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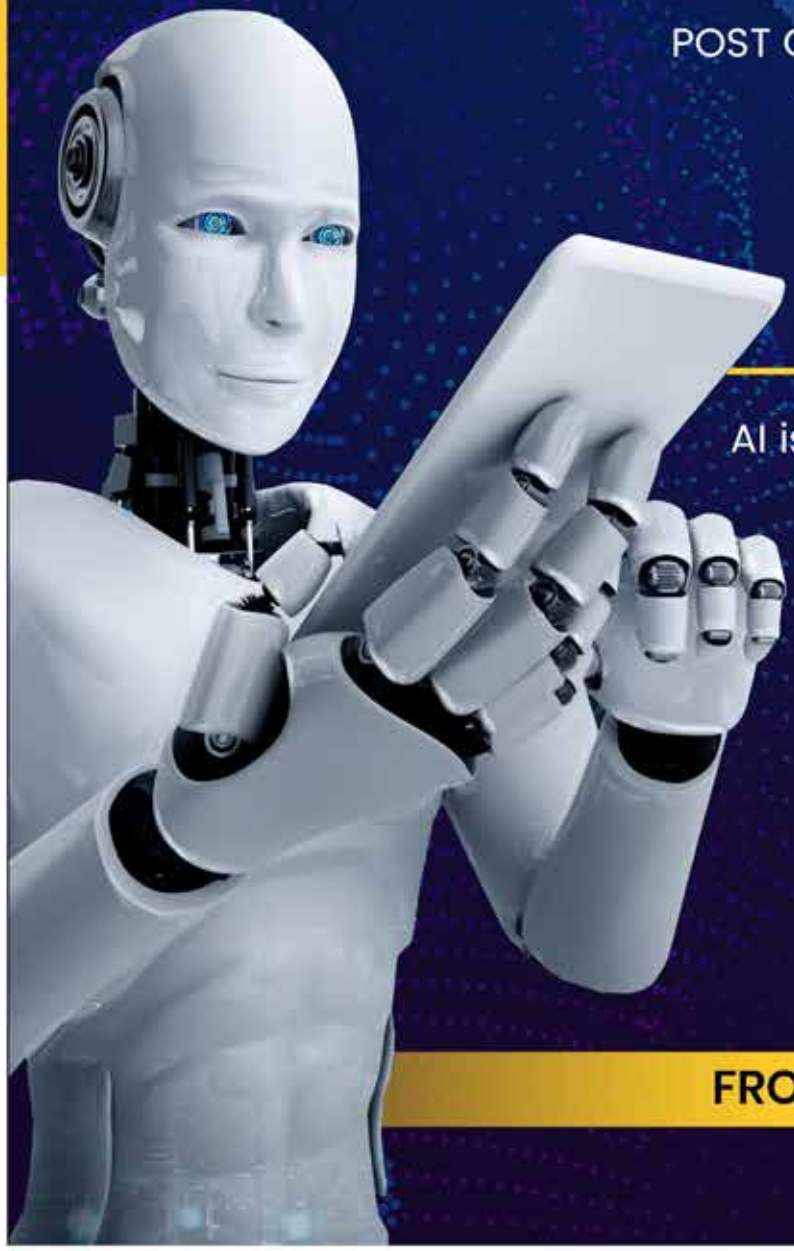

EDITORIAL PICK

POST COVID-19 DIGITALIZATION
THE JOURNALIST REBORN

AI & ROBOTICS

AI is impacting the future of virtually every industry

2021
VOLUME

FROM THE EDITOR'S DESK

OCTOBER BREATHER


WEAR A MASK
Regardless of the distance
from others

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BU PRODIGY

RECTOR'S MESSAGE

VICE ADMIRAL (Retd)
KALEEM SHAUKAT HI(M)
RECTOR BAHRIA UNIVERISTY

We at Bahria University work diligently to become a Knowledge and Creativity driven International University that contributes towards the development of society. BU strives to deliver Quality, Distinction and Leadership in different Academic Fields in an era of National and International transformations witnessed by the Higher Education System.

Getting into the world of knowledge is made possible by investing and producing quality Research in a way that enables promoting Academic Excellence. Challenges faced by Higher Education are not just limited to the responsibility of providing Learning and Research platforms, but also lie in enhancing the intellectual side of those involved in imparting knowledge.

BU Prodigy is a New Magazine of Bahria University for Industrial and Academic segments, highlighting key Research activities and originally created articles on relevant trends and topics. The idea is to enlighten the aspirant readers on the Research, Creative and Intellectual side of our valued BU Faculty, Researchers and Innovators.

I invite you to explore this new avenue that showcases creativity driven efforts by the BU Fraternity and familiarize yourself with the BU Community.

Happy Reading!

EDITOR'S DESK

In the midst of all the chaos of different variants of COVID – 19 arising in 2021, many of us are desperately looking for a fast-forward button. New Year's Eve may be the most anticipated event of the year.

But it is not too late in the next few months to create wonderful new memories - which we will later consider not only the silver lining of bad situations but also happy times on our own. Fall is upon us. Holidays are coming. The sun still rises every morning. There is a lot to see before January 1st.

Sometimes we just need a change. Whether things are stagnant, or so busy that we are close to burnout, or not at all better and we see room for improvement. Accepting and implementing change in our lives is not just overnight. It also takes time to figure out the direction of change. We're pushing the "pause" to think about what we can do now to set a better tone for the rest of the year.

In this Edition of BU Prodigy, we aim to provide the kind of content that offers opportunities for reflection during the engagement of our highly connected world, feeling more in touch with our true self, and better prepared to make improved decisions that help us to live our best lives encompassing issues such as anger, forgiveness, mental health in sync with climate change, parenting and youth.

We have a great piece of writing on post-COVID-19 Digitalization and Bioinformatics. We have focused on Iqbal's Inclusiveness, Transparency in Global Economy, and many more. We also provide some life-changing pieces that some of us are called upon to feel - whether it's scaling up our weekend or social engagements for a breather. We hope that articles from this edition would provide some food for thought. Happy Reading!

For your valuable feedback, write to us at
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Maham Malik
Publications Officer
Directorate of Marketing BUHO

EDITOR'S CHOICE
POST COVID-19 DIGITALIZATION

THE JOURNALIST REBORN

Post Covid-19 pendemic, digital assets showed upward trends in all fields and professions, reinforced investing more in the digital industry than in the traditional market. Investors prefer to sell, buy, market, and excel more in the digital world through tokenization. There is a huge digital consumer base available online for purchasers, sellers, producers, and viewers than in the capital market. Likewise, media is also channelized from traditional media outlets to digital ones. During the endemic, journalists lost jobs due to the financial crises of media organizations. A number of journalists were laid off worldwide. It is well said that "Once a Journalist, forever a journalist".

Passion cannot be killed by the macro or micro devastating and deteriorating factors. Women stepped into the digital world, making digital assets, producing digital content, founding digital channels, and becoming digital authors by utilizing hypermedia (using sounds, animations, pictures, graphics, and text). In Pakistan, 5% women are working in media. Out of 5%, 1.8% female journalists in Pakistan shifted to digitalization from traditional media and making money out of it within a year's crackdown.

Female journalists have their own YouTube channels, Web Radios, Instagram accounts for marketing, Facebook page for advertisement and promotion, and so forth. However, the progress is slow but the sense of ownership has no match. Digital organizations heir digital authors, content writers, and hyper-textures for their blogs, marketing, and awareness campaign. Such organizations pay more than traditional media outlets. In this manner, digitalization has made the media profession slightly supportive than conventional for female journalists.

Fundamental rights under Article 19 of the Constitution of Pakistan guarantees the right to freedom of the press. That right of freedom of the press includes the right to operate free from censorship, monitoring, and intimidation. Despite the challenges, female journalists are facing today, they are now better earning and working to establish their identity in the profession of media. Digitalization, albeit providing revenue at the personal and organizational level, is working to institutionalize the digital industry.

Digital ethics, securing digital identity, information protection, digital citizenship are to utilize the information with security, safety and transparently. In actuality, digital right is a human right that guarantees the right to use digital devices and information or content of personal / organization keeping in view the digital privacy. Having said that, it is necessary to make the rules and regulations for the secured digital usage at a personal and professional level. In Pakistan, female journalists are needed to secure and train to follow digital ethics and self-censorship. A great effort is needed to revamp all the rules, regulations, and providing female journalists a platform to work without digital harassment and insecurity. Therefore, the shift is positive and it seems that it would open avenues for the upcoming female journalists to work as a freelance in the world of digitalization.

Dr. Hayam Qayyoum
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MIND BOX

ENHANCED MICROWAVE ABSORPTION FROM THE MAGNETIC-DIELECTRIC INTERFACE

Owing to the fast-growing gigahertz (GHz) technology in wireless communication and radar detection systems,electromagnetic interference (EMI) pollution has become a major problem. To resolve the issues associated with EMI, considerable attention has been paid to attain high-performance microwave absorbers possessing strong absorption in wideband and thermal stability at elevated temperatures. For this purpose, we have successfully synthesized a novel composite of rGO supported Ni-doped MoS2 (rGO@NiMoS2), retains the advantages (lightweight, high EM attenuation, etc.) of reduced graphene oxide and for the meantime, NiMoS2 helps to overcome the demerits (impedance mismatching) of the composite material.

ISOMERS IDENTIFICATION

Isomers of a single compound: having an alike composition but reflected in various responses. That is why, their selectivity is extremely essential in the practice analysis, particularly in food, and medicinal or pharmacology industries. Recently, it is found commonly in food and drug trade industries for utilizing various isomers of the same compounds in the productions of the same medicines which is mostly reflected in health hazards, side effects, or ignition of other kinds of diseases in the host. It is not mandatory that every isomer compound may have the same functions for the same cure. Therefore making food or medicines from the wrong isomers will take lives. For example, the cis-plating isomer is used against various types of cancers but the trans-plating has no beneficial pharmacological activity. However, an attempt has been made to distinguished the nature of isomers (2-HydroxyBenzene) at the same concentration.

