to importing to statistical package for social sciences (SPSS) version 22 where both descriptive and inferential statistics were performed. Statistical significance of differences in proportion was determined using Chi-squire test of analysis. It was observed that majority of Kisii residents were not observing covid-19 protocols hence contraction of the economy, productivity losses, and social welfare losses. The preliminary data so far indicates that Kisii residents were not compliant with covid-19 protocols by 93%. However, the contraction rate can be reduced if they take health as their responsibly and wear masks as required, maintain social distance in social datherings as well as washing hands. The study therefore recommends compliance of COVID-19 regulations to prevent further spread of the pandemic especially in Kisii town

> Key Words: COVID-19, Economic Contraction, Mitigation Measures, Compliance

Influence of Smartphone Addiction on Students Learning and Memory: A Case Study of Bumbe Technical Training Institute

*Achuodho Hamphrey Ouma, Prof. Pamela Raburu, Calistus Omilo and Claude Juma hamphreyachuodho@gmail.com

ABSTRACT

While smartphones and related mobile technologies are recognized as flexible and powerful tools that, when used prudently, can augment human cognition, there is also a growing perception that habitual involvement with these devices may have a negative and lasting impact on users' ability to think, remember, pay attention, and memorize. The purpose of this study was to investigate the influence of smartphone addiction on Technical Training Institute students learning and memory. The study employed quantitative research design to collect and analyze data with a target population of 1310 students from Bumbe Technical Training Institute in Western region of Kenya and a sample size of 303 Bumbe TTI students (172 females and 131 male) were selected by stratified sampling. Questionnaires were used as the main data collection instruments for the study. The data was analyzed using descriptive statistics. The students felt that smartphone addiction is the main reason for their poor academic achievement, meaning that smartphone addiction existed among students and influences their learning and memory. Students also realized the ill effect of overuse of smartphones on health, learning, attention span and memory. The present study helped us to create awareness among the participants regarding the impact of overuse of smartphones and how it is influencing their academic activities. Therefore, the study recommends that academic institutions should implement programs that can restrict students from using social network sites and applications while attending lectures. The study also recommended that the students are only allowed to use their smartphones when the lecturer tells or recommends them to do so; for example, to access their academic materials or something of the sort.

Key Words: Smartphone, Addiction, Learning and Memory

SCS-16 Anti-COVID Tag

Isaiah Ong'ong'a isaiahongonga@gmail.com The Kisumu National Polytechnic

ABSTRACT

Health and safety have become number one priority during the COVID 19 pandemic. Employers, school officials, government officials and others need to do everything to ensure the highest standards of protection possible. A number of interventions were proposed by WHO to help minimize the spread of the virus. One of these interventions was the social distancing. According to CDC, social distancing means keeping a safe space between yourself and other people. From experience and observation, social distancing has been one of the hardest things for people. Many people have violated the social distancing rule of 6 feet apart not because they like but due to the nature of human beings that is built on interaction. Whether in school, college, organization or any other social place, keeping social distance has not been easy. Due to this problem, several organizations have undergone unnecessary shutdowns. Also, a number of countries and regions have been under lockdown because of peoples' failure to observe social distancing rule especially during social gatherings. As a solution to this problem, Anti-COVID Tag has been designed to ensure proximity monitoring without having to verbally remind people to keep social distance during the COVID era. The tag will remind people through sound whenever they forget to keep safe distance from each other. The design is in the form of a small wearable unit that the wearer can hang on his neck while moving around in a public place. The tag uses Bluetooth radio signals to scan for other tags in its environment. As soon as the tag meets another tag within a radius of 1.5 meters, a warning signal follows. This project ensures that safe distance is kept between employees in office, students in schools, people in recreational facilities and many other places. Also, the device uses basic technology and put together low cost readily available components. This ensures a very cost-effective monitoring of safe distancing between people in public places.

Key Words: Safe Distance, COVID-19, Gathering, Ultra-Wide Band, Alarm. Signal, CDC

Socio-economic Characteristics of Cricket farmers in the Lake Victoria Region of Kenya

Jackline A. Oloo1*, Afton Halloran², Maina J. Nyongesah³ *jacqueslangi@ejooust.ac.ke

 Department of Agricultural Economics and Agribusiness Management, Jaramogi Oginga Odinga University of Science and Technology, Box 210-40601, Bondo, Kenya.
Department of Nutrition, Exercise and Sports, University of Copenhagen, Rolighedsvej 25 1958 Frederiksberg C, Denmark
Department of Biological Sciences, Jaramogi Oginga Odinga University of Science and Technology, Box 210-40601, Bondo, Kenya.

