

# DISCOVERY

## About the Cover



Education is important to national development spanning all indices of and precursor of socioeconomic transformation, technologies development, welfare attainment, health and peaceful co-existence in communities. It leads to the culmination of facts, experience and thoughts that is gained over a life time. This informs the aphorism that a nation cannot develop beyond the level of education of the citizenry. Schooling is an organised process of teaching and learning which takes place in formal setting. Children are expected to be exposed to schooling as the primary focus of their engagements. Parents ordinarily take education of their children as important unless there are serious issues that bar them from its achievement. In developed economies almost all children of school age attend schools, whether in urban or rural areas. The experiences in developing nation, particularly in rural areas, are contrary to this, which has been attributed to dearth of infrastructural facilities, indigence and low socioeconomic status. (Ref: Alaka FA, Yekinni OT, Ashimolowo O. Factors influencing children's schooling in rural communities of South West Nigeria. *Discovery*, 2021, 57(303), 246-252).

**Spread and Perpetuation of Bacterial Leaf Spot Pathogen *Xanthomonas axonopodis* pv. *Mangiferae-indicae* in Mango Orchards**

Borkar SG, Ajayasree TS, Chavan VA

Bacterial leaf spot and canker of mango caused by *Xanthomonas axonopodis* pv. *Mangiferae-indicae* is an important disease of mango world-over. In Maharashtra state, India, the disease symptoms appear on the mature leaves of mango plants in the month of Nov-Dec which includes water-soaked irregular lesions ranging from 1-5mm. These lesions are surrounded by a yellow halo. Several lesions are formed on a single leaf. Such infected lesions are transformed into a cankerous spot. The infection also spread to unripe mango fruit causing blemishes and cracks on the fruit. At the end of the mango season, in the month of June, all the infected leaves drop down in the mango basin with the emergence of new leaves. The young new juvenile leaves are not susceptible to the bacterial pathogen and are observed free from bacterial infection up to a period of 5 months. The bacterial pathogen perpetuates in the fallen diseased leaves and also survives as an epiphyte on juvenile mango leaves till it gets mature to succumb to the infection to cause disease. The spread of the disease pathogen is through the air current during rains in June-July. The air current blows at a speed of 26 km/h in the mango orchards which carries the infected dried leaves with it up to a distance of 88 meters in/around the orchard, which disintegrates due to weather and rainy conditions and releases the bacterial pathogen in soil. The disintegrated infected leaves remaining in the plant basin serve as a source of severe infection in the same plant in the next season while the blown-up leaves serve as a source of infection to other plants in the orchard.

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**Medicinal Plants Used by Local Kavirajes in Sarishabari Upazila of Jamalpur District, Bangladesh**

Sadia Afrin, Mahbubur Rahman AHM

Medicinal plants used by local Kavirajes in several villages at Sarishabari Upazila of Jamalpur District, Bangladesh from September 2017 to October 2018 were investigated. The information about medicinal plants uses of traditional Healer was collected through interview. A total of 52 plant species under 50 genera and 37 families have been documented which are used for the treatment of 57 categories diseases. For each species scientific name, local name, Family name, habit, part(s) used, diseases and treatment process are provided. This important work may be helpful to develop the herbal drug development in future.

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TECHNOLOGY

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**Modeling blood flow with unilateral stenosis based on interpenetration model**

Umuridin Dalabaev

The paper deals with the numerical simulation of the flow of Newtonian fluid by the control volume method, which simulates the flow of blood in a blood vessel with stenosis. An interpenetrating model of two-phase media is used to describe the process. Based on this model, under appropriate simplifying assumptions, we obtain the Navier-Stokes equations in the free (outside the stenosis region) zone, and in the stenotic region, we obtain a system of equations generalizing the filtration equation. Stenosis is viewed as a porous medium. The influence of the Reynolds number and the degree of stenosis on the nature of the flow on the behavior of blood is investigated.