Dr. Waqar Uddin
Deputy Director, ORIC
Bahria University Karachi

IQBALIYAT AND YOUTH

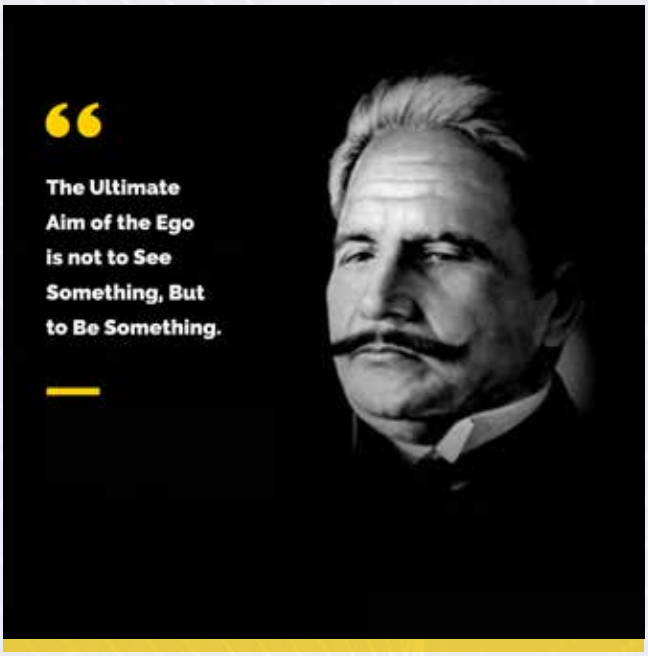
INCLUSIVENESS OF IQBAL'S THOUGHT

Iqbal's were greatly dismal times, as most of the Muslim countries came under the yoke of colonialism and were in a morally disparaging state. The morale of the Indian Muslims was at its ebb, due to the political and social victimization by the British as well as the Hindus and the minority Sikhs.

Three distinct classes of Muslims became apparent: first, a class that was awed by the Western civilization, blindly followed into their footsteps and were quite ignorant of their own traditions; second, the religious people, who had shut themselves up to the progress and were sticking to the rituals only, trying to protect their faith against the onslaught of Western intellectualism; third, the poor Muslims, who had little to think about but earning their daily bread, barely meeting their basic needs. This condition was not common among the Indian Muslims only but was prevailing in the entire Muslim world due to the dearth of leadership (President Khamane'i)

The shared traits of these classes of Muslims were the loss of individuality, lack of self-respect, disunity, and slavish attitude towards the West. Such were the circumstances at the time, when we see Iqbal not only enumerating the ailments of the Indian Muslims and the Muslim ummah but also prescribing therapy for these ailments with vigor, creating a tumult among the Indian Muslims that led to the movement for the acquisition of a separate homeland in the shape of Pakistan, nine years after Iqbal's passing away.

Iqbal had dreamt of an independent dynamic country based on the principles of the Quran and Sunnah, His all-encompassing, all-inclusive teachings or edicts are contained in 12000 Urdu and Persian verses of poetry, which are not only full of Qur'anic wisdom but are highly motivational as well. His poetry ranges from the importance of Tawheed to traits that make nations fall and the traits that make a nation truly great. This article is an attempt to elaborate on the main domains of Iqbal's prophetic message.



(I) Allah the Creative Force

Iqbal holds the concept of Tawheed as the foundational principle of life. In one of his Persian poetry he elaborates:

What is it that infuses one breath in a hundred hearts?

It is one of the secrets of faith in Tawhīd!

Be united and thus make Tawhīd visible;

Realize its latent meaning in action!

Faith and wisdom and law all spring from it,

It is the source of strength and power and stability!

"There is no god but God" is the capital of our life!

Its bond weaves our scattered thoughts together.

For Iqbal one of the main qualities of Allah Subhana wa Ta'ala is complete creativity. He is continuously creating and destructing and creating anew. Iqbal elaborates that Allah wants the human to be a partner in His creation and this quality of creativity in the universe he has given only to the human beings.

Iqbal expounds that a nation that excels in its creative skills will become a world leader:

جو عالم ایجاد میں ہے صاحب ایجاد
ہر دور میں کرتا ہے طواف اس کا زمانہ

(II) Ailments of Nations

In the philosophy of Iqbal, the biggest ailment for a nation is to lose its self-respect, self-realization, and drift into the influence of another nation as had happened with the Muslims of the Subcontinent.

ممکن نہیں محکوم ہو آزاد کا ہمدوش
وہ بندۂ افلاک ہے، یہ خواجہ افلاک

And never the twine shall be equal

The one is a slave to fate, the other, master of fate

Only free nations can realize their potential the slave will always be a follower. Iqbal complains:

جاں بھی گرو غیر، بدن بھی گرو غیر
افسوس کہ باقی نہ مکاں ہے نہ مکیں ہے
یورپ کی غلامی پہ رضامند ہوا تو
مجھ کو تو گلہ تجھ سے ہے، یورپ سے نہیں ہے

Among the ailments Iqbal narrates are lack of unifying force, which for Muslims is religion, drifting away from the understanding of Qur'an, meaningless lives, blind following & mental slavery, hypocrisy, inactivity & passivity, fear of death, and pessimism. He speaks of complete submission to the Creator:

(III) Development of Individual

In contrast to human group development, Iqbal focuses on the development of individuals which is the nucleus of a community. This also reflects the important teaching of Islam which holds each individual exclusively responsible for their deed and will have to take responsibility all alone on the last day of judgment. Iqbal uses the term Khudi to elaborate on this individuality of humans.

وہی سجدہ ہے لائق اہتمام
کہ ہو جس سے ہر سجدہ تجھ پر حرام

He whose self shines like a gem, alone exists

Take heed of it! I do not see your shine

The development of any society is conditional on the development of each individual. He emphasizes that each individual has been blessed with the tremendous latent potential to grow.

وجود کیا ہے، فقط جوہر خودی کی نمود
کر اپنی فکر کہ جوہر ہے بے نمود ترا

A nation's life is illumined by selfhood

Selfhood is the pathway to everlasting life

(IV) Development of Community

After discussing the methods of development of a strong individual with an independent personality, Iqbal discusses the process of converting the individuals into a nation. He introduces the concept of Bekhudi, which is voluntarily giving up one's rights and volitions, and utilizing one's qualities of Khudi for the benefit of one's nation. That's how individuals combine and build a strong nation.

خودی کے ساز میں ہے عمر جاوداں کا سراغ
خودی کے سوز سے روشن ہیں امتوں کے چراغ

The individual is firm by nation's coherence, otherwise nothing

The wave is only in the ocean, and outside it is nothing

Iqbal elaborates that the destiny of a nation is in the hands of every individual.

فرد قائم ربطِ ملت سے ہے, تنہا کچھ نہیں
موج ہے دریا میں اور بیرونِ دریا کچھ نہیں

Nation's fate is in the hands of its individual

Each person is a star of its destiny

This theme can also be called **"Tameer e Millat e Islamia"** which Iqbal theorized in his literary masterpiece, **Javid Nama**.

(V) Renaissance of Ummat e Muslima

The reawakening of Ummat e Muslima is one the main focus of Allama Iqbal. His famous poems of Shikwa and Jawab e Shikwa are considered masterpieces in this respect. The Arabic version of these poems is popular in the Arab world as well. Iqbal exhorts the ummah not to follow the west blindly as we have a completely different approach to this life

اپنی ملت پر قیاس اقوام مغرب سے نہ کر
خاص ہے ترکیب میں قوم رسول ہاشمی

Judge not your nation on the criteria of western nations

Special in the composition is the Hashmi Prophet's nation

Iqbal encourages the Muslims to have self-confidence hold tight to the teachings of the Qur'an and follow the path of the Prophet (PBUH) which he guarantees will lead the ummah to success.

If you wish to live the life of a Muslim,

then it is not possible except by the Quran

For Iqbal, the technological advancement of Muslim ummah is a must to gain respect from other nations of the world, and as such provokes them.

کس طرح ہوا کند ترا نشتر تحقیق
ہوتے نہیں کیوں تجھ سے ستاروں کے جگر چاک

How was blunted your scalpel of research?

Why do you not rend open the hearts of Stars?

(VI) Complaints and Supplications

A portion of Iqbal's poetry is dedicated to direct conversation with the Creator. This conversation includes complaints, wishes, prayers, requests, questions, demands, dialogs and affectionate talks. These are representative of his devote, affectionate, informal, and ardent relationship with Allah and His Prophet (SAW) for whom he has written several Hamds (Praises).

Iqbal would ask Allah to make his message effective to the ummah and pleads ummah to follow his message.

خدایا! آرزو میری یہی ہے
مرا نور بصیرت عام کر دے

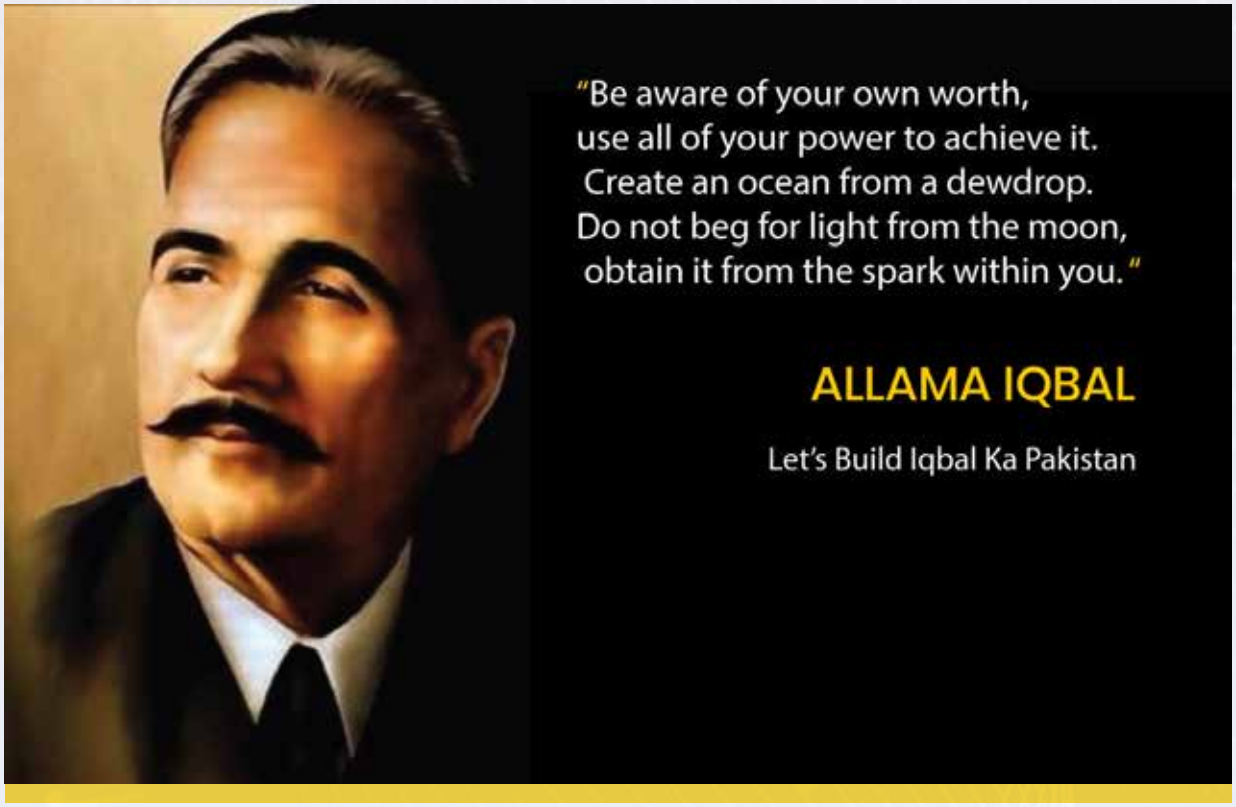
This, dear Lord, is my only wish

That my insight should be shared by all!