ABSTRACT

Climate change has provoked innovative mitigations includina domestication and consumption of edible insects like crickets. Crickets require fewer inputs like water and feed but provide higher output per cubic unit of agricultural land compared to other livestock. They also contain important macro and micronutrients and therefore have potential to enhance a sustainable food and nutrition security for vulnerable families. Social-cultural systems and economic situations may shape the adoption of crickets as a mini-livestock as well as its impact on women and rural farm families in Kenya. An understanding of the socio-economic characteristics of practicing farmers in Kenya will enhance an understanding of the factors that shape the adoption of crickets as a mini-livestock among rural farm families and promote sustainable cricket production models in Kenya. This study determined the socio-economic status of cricket farmers in the Lake Victoria region of Kenya. Purposive sampling technique was used to select practicing cricket farmers. Data on age, income levels, and cricket farming experience, education, household size, land size and ownership were collected. The study results showed that the majority (71%), of the cricket farmers were females who were between the ages 30 and 49 years of age, had four years of experience in cricket farming and with secondary-level and primary education. The average household size was 5-6 individuals. The cricket farmers also engaged in small-scale crop and livestock production with an average monthly income of approximately USD50.

The study concludes that variations in socio-economic factors as well as socio-cultural insights affect the cricket farmer's ability to uniformly adopt cricket farming innovations for optimized cricket production. The findings of this study should be considered during the implementation of strategies to upscale cricket farming in the Lake Victoria region of Kenya. More specifically, a subsidized and comprehensive sensitization to encourage more men into the venture, are required.

Key Words: Climate change, Crickets, Women, Socio - cultural, Economic

Prospects of Adopting the Onsite Classroom Training Model in Kisii National Polytechnic: A Case of KEFEP Classes.

John H. Gekonde john.hg.knp@gmail.com Kisii National Polytechnic

ABSTRACT

The onsite classroom training model requires that trainees engage in structured work-integrated learning before completion of college as is the case in some Canadian colleges. For instance, Vancouver Island University [VIU], being the Canadian partner with the Kisii NP [National Polytechnic] in the Kenya Education for Employment Program [KEFEP], has adopted this model with high levels of success. However, in most if not all TVET institutions in Kenya, this model has never been meaningfully integrated. This paper discusses the benefits, challenges and potential strategies for adopting the onsite classroom training model in Kisii NP with specific reference to the KEFEP [2020] class pursuing Building Technology Level 4. In this case study, participants included 6 trainers and 23 trainees, selected using purposeful sampling techniques. Purposeful sampling was used to identify and select individuals that had a knowledgeable and situated experience within the area of interest. The data collection instruments were interview guides for trainers, questionnaires for trainers and observation schedules. Qualitative data from interviews and structured questionnaire items was analysed using qualitative techniques while quantitative data from non-structured items were analysed using percentages, mode and t-test. The analysed data was presented using frequency tables, cross-tabulations and graphs. Findings reveal that onsite training enabled trainees to internise/apply theory in an authentic work environment; had the potential to enrich their soft skills; was best done after theoretical training; and both trainers and trainees eagerly embraced it despite facing some challenges. To that end, the paper recommends drafting of an institutional policy framework to guide the implementation of the model and actively involve trainees, too, in designing the work-integrated work programme. There is also need to borrow a leaf from, and get mentored by, VIU on the implementation of the onsite classroom model.

Key Words: Prospects, Adopting, Onsite Classroom Training Model, KEFEP Classes

Conceptual Approach to Sustainable Urban Development: A Case Study of Eldoret Town

Otieno K¹, Odula A², Waseni L³ & Nyanumba A4. otienokelvin18@ymail.com ^{1,2,4}The Eldoret National Polytechnic ³ Kaiboi Technical Training Institute

ABSTRACT

Sustainable urbanization is both the study of cities and the practices to build them, that focus on promoting their long-term viability by reducing consumption, waste and harmful impacts on people and place while enhancing the overall well-being of both the place and the people.

The future of urban planning has been the object of lively debate in recent years. For a long time, urban planning was considered an inefficient tool, unable to address development effectively.