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SOCIAL SCIENCE

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**An Investigation to Continuum Hypothesis**

Lam Kai Shun

Everyone is born with equal rights, and therefore should have an equal opportunity to receive education. Based on the author's previous teaching experience, an empirical teaching model for schools has been developed. Based on this model, an educational philosophy was also discovered, which can be categorized and circulated through teaching, learning, and reflecting. Indeed, through daily experience, this philosophy can be transformed into useful daily applications. The converse of the fact that daily applications can be transformed back into philosophy is also true. Furthermore, the purpose of a case study is rationalization. As such, details of this study will be explained in the following sections. For Penrose's philosophical beliefs, there may be three proposed theories: i) Three types of infinity act as significant stages between the three traditional types of mathematical philosophy and Penrose's three worlds theory. ii) Different types of infinity act as significant stages to connect various types of philosophy, which can be mapped into the multiverse. iii) Inductively, there should be a generalized significance stage that relates to meta-philosophy and the mega-universe. Thus, the aim of this research is to find out the complete solving method of the continuum hypothesis through my suggested research in a book reading investigation. If an in-depth investigation of the continuum hypothesis is required, one may extend the book research project to a larger scale by using big data. Hence, the problem can be viewed and settled in a more detailed manner. Finally, a generalized rationalization theorem will be discovered.

### **Factors influencing children's schooling in rural communities of South West Nigeria**

Alaka FA, Yekinni OT, Ashimolowo O

Education is important to national development spanning all indices of and precursor of socioeconomic transformation, technologies development, welfare attainment, health and peaceful co-existence in communities. It leads to the culmination of facts, experience and thoughts that is gained over a life time. This informs the aphorism that a nation cannot develop beyond the level of education of the citizenry. Schooling is an organised process of teaching and learning which takes place in formal setting. Children are expected to be exposed to schooling as the primary focus of their engagements. Parents ordinarily take education of their children as important unless there are serious issues that bar them from its achievement. In developed economies almost all children of school age attend schools, whether in urban or rural areas. The experiences in developing nation, particularly in rural areas, are contrary to this, which has been attributed to dearth of infrastructural facilities, indigence and low socioeconomic status.

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### **Determination of factors that hinders girl-child Education in Kware local government, Sokoto State, Nigeria**

Ahmad Ibrahim, Yusuf Sarkingobir, Mustapha Sahabi, Ibrahim Salihu, Muideen Oladeji Salami

This study aims to find out the factors hindering girl-child Education in Kware local government Sokoto Nigeria and the possible solutions. A total of 150 parents with girls of school-going age were selected from the twenty five thousand (25,000) study population, using a multi-stage cluster sampling method. A self-designed questionnaire was used to obtain data from the selected respondents. A reliability index score of 0.85 was obtained through test retest. Descriptive statistics was employed in analyzing the data. Problems hindering girl-child education as revealed by the study include; the perception of parents that girl-child education was against their religion and culture, poverty, co-education, parents' lack of education, hawking amongst girls, early marriage and demand for girls' labour at home. The study finally recommended that there should be more awareness campaign for improvement in girl-child education that will involve both traditional and religious leaders as they exert great influence upon their people.

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### **Cultural Transformations in Parents' Handling of Child ICT Usage**

Carson Lam Kai Shun

How should someone encourage 'positive and quality usage of ICT' among students? Lam (2016) suggests that "school and family partnership theory" as well as "mediation philosophy" are key factors for parents when it comes to changing their attitude towards the handling of child ICT usage. Even so, what are the stages or processes of these transformations? This study will review four models and theories that predict the behavioural changes of people. Based on these theories, this study recommends a "permeability model of changes" in order to depict the alteration actions of parents due to the behavioural changes. Therefore, it becomes possible to aid—also known as systemic therapy—immediately during the different stages or levels of change in the model. Hence, parents can successfully change their behaviour towards dealing with their children's ICT usage, in addition to being able to control this usage. Furthermore, this paper also proposes that social, cultural, and psychological factors of children's ICT usage constitutes a step towards the philosophy of Digital Equity. These enhance the aim of the present research by ultimately urging "a positive and quality usage of ICT" among students (Yuen et al., 2014: p.13). The poor academic effects of using ICT for entertainment can therefore be eliminated. That said, parents must nurture their children's passion for learning by not only controlling their ICT usage. The reason is that being overly strict may lead the child to rebel. If this was to occur, then professional intervention would be necessary. As a result, it would be possible to improve the scholarly achievements of students by using educational technology, and it could also bridge the digital divide in education.