اندھیری شب ہے، جدا اپنے قافلے سے ہے تو
ترے لیے ہے مرا شعلہ نوا، قندیل

From caravan, you are adrift, and night has donned a mantle black
For you, my song that burns as flame, like a torch, can light the track

Iqbal's message of wisdom has found its place in many Muslim countries and won the adoration of Ummah at large.



Dr. Muhammad Abid Ali, Coordinator
Moeena Kausar Satti, Assistant Coordinator
Iqbal Chair Bahria University (BUHO)

WRITER'S RELIEF

LIBRARIES IN DIFFERENT ERAS OF HISTORY

The simple word "LIBRARY" is a collection of thousands of meanings. We can say that the word library is like an ocean with infinite knowledge rivers, streams that come out spreading all around the world, quench the thirst of the knowledge seekers. Simply it means a building that has a collection of books, periodicals, and other knowledgeable material for the people to read, borrow & refer to. If we look into history, we can find famous personalities who were in this profession and who render their services for the benefit of mankind.

EARLY LIBRARIES

The history of libraries shows that the earliest forms of archives were not more than clay tablets in the Sumerian era. This goes back to 2600 BC when people of that time used these forms of writings. These clay tablets were an inch thick having different shapes and sizes. These mud clays were placed in a wooden frame and the surface was smoothed for writing. After writing these wooden frames with mud clay tablets were placed in the sun to get them dry.

CLASSIC ANCIENT LIBRARIES

At the time of the Achaemenid Empire from 550-330 BC, outstanding libraries were formed that served the Government, the administration, and common people at that time. In those libraries, two main functions were performed like keeping

records safely and keeping administrative records safely. This was the first time that different segments were generated in the archives like medical science, astronomy, history, geometry, and philosophy, etc. In the year 1933, the University of Chicago excavated a huge number of clay tablets. This archive of Data is considered as the backbone of administrative data that was mainly written in Persian, Elamite & Babylonian languages.

LIBRARIES IN THE ISLAMIC GOLDEN AGE

To preserve QURAN, let to establishing areas or libraries for the collection of writings. Also, the tradition of Muhammad SAW primarily inspired the Muslims to develop such archeological places for preservations. Initially, Mosques were also used for the material preservations, and later special places were developed for the purpose. In those places, all types of knowledge from devotional books like HOLY QURAN to books on philosophy, geography, and science were archived. The HOLY QURAN was used as the prototype of the written word especially in Islam bears a significant role in books within its intellectual tradition and educational system.

PROMINENT LIBRARIES THROUGHOUT THE ISLAMIC WORLD

Some of the prominent libraries that served a spread of knowledge all around are:

1) Bait ul Hikma Library Baghdad 9th Century

2) Yahya Ibn Abi Mansur Library 9th Century

3) Nuh Ibn Mansur Samani Library 10th Century

4) Baha al Dowleh Library Shiraz 10th Century

5) Abu Nasr Shapur Library Baghdad 10th Century

6) Sahib Ibn Abbad Library 10th Century

7) Rab e Rashidi Library 10th Century

8) Timbuktu Library 11th Century.

LIBRARIES IN EUROPEAN CULTURE

In the Middle Ages first time, the monastery libraries were developed. In those monasteries' books were usually chained to the shelves for safety. The reason being that they knew the importance of these manuscripts for their future. They termed them valuable for the next generation to come. This hand-copying was mostly done through Monks who travel everywhere for the collection of information and knowledge. Besides chaining interestingly, they also saved their manuscripts by putting them in Book Curses to avoid stealing. World-famous historians were mostly librarians who gathered information through much struggle and effort.

ENLIGHTENMENT ERA LIBRARIES

The 17th & 19th Centuries are considered as golden eras for libraries flourishing. During this time important libraries were founded in Europe. The Francis Trigge Chained Library is considered the ancestor of all public libraries. This Library was founded in 1598 having no patrons to run the library. The members of the library gathered all the resources and material of both Catholic & Protestant religions.

Thomas Bodley founded Boudin Library in 1608 that provided services to the whole republic.

SUBSCRIPTION LIBRARIES

In the early 19th Century, there were no virtually public libraries available in the manner we understand them today. Libraries are considered public-funded places that are accessible to common people. At that time, only one public library by the name of "Chetham's Library" was available for the general public. However, the increase in secular literature led to the spread of lending libraries an around called the subscription libraries. As a result, many small private book clubs evolved into subscription libraries.

Private Subscription Libraries

Private subscription libraries functioned just like public subscription libraries but with some variations. The memberships were only for those who were some proprietors, shareholders, and owners of properties. that's why these libraries were also called gentlemen libraries. For example, the Liverpool Subscription Library was a gentlemen's library founded in 1798.

National Libraries

The first National Library was founded as a part of the British Museum in 1753. This contained belongings neither Church nor King but freely for the general public. This library contained about 40,000 printed books & approximately 7000 manuscripts.

Modern Libraries

In the middle of the 19th century, England established 274 subscription libraries whereas Scotland also managed to establish 266 modern Libraries that provided foundation of modern public library system in Britain. This was the first legislative step toward giving the concept of free libraries that provided free universal access to information and literature.

Winchester Library, Manchester Library, Liverpool Library, Bolton Library, Kidderminster Library, Cambridge library, Birkenhead Library, and Sheffield library are considered to be the first proper modern Libraries that provided the foundation for future classic libraries.

Futuristic Libraries

Library of TIANJIN BINHAI, China is considered to be the top library in the world having unbelievable state-of-the-art architecture, quality, and services.

There's a good justification why this luminous spherical library attracts up to 10,000 visitors a day, making this China's biggest tourist attraction. Upon entering Tianjin Binhai Library one can find white terraced bookshelves full of tomes from floor to ceiling. The library provides the master plan for a cultural district for the city.

Digital Libraries

Nowadays, almost all libraries are automated in this era of digitalization. Formerly, everything available was manual like books, journals, magazines, documents, etc. But now every available material is available through the internet. Digital Library, also called a digital collection, a digital repository, an online library or an internet library is an online repository of digital material that includes text, still images, audio, video, digital documents, or other formats or digital media or online library. This digital content can be stored locally, or accessed remotely via computer networks.

Features Of Digital Libraries

The benefits of digital libraries include easy and quick access to books, archives, and photographs of various kinds that are now widely recognized by commercial interests.

1) No physical boundary: The user of the digital library does not have to go to the physical library; people from all over the world can have access to the same information through the internet.

2) Round the clock availability: The great advantage of digital libraries is that people can access 24/7 information.

3) Multiple access: The same resources can be used simultaneously by multiple institutions and patrons.

4) Information retrieval: The user can use any search term (word, phrase, title, name, subject) to search the entire collection. Digital libraries can provide very user-friendly interfaces, giving clickable access to their resources.

5) Space: Traditional libraries are limited concerning storage space whereas digital libraries are capable of storing large amounts of data, as digital data requires very little physical space to handle also media storage technology is more affordable than before.

Saima Syed
Chief Librarian (BUHO)

HOPE
PERSONAL RESPONSIBILITY IN STRESS MANAGEMENT

Stress has been defined in different ways over the years. Originally, it was conceived of as pressure from the environment, then as strain within the person. The generally accepted definition is "Interaction between the situation and the individual. It is the psychological and physical state that results when the resources of the individual are not sufficient to cope with the demands and pressures of the situation"

Much of the world views all stress as bad, rather than viewing stress in its original meaning as "the non-specific responses of the body to any demand for change" (Selye, 1965). The notion that stress is unhealthy and can lead to cardiovascular diseases, anxiety, and depression (Li, Cao & Li, 2016) has become part of the current global perception of stress. This is because, as Le Fevre, Matheny & Kolt point out (2003)" stress" has become a synonym for "distress," a state of ill-being in which happiness and comfort have been surrendered.

In the real sense, stress may not be "good or bad," but the perception of stress makes it so. In a general sense, stress is just a conditioned response to a stressor or a stressful event. Primarily stress helps us survive by heightening our senses and improving our performance with a given task or assignment. But believing "stress is bad" can be detrimental in ways that stress itself is not. Psychology, backed with empirical data, implores us to actualize our definition of stress by offering fresh insight. If we change the negative perception of stress, we have the potential to transform our lives.

In 1974, the famous Hungarian endocrinologist Hans Selye redefined the terminology to establish a clarification between two different types of stress: eustress, and distress. Combining the Greek prefix EU- (meaning good) with stress, eustress became the term used to define "good stress" in opposition with "bad stress." By making the distinction between good stress (eustress) and bad stress (distress), Selye sought to show that stress, while being a reaction to a stressor, should not be always linked to negative scenarios. According to Selye, eustress has emotional and physical health benefits. It differs from distress like it only lasts in the short term; energizes and motivates; it is perceived as something within our coping ability; it feels exciting; ncreases focus and performance.

In the end, it's the perception of an individual that makes the situation either worthwhile or worthless. Eustress can lead to focused attention, emotional balance, and rational thoughts. Distress, on the other hand, can cause impaired attention, boredom, confusion, apathy, excitement, burn-out, and isorganized behavior.