However, renewed attention to urban planning has recently emerged. Shifting dramatically from its initial ambition to command and control the city, planning has started reassessing itself in the new context of urbanization. This paper was guided by the following objectives; to interpret the concept of sustainability, to identify urban planning traditions that lay a foundation for sustainability and finally, to suggest steps towards urban planning framework that incorporates sustainability. The methodology covered a case study of Eldoret town. Data was collected through direct observation of the current urban state of the town and also through a set of questionnaires to the general public administered through stratified sampling. The findings revealed that sustainability is not entirely practiced in the town and this is due to poor economic planning, improper environmental management methods and ineffective urban governance. The findings also revealed that traditional urban planning techniques are still in play in the town and also the findings uncovered that good urban governance, proper environmental management and correct economic development planning will meliorate sustainable urban development within Eldoret town. In conclusion, sustainability is important all around the globe. It will not only help in reducing environmental degradation but also this research will assist the national and county government plan efficiently and effectively structures in their towns and cities. In summary, the study has drawn the following recommendations; protecting and restoring natural ecosystems in urban areas is crucial, creating community environments that nurture human potential using land and resources wisely and facilitating human lifestyles that contribute to global sustainability.

> Key Words: Sustainability, Urbanization, Governance, Suburbs, Urban development.

Evaluating Local Food Consumption Behaviors in TVET Institutions, Case study of The Kitale National Polytechnic, Trans-Nzoia County, Kenya

Wamocho Leonard Kingasha & Miriam Wakasa flonardsk@gmail.com The Kitale National Polytechnic

ABSTRACT

Scientists have recently been studying determinants of food consumption behavior with a focus on sustainable food systems. This stems from increased consumer demand of products to sustain our growing population. The current food system is not sustainable and we must recognize and implement other food systems, such as local food, to help reduce the damaging environmental impacts we already face. Changing food consumption behaviors is difficult because it is greatly influenced by habit. It is important to understand the determinants of behavior both individually and holistically. A survey was conducted to gather information from about 200 TVET College students regarding food consumption. This study looks at five behavioral determinants, based on relevant literature, that were tested to assess their predictability of local food consumption behavior among TVET students by means of a behavioral model. "Attitude" variables were found to be significant predictors of grocery purchasing behavior, while other variables (Knowledge, Behavioral Control, Subjective Norms, and Situational Factors) did not show any significant correlation. Two behaviors (Grocery Index and Consumed Meals Index) were tested using a multiple regression. Only the regression model on the Grocery Index was significant (p<0.05). Since only one studied variable proved to be a noteworthy predictor, this study shows that the behavioral model created to predict local food consumption is not adequate. Based on the results from this study, it is recommended that the College utilizes an experiential learning program geared toward facilitating positive attitudes toward local food consumption. The TVET College community could be an innovator of sustainable food programs. Through the use of education as well as a focus on strengthening consumer attitudes, we can promote local foods and create a change in the food consumption paradigm.

Key Words: Local Food, Consumption Behaviour, Learning Programs, Environmental Impact, Sustainable food systems

Consequences of the Covid-19 Pandemic on Street Families in Kenya

Chepn'getich Marygoretty gorettychep@gmail.com Technical University of Kenya

ABSTRACT

In 2020, COVID-19 stormed the entire planet catching governments unprepared for the pandemic. In March 11, 2020, the WHO declared the existence of a global pandemic. In Kenva, the first case of the virus confirmed on March 12, 2020 and numbers have gone up ever since with the country going through phase three of the virus as from March 2021. Faced with an alarming spread of the virus, the Kenyan government ordered a complete containment of most sectors of the economy through curfews, handwashing directives, proper sanitization, social distancing, and avoiding crowded places. Among the groups of people particularly affected by this health crisis are also those in a situation of homelessness -street families. The objectives of this study are; to understand the issues experienced by people experiencing homelessness, on a personal, social and economic level, to identify the challenges faced by people experiencing homelessness and to recommend possible remedies to help street families. The researcher in this study used surveys and a critical analysis of publications from the Kenyan media and press to report on the pandemic context in which the street families' population of the Nairobi Metropolitan Area finds itself during the wave of the Covid-19 pandemic. The findings of this study indicate that the homeless have no access to food, no sanitary ware for personal hygiene and lack emergency accommodation measures during the pandemic. It would be imperative for the government to create a stable and secure environment that would make it possible to reach homeless people to better plan, prioritize and implement services to them helping stop the spread of the virus.