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## **MEDICINE**

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### **Analysis of healthy lifestyle among university students: a case study of university of Ilorin**

Oluwadamisi Tayo-Ladega

This study was designed to analyze healthy lifestyles among university students at the University of Ilorin, Nigeria. This is a descriptive cross-sectional study. A total of 625 students participated in this study. Data gathering was carried out from 17<sup>th</sup> November 2020 to 20<sup>th</sup> January 2021 at the University of Ilorin. The majority of respondents were females constituting 71.52%, 24.16 of the respondents were overweight and 13.12% were obese. From the analysis, it was found that there was a significant difference between the university students in the health-related disciplines and those in the non-health-related disciplines based on the health responsibility factor on the part of students. It was discovered that both categories of students have proper knowledge and observance of recommendations on healthy eating habits and physical activity. Also, the majority of the students in both categories do not attend health care educational programs. The model reveals that type of students (health-related or non-health-related), gender (male or female), academic level in the University (first year, second year, third year, and fourth year), and family dynamics (nuclear, extended) were found to be significant predictors of the healthy lifestyle among university students in the University of

Ilorin, Nigeria. From the study, it was revealed that the university students were found of unhealthy living attitudes, a poor level of physical activity, and unhealthy eating habits. It is worthy to note that Universities should be the perfect model for implementing health related programs. Hence, programs that will inspire students to be more accountable for their health should be highly considered.

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## SCIENCE

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### **Modelling the Impact of Climate Changes on Schistosomiasis Epidemic in Human**

Felix B. Mbogolela<sup>1</sup>, Estomih S. Massawe, Daniel O. Makinde

In this paper, a deterministic model incorporating climate changes is formulated and analysed to study the impact of temperature factor and variation of river water levels on the Schistosomiasis disease transmission in human. Qualitative analysis is carried out to determine the basic reproduction number and equilibrium points. It is found that the disease free equilibrium is locally asymptotically stable if the reproduction number is less unity and endemic equilibrium point is globally asymptotically stable if the reproduction number is greater than unity. Numerical simulations are performed and suggest that at a certain range of temperature, i.e. 15.6° C to 30° C, the rate of humans and snails infection of the disease is high. On the other hand, the results show that the force of infection experienced by river water levels is high when the river water levels is low. The study therefore, recommends that treatments, good sanitation practices and human behavioural changes which reduce contact with water bodies should be practiced and applied in the community so as to reduce the infection intensity in the population.

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### **Detection of Antibiotic Residues in Broiler Chicken Meat Sold in Dharan Sub-metropolitan City, Nepal**

Shiv Nandan Sah, Jeena Katwal, Arjun Ghimire, Ranjit Kumar Sah, Pradeep Kumar Sah

*Background:* The antibiotic residues in poultry meat can cause public health hazards such as sensitivity to antibiotics, allergic reactions, a mutation in cells, imbalance of intestinal microbiota, and bacterial resistance to antibiotics. *Objectives:* This study aimed to detect antibiotic residue in Broiler chicken meat collected from the retail shop of Dharan, Province-1 (Nepal) from April to June 2019. *Method:* A total of 60 chicken meat samples (20 muscle samples, 20 liver samples, and 20 gizzard samples) were collected in plastic bags and tested for detection of antibiotic residues against *E. coli* and *S. aureus* by using Agar well diffusion method on MHA through antibiotic susceptibility test and TLC in the microbiology laboratory in Central Campus of Technology, Dharan, Tribhuvan University, Nepal. *Result:* Among 20 muscle samples tested, 3 (15 %) were found to contain antibiotics; While among 20 liver samples tested, 6 (25 %) were found to be positive. But, out of 20 gizzard samples tested, 1 (5 %) were found to be positive. In the microbial susceptibility test, both test bacteria namely *E. coli* and *S. aureus* were inhibited in 7 (11.67%) and 3 (5%) samples respectively among the total of 10 positive samples. In this study, among 7 samples in which *E. coli* was inhibited, only 3 were taken for the TLC method. In TLC, R<sub>f</sub> values of all three samples loaded were calculated as 0.496, 0.464, and 0.456 respectively. *Conclusion:* This study revealed the presence of antibiotic residue in broiler chicken meat sold in Dharan which demands strict rules and regulations as well as surveillance from the concerned authorities.

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### **Recovery of base metals from used fluid catalytic cracking (FCC) refining catalyst**

Alhassan M, Yelwa AS, Abdulrahim H

Base metals Zn, Fe, Cr and Mg were recovered from used (catalytic cracking) catalyst using sulfuric acid leaching method. After pre-treatment at 400°C for 4h, three sets of leaching fractions were carried out on the spent FCC catalyst. The residues were analyzed using FTIR and XRF techniques, while the leach liquors were analyzed using AAS technique to determine the concentrations of the leached metals present. Variable sulfuric acid concentrations of 0.5M, 1M and 2M; temperatures of 40, 60 and 80° and resident time (1h, 1.5h and 2h) were used. Optimum recovery was observed at heating temperature of 80°C, concentration of 2M and 2h leaching time.

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