Dr. Noshi Iram Zaman
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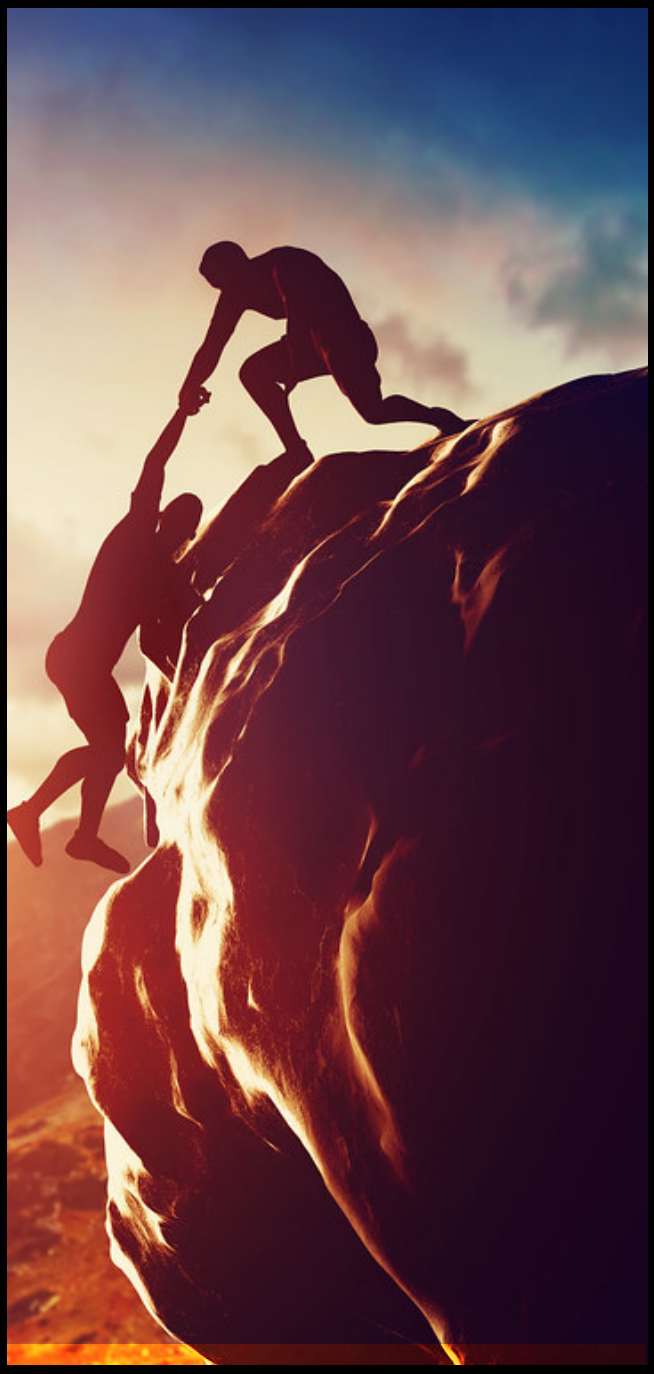
COMPASSION

The simplest acts of kindness are by far more powerful than a thousand heads bowing in prayer."

Mahatma Gandhi



What is a world without compassion? Probably like a set of a sci-fi movie, full of robots. Compassion is what makes us humans, and without it, many psychological problems will prevail like now some days. These days so much distress and psychological problems have prevailed and though there are many factors behind this mainly it could be due to lack of compassion. People die of hunger in a neighborhood full of well-fed people, people die of depression in a neighborhood where people live close by, and people die of domestic violence in a neighborhood full of social work enthusiasts.

All of this happens because we have stopped taking interest in other people's well-being. Such and many other problems can be solved if we resolve to be more vigilant towards the misery and problems of other people. Simple acts like just asking others if they are okay, or they need any help, can make a great difference. It can be difficult to be compassionate towards others when you are struggling yourself so we need to have compassion for our own selves as well, for we can only give to others what we have in our glass.

Aimen Zafar Butt

Lecturer, Department of Professional Psychology

IMPORTANCE OF TIME MANAGEMENT

Time management is about how you plan and control your time. How much time you spend on an activity is important because it affects other activities as well. If a person wants to do more in a shorter time, lower his stress, or wants to achieve excellence in his career then he must develop good time management skills. It also helps individuals to improve their productivity and efficacy. There are a lot of benefits of time management. Time management reduces stress as when you check tasks on your "to-do list", you can see your progress. It helps you minimize your worry about how many things you have to do. Good time management also provides more opportunities as you don't waste time on unimportant things.

Let's have a look at how you can manage time effectively: The first thing in time management is to select realistic goals by keeping in view your abilities and external factors. Secondly, set priorities wisely. Select those tasks first that you have to complete on an urgent basis. After selecting priorities, set a time limit to accomplish the goal. Whenever working on a goal take breaks in between to stay focused and motivated. Shift your focus from unimportant tasks and give complete attention to the task at hand.

At the start of every day keep a clear picture of what you need to do that day. You can also motivate yourself by giving small rewards to yourself after accomplishing a task in a day. For example, after finishing a report you can celebrate by 10 min walk or anything of your own choice. By developing good time management skills, you can achieve excellence and exceed expectations.

Sana Shaheen
Lecturer, Department of Professional Psychology
ahria University Islamabad

FORGIVENESS

Forgiveness is an intentional process in which a person lets go of the sentiments and contemplations of hatred, and outrage for others and self. It is an integral part of a person's emotional and psychological growth. We all make mistakes but the important thing is how we forgive others and ourselves for those mistakes and what we learn from them. Our religion also emphasizes on forgiveness. It brings hopefulness and inner peace. Allah says, in the Holy Quran: "Let them forgive and show indulgence. Yearn ye not that Allah may forgive you? Allah is forgiving, Merciful" (Al Noor, 22)

Self-forgiveness isn't tied in with allowing yourself to be free nor is it an indication of weakness. The act of forgiveness regardless of whether you are excusing yourself or somebody who has violated you don't recommend that you are overlooking the conduct. But forgiveness implies that you are acknowledging the actions, you are acknowledging what has occurred, and you will move past it and continue forward with your own personal business without ruminating over previous occasions that can't be changed. But it helps us in making our future bright. When we forgive someone, basically we are healing our own wounds and adding in our deeds. So forgive more, heal more.

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ANGER

Anger is one of the basic emotions which occurs when one feels rejected, threatened, and/or experience some loss. It can be a good thing as it can give you a way to express negative feelings, for example, it motivates a person to find solutions to problems. However, extreme anger can cause problems that will harm physical as well as mental health. It is very important to understand the situation that triggers anger.

Internal triggers may include reactions to things a person may already be sensitive about, like being teased while external triggers include those things that are beyond one's control that don't happen in the way they should. It is often said that the most powerful tool in diffusing anger is by learning to forgive others. However, anger management is all about learning how to recognize anger, what causes it, and how to express it healthily. Therapeutic techniques from deep breathing and emotion labeling to adopting a problem-solving mindset can aid people to learn to manage anger at their own.

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ROLE OF PARENTING AND YOUTH

he best inheritance a parent can give their children is their time each day

Nowadays our youth are facing a lot of different problems including academic failure, difficulty in career decision-making, bad habits, health, and interpersonal problems, etc. So it's very important to highlight or understand what are the reasons or causes behind these increasing issues. The most significant factor is the role of good parenting which is crucial for young people's social, cognitive, emotional, and physical development.

As we know parenting can have a lasting impact on the child, with good parenting showing evidence of an adult who can cope with the challenges presented by their environment, and harsh or neglecting parenting resulting in anxiety, depression, academic struggles, and even other pathologies. But here the question arises 'What's the appropriate parenting style? There are different types of parenting styles one could encounter, ranging from the authoritative parent that displays both high levels of support and control, the authoritarian parent that gives low support but imposes high control on their child, indulgent parents who partake in high support but low control, and finally, the uninvolved parent, that gives neither support nor enforces control.

From various studies, it was suggested through evidence that children reared under authoritative parents prospered better than their peers in areas of academic achievement, development, and even psychological wellbeing. Different famous psychologists' (Freud, Erikson) emphasize the early years of growth and development which have a drastic impact on the later personality of an individual. Therefore, those children who are given love, care, time, and nurturing environment from early childhood are more likely to develop into healthy individuals with a good chance of realizing full potential.

As life is going at a very fast pace and we all are busy with different day-to-day responsibilities. But we cannot ignore our role as a parent which is the most vital duty in the current situation. Firstly, for any interpersonal relationship to be successful the key is open communication. Spare some time from your daily routine and spend it with your children now, one-on-one time. Listen to them, understand them, and look at their university life, their interests, what they want in their life, the challenges and problems they are facing. Also while communicating with your children put aside your autobiography, understand them from their level, give them confidence. Secondly, catharsis is a psychological term which means to vent off feelings and emotions by sharing the problems with someone.

Be that one person for your children, so that they come first to you without any hesitation, fear, and freely say what they want. Thirdly, see your children's problems as an opportunity to build a healthy and positive relationship with your children instead of negative, burdensome irritation which changes the parent-child interaction and focuses on the solutions. To conclude, strong bonds of love, care, and trust are created when children sense the value parents give to their problems and them as individuals.

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PRAYERS: THE BEST WAY OF CATHARSIS

Life is like a roller coaster, sometimes we are achieving and sometimes we are losing, sometimes we are happy and sometimes sad..... That's how life is. This up and down spike in life is the biggest indication of life if we notice the heartbeat it is always having up and down spikes in it, it's never in a straight line as a straight line is the indication of death. Whenever there are ups and downs in our life we use different strategies to deal with the situation.

Some people avoid the situation, some try to distract themselves, some use to indulge in different activities, some try to go for the practical solution of the problem and some people get some other way out. After trying some sort of strategies but still, we feel that we are not internally satisfied with whatever we have done so mostly we use to make ourselves satisfied by saying that "we have tried our level best and now Allah will help us" this one statement mostly shed tons of load from our shoulders and we feel relieved. Religious coping always helps those who have firm faith in their God.

When we turn around and look at the people around us whatsoever their religion is they have faith in their god which is making them believe in it. Some people go to the temple to worship his or their God, some go to church, and some people go to the mosque whereas some go to some other religious place to worship their god. Faith has always helped them survive. Whenever we pray, we pray with a belief that someone is listening to us who loves us unconditionally. In our life we have many people around us, most of them listen to us with some intentions but our Allah Almighty always listens to us because we are his creatures.