Key Words: Covid -19, Pandemic, Street Families, Social Justice, Homelessness

Effect of Digital Preservation of Information on Academic Libraries: A Critical Review

Maureen Inyangala Ngaira mngaira06@gmail.com

ABSTRACT

Digital preservation is a combination of policies and actions to ensure access to reformatted and born digital content regardless of the challenges of media failure and technological change. In this regard digital preservation is not only preserving information by backing up desired content but also involves caring and maintaining the storage media upon which the data is stored. The method was to examine information resources available in libraries through a task top research. The paper highlights the effect of digital preservation and nature of information resources in libraries .It denotes that digital preservation should be given desired attention in academic libraries to avoid loss of resources .The purpose of the study is to identify and raise awareness of the effect of preservation of digital materials, to appraise and evaluate information sources and documented developments in digital preservation and to provide an enquiry and advisory services on effects of digital preservation. Digital preservation is no longer an emerging tool it is now a preferred and accepted practice for saving many information materials. The method of data collection is to critically collect literature and find out what how other writers perceive the effects of preservation of information materials. From the findings it was established that each digital preservation project comes with its set of requirements and demands, individualized planning with regard to technological requirements for the selection and restoration of source items, staffing cost, archival cost and time factor. It is hereby recommended that digital preservation ought to be embraced by most information centres to highly preserve and protect materials lifespan. It also minimizes deterioration hence enabling reliable materials for future reference.

> Key Words: Digital Preservation, Information Resources, Academic Libraries

Professional Development of Technical Vocational Education and Training (TVET) Trainers in Kenya: Status and Way Forward

Judy Githaiga & Norah Nyakira nenyakira@gmail.com Kiambu Institute of Science and Technology

ABSTRACT

Continuous Professional Development (PD) of trainers in Technical and Vocational Education and Training (TVET) is important as it equips them with new technological skills demanded by industries as well as closes the gaps of the pre-service training. Enhanced opportunities for PD contribute to constant innovation to suit the constantly evolving human needs. However, research shows that PD of TVET trainers in Kenya is weak due to lack of clear policies on PD, lack of supporting policies, inconsistency and lack of coordination in implementation of the PD policies. The effect of this poor PD of TVET trainers is mismatch between supply and demand of skills, slow attainment of Kenya's development agenda (Vision 2030) as well as low morale among TVET trainers due to lack of clear guidelines on the relationship between PD and their career progression. The objective of this paper is to identify the challenges faced in the formulation and implementation of PD of TVET trainers' policies in Kenya and suggest strategies on their effective implementation. Commitment of the government to enhancing the guality and relevance of TVET, shall not only lead to fast industrialization but also nurture a more robust trainer and innovative trainees. It is therefore; only through PD that TVET will help Kenya attain a competitive global economy for industrialization and the realization of Vision 2030.

Key Words: Professional, Development, Trainer, Policy, Implementation

Exploring the Impact of COVID 19 on Teaching and Learning in TVET Institutions: A case study of Thika Technical Training Institute

Peter Muchiri & John Musyoka pmuraguri289@gmail.com Thika Technical Training Institute

ABSTRACT

TVET institutions are charged with the responsibility of impacting critical knowledge and skills to learners to enable them get gainful employment or create employment for themselves. COVID 19 has impacted heavily on traditional content delivery methods used by TVET trainers in their institutions. The protocols set forth by the ministry of health have made it hard for trainers due to the high number of students currently in TVET institutions. These has necessitated the adoption of new technologies by trainers to assist them deliver content and instill skills to high number of students without flouting the MOH protocols or exposing learners to the pandemic. Remote learning tools such as Google-Meet, Microsoft Teams, and Zoom are some of the common platforms that trainers have embraced to bridge the gap occasioned by COVID 19 pandemic. Data for the study was through face-to-face interviews collected and self-administered questionnaires with predetermined responses which were administered to trainers and administrators in Thika Technical Training Institute in Thika. The study involved 60 trainers and 10 administrators sampled randomly from the institution. The study yielded both gualitative and guantitative data whose analysis indicate that trainers in TVET felt that COVID 19 had impacted negatively on training, most trainers felt that even though they were trained on the new technologies, they were still not very comfortable using them. The study concludes that trainers and administrators in TVET institutions require more training on the technologies, and more resources provided to enable effective use of the said technologies. More awareness needed for successful implementation of the curriculum using the new approaches. It further recommends that administrators monitor the implementation of the curriculum through various platforms to increase use, preparedness and acceptance by TVET trainers and students.