During prayers, we say to him whatever comes to our mind and feel relieved. It's our common practice that mostly we discuss our problems with our loved ones or friends and after discussing with them we feel relieved. But as human beings, we can expect that they can share it with someone but when we discuss it with Allah we are having to believe that Allah will help us. This faith is maybe our hope and life. On this faith, we spent many years of our lives that Allah will help us. Prayers

So it's all about faith and the beliefs that give us life. In the end, I must say that the "prayers are the best way for catharsis and it always leaves us with never-ending hope"

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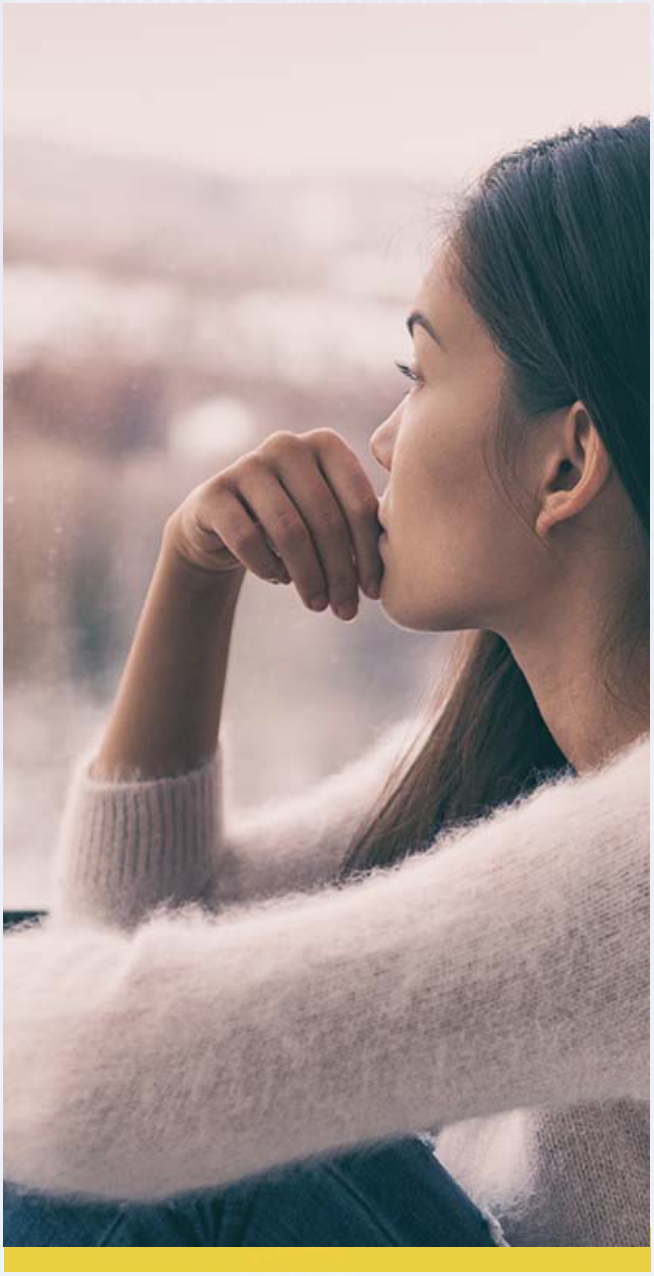
CLIMATE CHANGE: A POTENTIAL THREAT TO MENTAL HEALTH

Climate change is inevitable and everyone is being affected across the globe. It has stemmed from global warming resulting in large-scale shifts in weather patterns. The World Health Organization and American Psychological Association (2017) identifies that it has become one of the major threats to public health, including mental health. Extreme weather conditions and related disasters are linked with high levels of stress, high-risk coping behaviors like substance use, etc. It may lead to aggressive behaviors, stress-related disorder (PTSD), and adjustment issues. Moreover, consequences of climate change may be job loss, migrations, loss of loved ones, and scarcity of community resources also causing stress among individuals who are experiencing it.



Climate change affects people differently depending upon various factors. People who are more vulnerable to the external environment and its effect on their mental health are most likely to develop mental health problems as compared to others. These include children, the elderly, terminally ill patients, and pregnant women. People in different age ranges go through various developmental stages that bring mental health concerns with them. For example, children and the elderly are more prone to become affected by environmental changes, thus; they tend to be vulnerable to mental health concerns. Similarly, pregnant women are prone to postpartum depression and environmental stressors or extreme weather can elevate their situation. Other than that, people belonging to low socioeconomic status and refugees are already living in poor conditions. Climate change on top of these difficult conditions for these people becomes an added stressor that is not good for their mental health.

People who are getting treatment for their mental health issues are often vulnerable to changes in their external environment, which double their trouble. On top of that, psychiatric medications are usually causing various reactions inside the human body. Among these changes, raising body temperature is a big concern amid global warming. Moreover, people with mental illnesses depend upon the services and health infrastructure of their country. Due to climate change and increased expenditure on regulating climate changes, less is spent on other infrastructure systems. This is why the normal services for mental health illnesses are either disrupted or are not accessible to the common man.

Many steps are required to handle the situation before it is too late. The priority should be to regulate laws that promote an environmental friendly lifestyle and to allocate a budget for mental illnesses that are caused by external factors i.e. climate change. Moreover, awareness to protect the environment is necessary. The long-term goal should be to create an environment that is least harmful to human health. There is a need to develop techniques that cater to blocking environmental stressors for patients. Lastly, collective efforts from health and environmental protection experts are required to achieve the goal.

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KEY ROLE OF EMOTIONAL INTELLIGENCE IN ACADEMIA

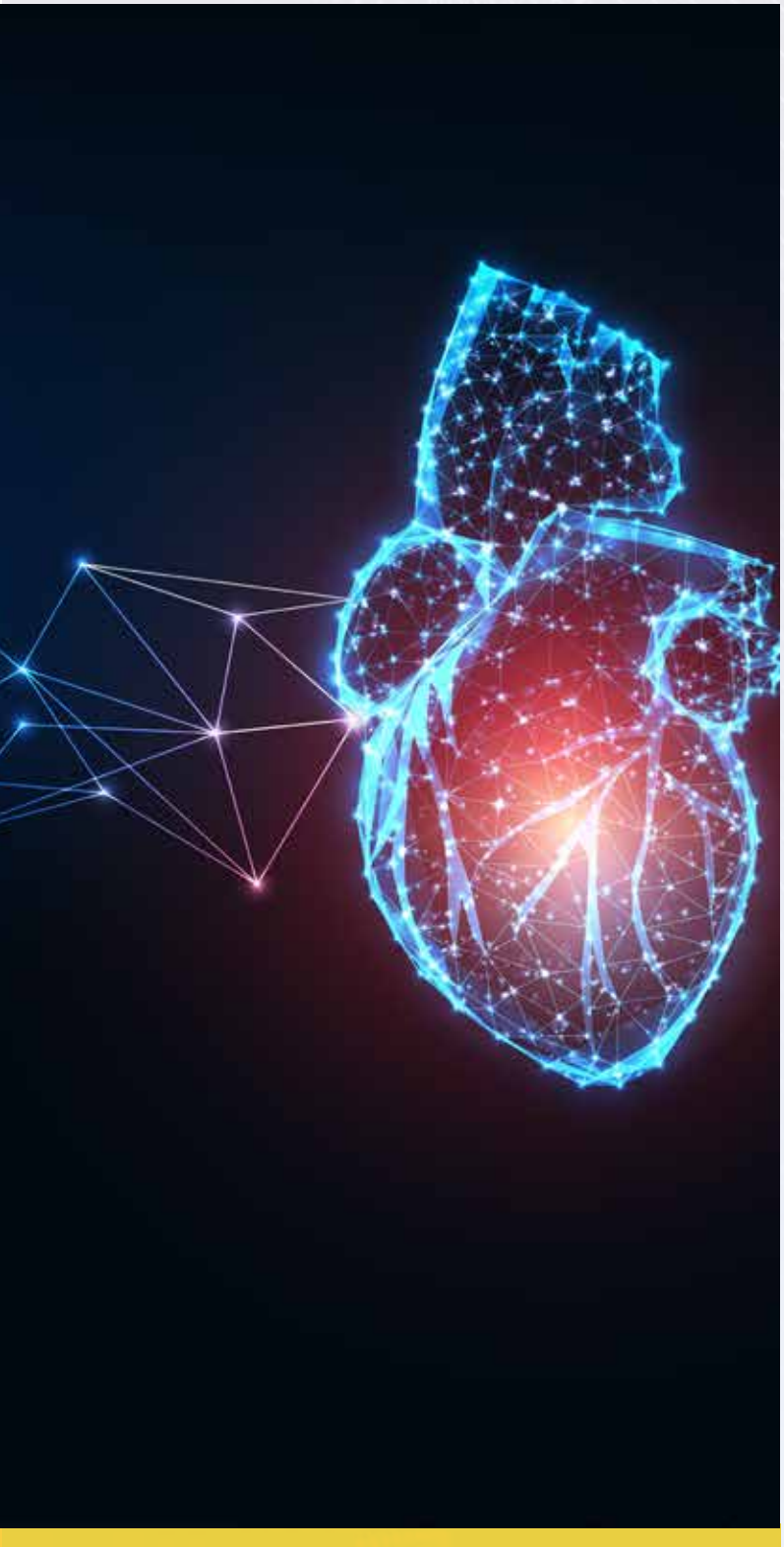
University life is an important entrepreneurship period for students, and they have many concerns regarding their career choices and academic success. In building a career, self-awareness is compulsory, that is making plans and working on them to achieve them (Salim & Safitri, 2020). This time requires major decisions to continue the education based upon the plan of joining a particular workforce (Fabio & Kenny, 2011; Sersiana, Lukitaningsih, Muis, & Purwoko, 2013). University students have high expectations for themselves, i.e., about careers, etc., and they are directly influencing the social progress, sustainability, and resilience of their communities and nations.

According to World's Youth (2013), they are influential to the demanding social values, norms, social and economic development for building the basis of the world's future. Among the most important and most troublesome choices for students in selecting a profession, is the transition from student to employee and plays a substantial turning point in their lives and may be a source of confusion (Fabio, Palazzeschi, Asulin-Peretz, & Gati, 2013). This process of choosing a specific direction towards a career often opens students to many uncertain situations, which further lead students to stress and anxiety. This indecisiveness about the career is often predicted by previous experiences of success and failure that shape an individual's self-belief about his/her capacities to perform certain tasks. Emotional intelligence facilitates students in effective career decision-making by helping them to cope with difficulties during academia.

Current findings showed that a substantial percentage of university students are doubtful about their career paths (Lee, 2005) and various cognitive factors are related to career indecision including career decision making, dysfunctional career thoughts (Sampson, Peterson, Lenz, Reardon & Saunders, 1998), lack of information (Germeijs & De Boeck, 2003), internal-external conflicts (Thompson & Subich, 2006),

self-knowledge (Gati & Saka, 2001) and experience of the past job (Lent, Brown, Talleyrand, McPartland, Davis, Chopra, et al., 2002).

Emmerling and Cherniss (2003) demonstrated that those people having greater emotional intelligence discover their interests and worth clearly and communicate them effectively throughout the career counseling procedure. They also said that those people that are adept at handling their emotions tend to be better accommodated to career decision-making because they're better able to forecast the psychological consequences of career choices.



This lets them prevent professions with disagreeable tasks and responsibilities while pursuing vocations that can cause greater life and job satisfaction. Thus, improving emotional intelligence capacities can encourage career options by boosting efficacy in making real-life decisions. Career counseling programs at the institutional level, awareness seminars, workshops for pupils and parents could be effective for greater future career choices.