Key Words: TVET, COVID19, Ministry of Health, Training, Remote Learning

Factors Influencing Access to Maternal Health Care Services Provided by Endebess Sub- County Hospital, Trans- Nzoia County, Kenya

Onsomu R, Phd & Masai P. ndemorichard777@gmail.com Kitale National Polytechnic

ABSTRACT

Despite worldwide efforts to curb infant mortality, maternal health care remains a major health problem in many developing countries. In developed countries maternal mortality rate has decreased over recent years through government efforts and support from various agencies. The purpose of this study was to investigate the factors that influence the access of maternal healthcare services provided by Endebess sub- county hospital. The objectives of the study were to: Analyze the economic factors that affect access to maternal health care, examine the relationship between distance and access to maternal health care, analyze the impact of existing programs on access to maternal health care and examine the socio-cultural factors that influence access to maternal health care. The information provided in this study will benefit policymakers, community members and all stakeholders to improve maternal health care services in order to reduce infant mortality rate. The study adopted a descriptive survey research design with a target population of 60 respondents. Samples of 52 respondents were selected using Abrha formula. The study was guided by Functionalist theory. The researchers collected data using questionnaires. Reliability of the instruments was tested through a pilot study where the Pearson's correlation coefficient of 0.73 was obtained, hence the instruments were considered reliable. Quantitative data was analyzed using descriptive statistics and presented in tables, frequencies, percentages and bar graphs. The study established that access to maternal health care services is highly influenced by the socio-economic status, programs available, distance to the facility and perception. Based on these findings, future research and policy should focus on improving access to maternal healthcare services, to reduce maternal and child mortality. This study was intended to contribute to developing a multi-directional and integrated strategy for access to maternal health services through sensitization in developing countries like Kenya.

Key Words: Access, Care, Maternal Health, and Affordable Health

Preparedness of TVET Institutions to Incorporate Online Learning During Covid-19 Pandemic: A Case of Sigalagala National Polytechnic

Eliud Opot Odindo eliudodindo2017@gmail.com The Sigalagala National Polytechnic

ABSTRACT

Schools and tertiary institutions around the world had to be closed indefinitely due to the rising tensions from the spread of COVID-19. This exposed the vulnerability of systems of education in Kenya both private and public institutions; which relied majorly on conventional mode of learning (face -to -face). The only remedy to ensure that learning was not disrupted was to opt for an online learning platform. This study seeks to assess the readiness of public TVET institutions in Kenya to adopt online learning to ensure continuity of learning; a case study of Sigalagala National Polytechnic. The readiness will be pegged on staff training, availability of relevant technology, internet bundles for both trainers and trainees and the overall view of online learning. Data will be collected by use of closed online questionnaires in the attempt to limit physical interactions. The questionnaires will be submitted through a WhatsApp application which will be responded to by the trainees and the trainers from different departments. A random sampling technic will be used to select two (2) students and two (2) trainers from ten (10) departments within the target population. Data will be analyzed guantitatively using statistical package for social sciences SPSS. The result of the study will be presented using charts and tables.

Key Words: Transition, Policy, TVET, Free and Compulsory Education

Retraining TVET Trainers in Kenya for Changing Global Trends and Dynamics

Muriuki S. & Magut D. researchinno@nairobitti.ac.ke Nairobi Technical Training Institute