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ART OF PERSEVERANCE

When you come to the end of your rope, tie a knot and hang on."
ranklin D. Roosevelt

Ever wondered how some people can overcome the adversities of their life so easily. They seem so calm and optimistic however the reality is very different. They go through the same emotions and struggles during adverse events although one thing that keeps them tight to their goal is perseverance. It's an art to strive for your goals and targets even in the face of unpleasant circumstances. It's a continuous effort to stick to your goals; the essential key to this is that you can manage your hope to the end of the rope.

Life doesn't work always as we plan. You will face ups and down like a roller coaster but you have to stick to reach the end. If we look into the lives of successful people around us, we will see they have been through a lot. Despite that they never gave up, they never lost hope, they were consistent with their goals. They all have one thing in common; perseverance. It's a strong character strength that can lead you towards your achievement. This character strength accompanies persistent, resilient, hope, self-regulation, and gratitude in many shades altogether.

Let's look into the ways to develop this character into your strength pool. The first and most important thing is to identify your strengths which can be utilized in the task you have initiated or are working on. For example, hard work, being resourceful, etc. sometimes we know that we have strengths but do not have a belief in our capacities during the task. We must develop self-awareness despite all the discouraging elements in our life.

The second thing which can be helpful is to find out pathways towards your goals. Once you know which way leads best and has fewer obstacles, the journey of success becomes easy. Pathways are never easy they all have hurdles that will shatter your belief in your strengths but you have to remind yourself repeatedly about the reward at the end of this journey.

The last thing which can help map out all the resources in your life to face the hardships of the chosen pathways. At first, you might not be able to see all the resources but human capacities always surprise you. The human being is programmed very intellectually it has all the ingredients which they need to face adversities of their life. You can find these resources within yourself, in your support system, and surrounding in which you are living right now.

A human being never ceases to amaze if they hold the key of perseverance in their life. It leads you towards success. It directs you towards your goals which you never thought you might be able to achieve. Trust yourself, as no one was created less than the others by nature. All have strengths and weaknesses. You might not have found a spark yet but it's inside you. Keep your hopes up that eventually future will be better than the present but with the condition of your consistency of sticking to your goals no matter what hardship you face.

I have not failed; I have just found 10,000 ways that won't work"
homas A. Edison

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GIFT WRAPPING STRESS AND TRAUMA

'Ignore it, and you won't feel it. If there was a sentence showcasing a national coping strategy in Pakistan, this would probably be it. Countless times have clients in mental health centers either broken down while recounting the looks that went with this sentence by a well-meaning but naive relative, or have shown signs of utter numbness and withholding of emotion while trying to do in effect what they had been told – 'don't feel', 'don't show it, and 'smile through it'.

Most of us live with the remnants of emotional scarring, going through life in our own resilient manner without stopping to take care of ourselves. Worse still that we enjoin the same strategy to our younger generation, teaching them that it may take a severe and observable form of tragedy for it to be called trauma and perhaps given any attention. In reality, psychological trauma constitutes a wide range of related issues that have been well studied in research literature around the globe.

From negative evaluations of stressful life events and subsequent emotional scarring to the more easily observable incidents in the form of natural disasters and even acts of terrorism in recent years, trauma has become a very real issue for all regardless of age or gender. They could affect us directly or even indirectly as we see news reports or even friends and relatives go through problematic circumstances.

So how do we know that trauma affects us negatively? And when does stress turn into what we know as trauma? Since we love a scientific explanation for things that even an armchair psychologist could deduce, it is the biopsychosocial model (Engel, 1980) that has led to the scientific application of medicine while keeping personal, emotional, family, and community concerns at the fore.

Scientific research on stress and trauma has followed a similar pathway with Selye's (1936) seminal work on the General Adaptation Syndrome and his eventual recognition of the term 'stress' as the bodily response to environmental demands in

three stages of alarm, resistance, and exhaustion. 'Trauma' on the other hand stems from stress and as such, it may arise after prolonged exposure to stressful events or after being the victim of a highly stressful event. In the latter case, the after-effects of the stress can persist in the form of symptoms that may be physiological or psychological, or both. It follows then without question that any change in brain anatomy as a result of stress or trauma needs to be studied to determine the extent of the cause-effect relationship between them.

Earlier studies of the brain have focussed on the sympathetic nervous system arousal – the fight-or-flight response (Cannon, 1932) while later researchers Taylor, Klein, Lewis, Gruenewald, Gurung, and Updegraff (2000) have discussed gender differentiation in this area showing that females tend-or-befriend using an underexplored biobehavioural pattern based on hormones and maternal instincts. This shows a greater tilt toward empathic patterns in females rather than the more defensive and aggressive stance usually adopted by males as a direct response. In turn, this can aggravate any stress-related symptoms and create a pattern of aggression that may be hard to interpret as a bid for help. Risk-taking behaviors may also increase as a direct result of this perceived trauma resulting in self-harm and negativity toward others in the environment.

A team of researchers in 2013 at the Brain Dynamics Centre based in the University of Sydney Medical School, studied the effects of early life trauma (ELT) on the brain. The outcome of the research showed obvious impacts on the gray matter volume of the amygdala, which is the main center for emotional processing. In this, the 13 to 18 years population sample group emerged as a high-risk group for the onset of mood disorders. The results of the study point towards the physiological issues that include the risk of the development of depression in later life in adolescents who perceive their early life as traumatic.

As the majority of our population in Pakistan fits the youth – young adult curve, it is imperative to take note of the pathways of stress and trauma. While society might gloss over the concept of addressing emotions as something that belongs to the domain of femininity in the age-old myth of 'boys don't cry' or 'patience' being lauded as a supreme virtue irrespective of age or gender, addressing emotions is as, if not more important than the attention we give to grades. Living with stress and trauma, day in and out ultimately takes its toll on young minds and when we tell them to look the other way and keep moving, we're lovingly telling them that they're not important – as we give them another stone to add to the weight of stress already on their backs.

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TECH IN 20

5G AND SMART FARMING WILL TRANSFORM AGRICULTURE AND THE ENVIRONMENT

Talking about environmental issues has gotten huge for society, business, and government the same. One of the developing revolutions that speed up solutions toward a cleaner climate is 5G. This new internet networking innovation takes into consideration quicker information assortment and transmission of information through electronic sensors put deliberately in a business activity environment. Here are ways 5G will help consumers, agriculture, and the climate the term used to define "good stress" in opposition with "bad stress."

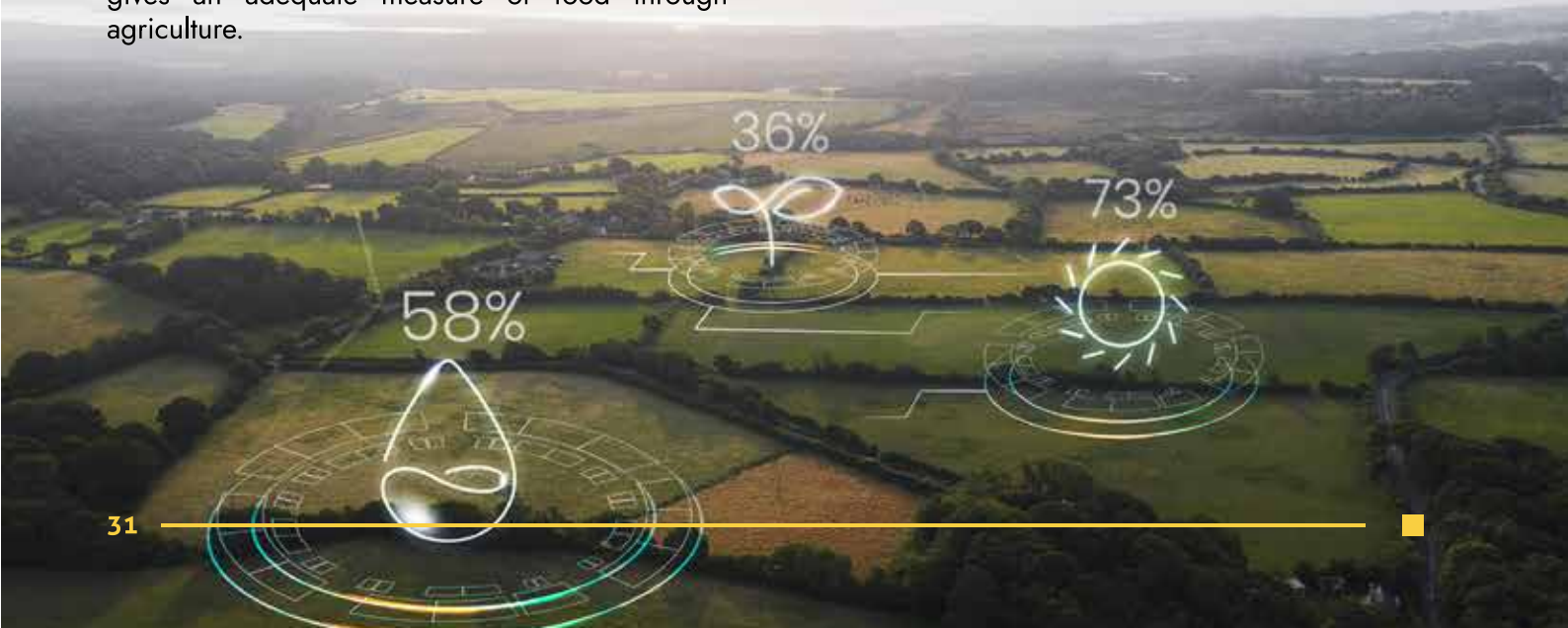
More Efficient Ways to Manage Population Growth

As per a new UN Food and Agriculture report, satisfying the worldwide food need for a rising populace requires expanding crops gathered from ranches while lessening the measure of required work. Quicker web speeds given by 5G, matched with AI programming, take into consideration a more noteworthy assortment of information that can highlight framework failures with suggested arrangements. Innovative changes over the course of the following quite a few years will speed up the objective toward a more reasonable society that gives an adequate measure of food through agriculture.

The Advent of Smart Farming

Smart cultivating gets its name from IoT innovation, wherein sensors are put all through a ranch to quantify developing conditions and harvest execution. These sensors generate valuable data assortment that uncovers regions requiring prompt consideration like inefficient creation.

IoT innovation permits farmers to screen explicit agrarian hardware and functional action, alongside the climate and other environmental conditions. Actually like smart infrastructure for utilities, smart cultivates that sudden spike in demand for 5G convey an abundance of information for ranchers to investigate, and this can assist them with changing their cultivating activities to further develop yields and harvest quality.



How 5G Improves Farming

1) 5G farm machinery - For 5G in agriculture to assist with working on farming proficiency, the machinery should be associated with IoT sensors. In any case, substantially more computing power will be needed to run this apparatus. Centralized AI is additionally a fundamental component, as it can give moment admittance to immense measures of real-time data monitoring activities.

2) Drone showering - Soon, mysterious battery-fueled robot sprayers will assist farmers with working on the development of yields by utilizing the perfect measure of pesticide for carefully timed lengths. Drones will give flying photographic perspectives on harvests and assist farmers with distinguishing weeds that need herbicide treatment. Another benefit to drone surveillance is it can recognize crop readiness by shading.

3) Weed and crop monitoring - Now that drone cameras can identify contrasts among yields and weeds, farmers can splash proper regions as opposed to abuse pesticides. John Deere rural firm Blue River presently utilizes 5G alongside high-goal cameras that produce 20 pictures each second. The innovation incorporates AI programming that recognizes weeds, so it assists ranchers with applying weed killers precisely where it's required as opposed to covering a field with synthetic substances.

4) Real-time livestock tracking - The AI and 5G combination will want to find domesticated animals continuously through radio checking. Eventually, it will lessen the current expenses of domesticated animals observing. This innovation will likewise further develop the food admission, wellbeing, and richness of cows and other livestock. Moreover, knowing the exact area of every creature is especially useful during the calving season.

5) Reduced water consumption - Farms rely upon the water, yet farmers must ration water however much as could reasonably be expected, particularly in dry, parched, and distant regions. At the point when Nokia set up Worldwide IoT Network Grid (WING) to assist with peaching ranchers in Algeria to further develop crop yields, the preliminary brought about a 40% drop in water utilization as it assisted farmers with overseeing water system cycles and soil nutrition better. The technology additionally tests soil conditions to check for moisture which guarantees less inefficient water consumption.

Conclusion

In the following decade, 5G will turn out to be more normal in agriculture, and especially for horticulture organizations with a huge yield. The utilization of IoT-controlled sensors and 5G together will give reasonable and naturally cognizant solutions for farmers to run more productive farming tasks. This blend will save energy, which will decrease costs and work on the nature of produce.

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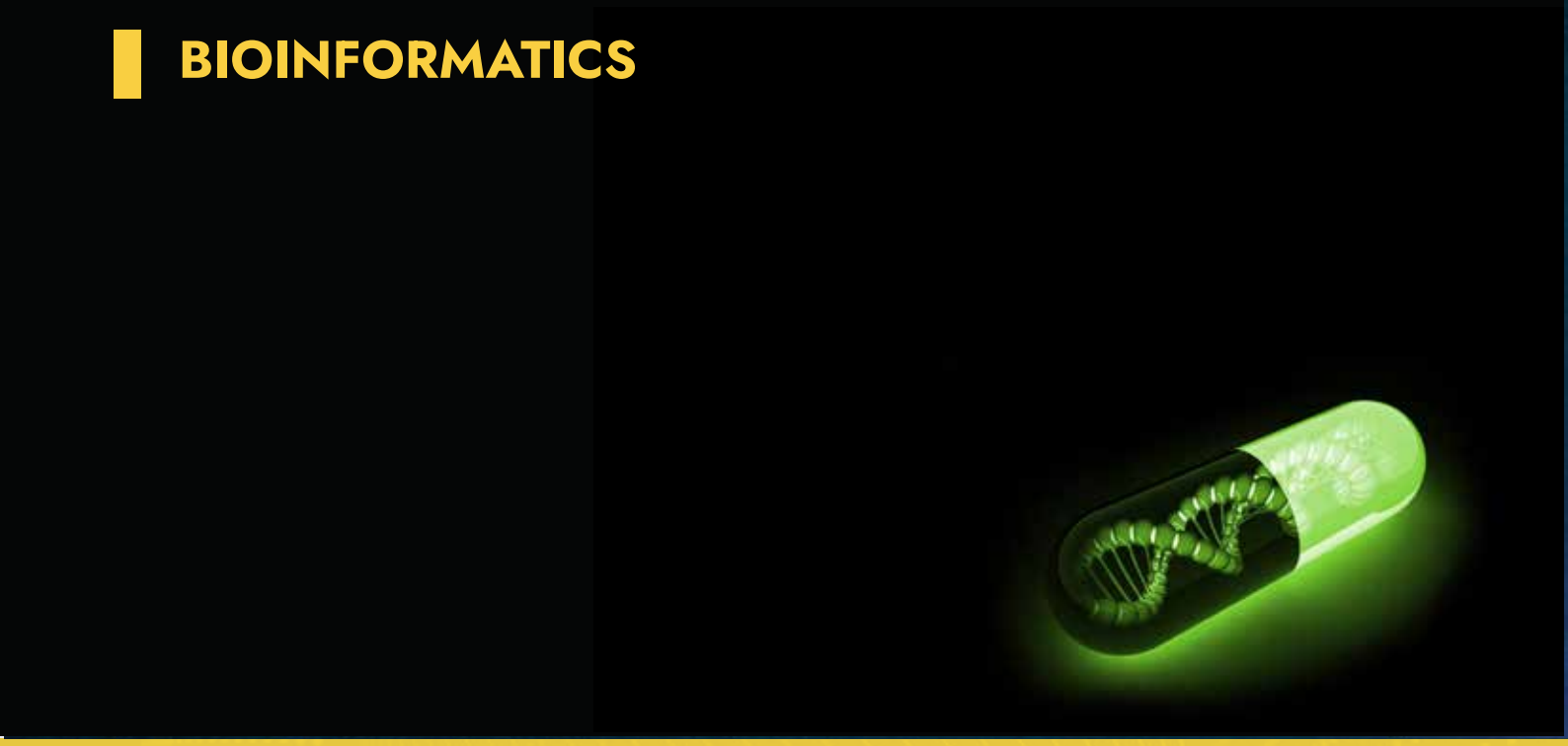
BIOINFORMATICS



Bioinformatics is the combination of biology and information technology that involves the computational methodology to analyze and understand biological phenomena. It manipulates the volumes of biological data by using different information technology tools and methods.

It is concerned about the utilization of quantitative logical methods in demonstrating and modeling issues in biological structural models. It is an interdisciplinary methodology requiring advanced information of computer mathematics and statistical techniques for understanding biological wonders at the molecular level.

History of Bioinformatics

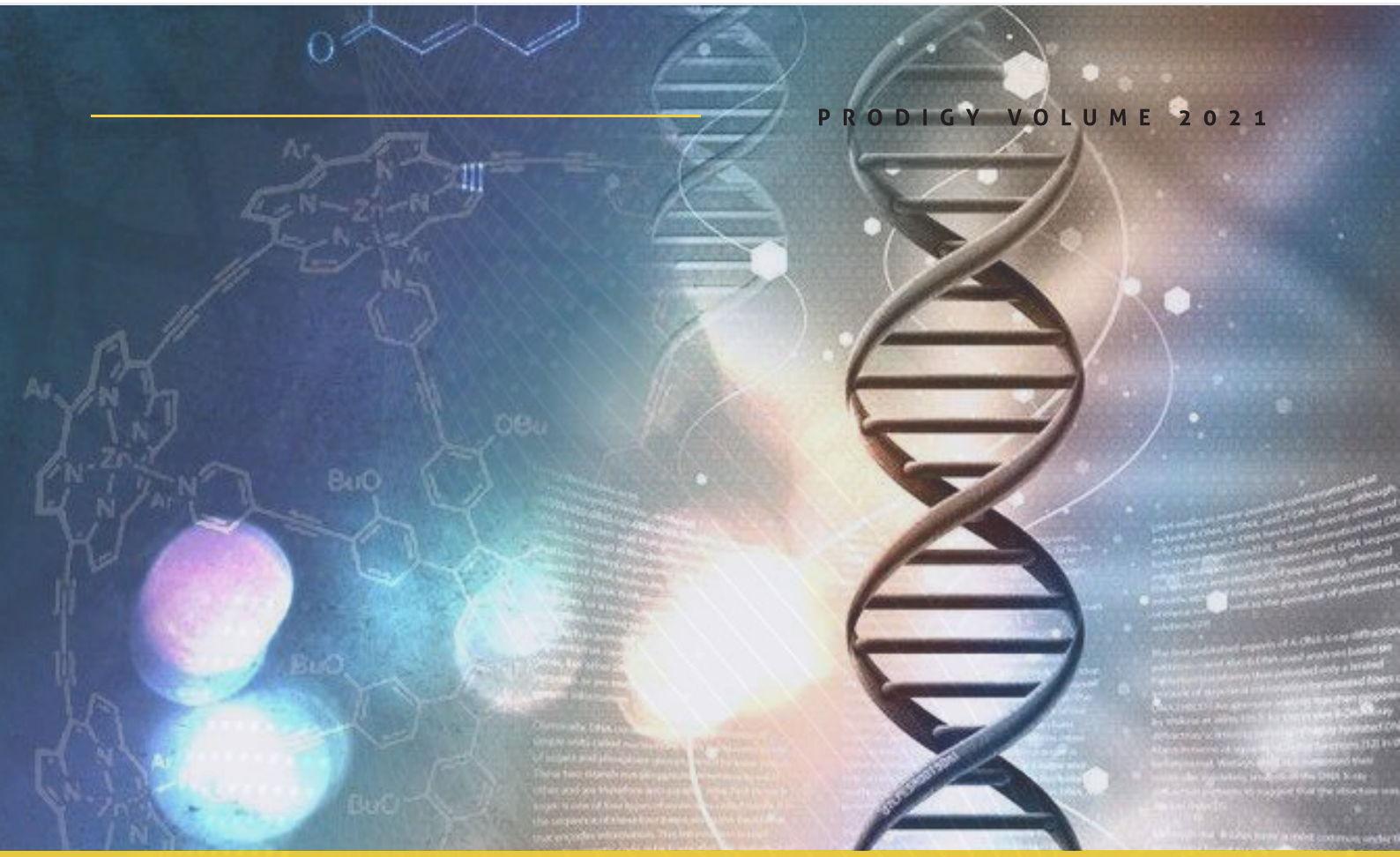
It was first presented during the 1990s. It managed the administration and examination of the information relating to DNA, RNA, and protein arrangements. It incorporates numerous different sorts of biological information. The main ones are Gene profiles, Protein structure, Protein interaction, Microarrays (DNA chips), useful examination of biomolecules, Drug planning.

Bioinformatics coverage

Functional genomics recognizable proof of qualities and their separate capacities. Underlying genomics: expectations identified with elements of the protein. Relative genomics: understanding the genomes of various types of organic entities. DNA microarrays are intended to gauge the degrees of quality expression in various tissues, different phases of advancement, and in various illnesses. Clinical informatics: includes the administration of biomedical information with unique references to biomolecules, in vitro tests, and clinical preliminaries.