ABSTRACT

TVET skill training is recognized worldwide as an avenue for preparing citizens for the world of work. Through TVET institutions, industries and organizations expect to receive prospective employees with high standard employable skills who will turn round the production and manufacturing to a competitive level. Unfortunately, industry continue to express considerable dissatisfaction with the general low level employable skills demonstrated by most prospective TVET graduates. This has been attributed to the fast-changing industry technology and the general reluctance of TVET training institutions to infuse these skills into prospective trainees. Nonetheless, this is an indication of the rot in TVET institutions which have for long time suffered negative perception and marginalization by most African governments. Because of these, facilities and equipment of training in these institutions are either inadequate, obsolete and cannot compare to those in industries where prospective graduates will work. Furthermore, reports show that most trainers in TVET institutions lack basic technical skills to even operate simple workshop machines and equipment used for training. Experts have attributed these to existing gaps in TVET teacher pedagogy, lack of updating trainer skills, insufficient involvement of industry and have recommended various strategies for revamping performance of this noble institutions including improving increasing funding and retraining of TVET trainers. This research adopts desktop research and survey methodology and will seek to establish TVET trainer's perception, challenges and mitigations put in place in addressing delivery of desirable employability skills for changing dynamics of industry. The findings and recommendations are expected to assist in addressing the shortcomings identified in TVET trainer capacity building programmes.

Key Words: TVET, Training, Trainers, Skills, Global

Impact of Inclusive Education on Children with Special Needs in Kisumu County, Kenya

Nyang'or T & Ongete E² thomasnyangor@kisumupoly.ac.ke ¹ The Kisumu National Polytechnic ² Umoja Foundation

ABSTRACT

All children irrespective of their gender, age, and the physical and mental need, have a right to inclusive education. The Kenya government is not only committed to providing this but also gives focus to marginalized groups especially the children with special needs and those with disabilities. However, the extent to which this commitment (of inclusivity) has made an impact on the ground is still a bone of contention. The purpose of the study was to examine the Impact of inclusive education in public primary schools in Kisumu County. Specifically, the study sought to assess the impact of inclusive education on children with special needs in the study area. The study adopted qualitative method with descriptive survey design. Purposive sampling was the main strategy used because not all the schools in Kisumu County provide inclusive education. Teachers head teachers and parents from inclusive schools in the County participated in the study. The study sampled 2 schools from the County which offer inclusive education with a sample of 40 respondents. The study used an interview guide to solicit information from all respondents which was carefully formulated according to the research objectives/questions. The study found that inclusion has increased the number of children accessing education. Secondly, it has increased the literacy rate in the community. Finally, inclusive education has created positive perception towards persons with special needs and disability in the community and has enabled learners to appreciate each other's strength and weaknesses.

> Key Words: Inclusive Educations, Children with Special Needs, Marginalized Groups
Leaky - Type Vaccine Model: Simple HIV- Aids Epidemic Vaccine for Kenya

Marjorie Truphosa Amunga tmamunga@gmail.com Friends College Kaimosi

ABSTRACT

The search for a safe, effective and affordable HIV/AIDS vaccine has intensified worldwide as a way to combat the deadly disease. Key factors which determine HIV/AIDS vaccine modeling have been given by several epidemiologists. The two types of HIV/AIDS vaccine are Leaky-type and All or Nothing type. A detailed study of the All or Nothing type of HIV/AIDS vaccine has been studied to show the future trend of the epidemic in the availability and application of the vaccine in Kenya. The objective of this study is to model the HIV epidemic Leaky-type of vaccine in Kenya. The main aim is to show the future trend of the HIV epidemic in the availability and application of the Leaky-type of vaccine. The methodology involves formulation of a system of ordinary differential equations for both the simple HIV epidemic model in which the Leaky-type of vaccine is incorporated. Using a system of differential equations in the model simulation is done using secondary data from Kenya Medical Research Institute (KEMRI) and Kenya Aids Vaccine Initiative (KAVI) by numerical integration using SAS computer package. The curves obtained show the HIV prevalence rate in the presence and application of the Leaky-type of vaccine in Kenya. The findings of this study are useful to Public Health Researchers among others in the management of HIV/AIDS vaccine once it is available and in the administration of any HIV/AIDS treatment and prevention method being used. The findings clearly demonstrate that in the availability and application of the vaccine the infectiousness of the disease is drastically reduced meaning that chances of more infections are almost zero. The model is also a contribution of knowledge in mathematical modeling. The recommendation is to motivate the public health workers to work on developing a vaccine for the disease and actually give guidelines on its application once available to help curb the spread of the disease.

Key Words: HIV- Aids, Vaccine Modeling, Leaky-type

Antibiotic Resistance of Streptococcus Pneumonia Serotypes in Kisii, Kenya

Orucho V.,Ochoi C &,Nyangau M oruchov@gmail.com Kisii National Polytechnic

ABSTRACT

Pneumoniae remains the leading cause of death in children under five worldwide, accounting for about 1.6 million deaths a year. Streptococcus pneumoniae, has proved to be the most competent bacterial pathogen causing pneumoniae infections among the infants and the elderly, leading to great morbidity and mortality. Currently there are over 94 different with a number being drug-resistant hence introduce a twist to the current treatment strategies. Information of current antibiotic susceptibilities, resistance and serotype distribution will be important in designing new strategies for treatment and management of pneumococcal infections. A total of 309 S. pneumoniaee isolates were collected from patients attending the Kisii Teaching and Referral Hospital between 2017 and 2018. Nasopharyngeal samples collected and serotyped using PCR, then cultured and their sensitivity to drugs tested using various concentrations Erythromycin, Tetracvcline. of: Ofloxacin. Oxacilin. Trimethoprim/sulfamethoxazole and Chloramphenicol. Out of the 309 samples collected, 235 were positive for S. pneumoniae, although 10 of the samples had incomplete data. A total of 41 S. pneumoniae serotypes isolated from the 309 samples with the most prevalent serotypes being; Non-typable (11%), 15B (7.6%), 19F (7.0%), 19A (6.7%), 23B (5.8%), 23F (5.3%), 6A (4.4%). All the serotypes were highly resistant to Oxacilin, and trimethoprim/sulfamethoxazole, while showing high sensitivity to Erythromycin, Ofloxacin and chloramphenicol. The rate of sensitivity to Tetracycline was 75% with the other 25% showing intermediate sensitivity. The serotypes isolated showed a marked resistance to routinely used antibiotics among various ages. The serotypes also consisted of serotypes 19A, 6A, and 5B that are lacking in the pneumococcal vaccine (PCV 10). This data will provide relevant information for a better approach to clinical treatment, management and prevention of infections with S. pneumoniae.

Key Words: Streptococcus Pneumoniae, Antibiotic Resistance, Serotypes, Drug Sensitivity

Strengths in Digital Teaching and Learning in TVET

Vinden S., PhD, Flinn C & Carson T. sally.vinden@viu.ca Vancouver Island University

ABSTRACT

This research study explored strengths in digital teaching and learning in trades, vocational, education, and training (TVET). The study used a mixed-methods research methodology with an appreciative inquiry approach to capture both quantitative and qualitative data. The intention was to capture TVET instructors' perceptions while remote delivery restraints were still in place in the Province of British Columbia during the coronavirus global pandemic. Data were gathered through a survey involving 37 participants and interviews with nine participants. The study revealed three themes to strengthen digital learning and teaching in TVET: digital pedagogy, technology and tools, and open educational resources and open pedagogy. The global pandemic has changed trades education and the use of digital pedagogy offers educators the opportunity to permanently embrace these approaches.

Key Words: : Digital Pedagogy, Vocational Education, Open Pedagogy, Open Educational Resources, Digital Literacy

Depression and Associated Factors among Special Trainees in Special Training Institutions

AwuondoWillys willys.awuondo@gmail.com St Joseph's Nyangoma TTI for the Deaf

ABSTRACT

Technology has greatly advanced across all sectors of human skills, knowledge and attitude: it is in this regard that the country has seriously embarked on an inclusive training of trainees regardless of their physical and mental abilities. It's therefore useful to have relevant behavioral information pertaining to how different special trainees approach the technological training skills moving forward. The purpose of this study was to determine the frequency of anxiety and depression among special trainees in St. Josephs Nyangoma technical institution for the deaf and their associations with socio-demographic and educational characteristics. The study employed a concurrent triangulation research design within the mixed method approach and a sample size of 18 trainers', 126 female special students. 126 male special students and 3 deans of students respectively were selected using purposive sampling from St. Josephs Nyangoma technical institution for the deaf. Questionnaires and interviews were used as the main data collection instruments for the study. The data was analyzed using descriptive statistics and thematic analysis. The mean age of students was 21.4 plus or minus 1.41 years with female preponderance i.e. 153(72.4%).Depression was present in 99 (35.1%) students. Where by age (p=0.013), gender (p=0.016), examination criteria dissatisfaction (p=0.002) and overburden with test schedule (p=0.002 were significantly associated with depression. One third of students were found to have depression which was associated with socio-demographic and educational factors as stated above.

Key Words: Depression and Associated Factors, Special Trainees, Training

OUR PARTNERS



Designed & Printed By: Crefadi Agency 0729836934