Components of bioinformatics

Production of data sets: Involves the getting sorted out, capacity, and the executives of the biological informational collections. Data sets are available and submit new passages. Protein arrangements information bank for molecular structure. Advancement of calculations and insights: Involves the improvement of resources to decide the relationship among the individuals from enormous informational collections. Correlations of protein succession information with the all-around existing protein groupings



Applications of bioinformatics

Sequence arrangements of bimolecular (DNA, RNA, and proteins). Distinguishing proof of nucleotide sequences of functional gene finding locales that can be cut by limited enzymes. To follow the evolutionary trees of qualities. For the expectation of 3D dimensional construction of proteins. Molecular demonstrating of biomolecules. Planning of medications for clinical treatment. Treatment of huge organic information which in any case is absurd. Advancement of models for the working of different cells, tissues, and organs.

Bioinformatics Usage

This field is used in managing big data, use to develop new algorithms for data analytics and statistics. Prediction in proteins DNA structure. Health and drugs usage and its practical implementation prediction. Interact with other disciplines of sciences like statistical analysis, biological formation with computational methodologies.

Bioinformatics applied areas

Bioinformatics applied areas include genomics, proteomics, system biology, and phenotype which have different further areas which used in daily life prediction. Important areas are sequencing and feature prediction, 3D structure modeling, drug design, pathway analysis, image processing, and integration.

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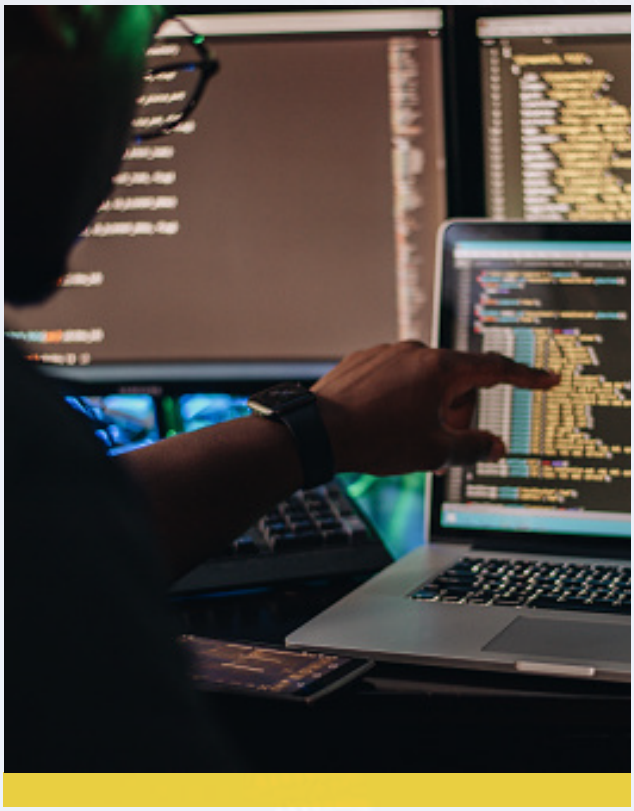
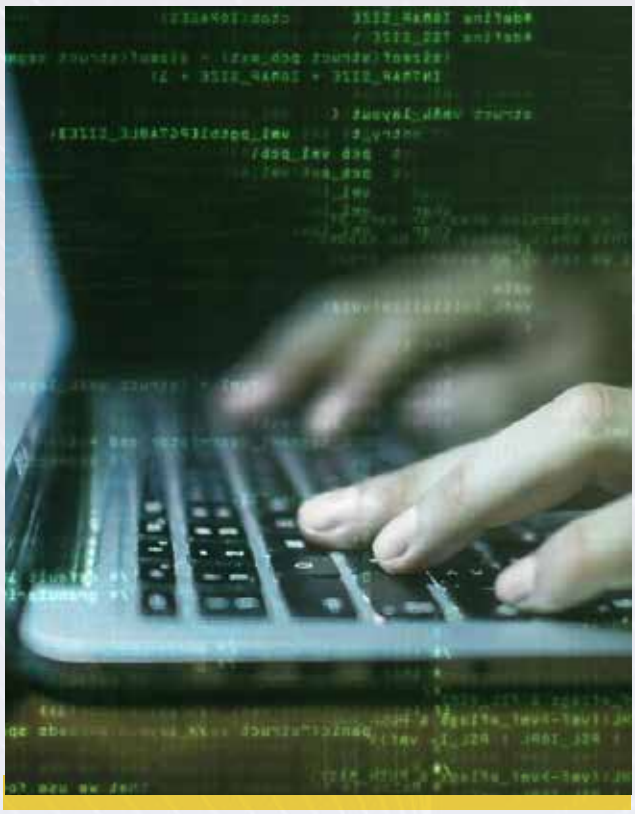
HIGH EFFICIENT DISTRIBUTED CHANNEL CODES

Channel Coding Theory

The era of communication theory has advanced at a breathtaking pace in the twentieth century. A prominent part of the advance in communication theory began seventy years back when Shannon published the seminal paper 'A Mathematical Theory of Communication. In that paper, Shannon raised the very fundamental problem of communication systems: how can we efficiently and reliably transmit the information. Claude Shannon also gave a basic answer: A channel coding can do it and hence the field of channel coding started with his landmark paper published in 1948. In channel coding, some extra redundant bits are added with the information bits that can be exploited to combat the distortion caused by the channel. Channel coding is complex but an important component of cellular communication systems, which is utilized for mitigating the communication errors that are caused by noise, interference, and poor signal strength.





Distributed Error Control Coding: Some Jointly Decodable Codes

As the name suggests that these codes are distributed over more than one communication node. The distribution of such error control codes over multiple communication nodes is designed by exploiting the algebraic structures of error control codes. Usually, the distributed error control code is divided over into two short-length error control codes which are placed at the source node and relay node. These two short-length codes jointly construct the single error control code at the destination node which is then jointly decoded at the destination node. The transmission of distributed error control code via multiple nodes provides cooperation diversity which is referred to as coded-cooperative diversity.

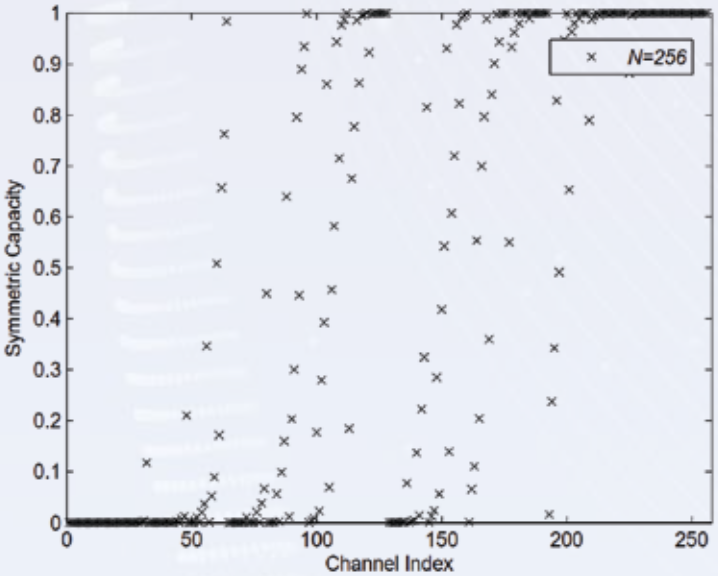
Distributed Turbo codes

A breakthrough happened in the field of channel coding when turbo codes were introduced at the IEEE International Conference on Communications (ICC) in Geneva, Switzerland, Berrou, Glavieux, and Thitimajshima in 1993. Their results caused a huge explosion of the research community working in the field of channel coding as they perform very close to the capacity limit. In its simplest form, the turbo encoding is done using two recursive systematic convolutional (RSC) encoders. At the receiver, two soft-input soft-output (SISO) decoders are employed. Each of the decoders decodes the stream of information bits of its corresponding encoder. By continuously exchanging probabilistic information, the two decoders can iteratively help each other like a turbo engine that's why the name 'turbo' is given to this code. Turbo codes which are formed as the result of cooperation between source and relay nodes are usually called Distributed turbo codes. In distributed turbo codes, out of two RSC encoders, one RSC encoder is placed at the source node while the other is placed at the relay node. To decode these distributive turbo codes, joint iterative decoding is employed at the destination.

Distributed Polar Codes

Polar codes represent a novel class of error-correcting codes that were introduced by Erdal Arikan in the seminal paper. Polar codes have the tendency to approach the capacity of a discrete memoryless channel (DMC). Polar codes are extremely useful since they have low encoding and decoding complexity. The complexity of these algorithms is O(NlogN), where N is the block length of the code. Polar codes are deeply rooted in an elegant effect, commonly known as channel polarization which transforms the main channel into two extremities: either good channels or bad channels. Polar codes have found their application in multiple-access channels. Moreover, recently the polar codes have drawn great interest due to the capacity-achieving property and have motivated the scientist and researchers to adopt polar code in 5G wireless communication standard for control channel of enhanced mobile broadband (eMBB) scenario.

As Arikan suggested that the polar codes can be constructed by using multilevel construction. Multilevel construction is employed to design distributed polar codes. The multilevel construction of polar code is also Plotkin's construction but it is different from the conventional Plotkin's construction.



Channel polarization for BEC with channel vector length N = 256 and erasure probability 0.5

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THE ROLE OF MACHINE LEARNING IN COMBATING THE COVID-19 PANDEMIC

Our planet has faced different disease outbreaks since its inception, but the latest – termed as Covid-19 by the World Health Organization (WHO) in March 2020 – can be considered as the most challenging for science, technology, and healthcare systems put into crisis. Awfully affecting global movement, Covid-19 compelled countries to close borders for months which mostly are still with the same status, resulting in massive economic loss. Families are apart, businesses have been drastically hurt, and students' education has been tremendously stirred or halted indefinitely. Uncertainty has surmounted the global operations that recent surge of the pandemic, in addition to the emergence of Covid-19 variants in the UK and the Americas has recently faded away hopes of soon reopening and normal life restoration. Nevertheless, scientists all around the world have been strengthening bonds, like never before, by sharing the latest findings of their clinical efforts to fight this extraordinarily villainous virus – the world stopper. In the same vein, computer scientists are streamlining computing intelligence to contribute to the toil all-around.

By the course of Covid-19 spread to every nook and corner of our planet, the advent of significantly large and calibrated datasets especially from China and European counties have facilitated researchers in evaluating different machine learning approaches. Not only these research works are experimental but also assistant to clinical endeavors. For instance, recently, after the approval of Covid-19 vaccines, the governments are struggling to provide vaccines to the target groups at the expected pace; mainly due to flaws in the distribution system, which has exposed the shortsightedness of unidentified patterns in vulnerable or at-risk groups (like elderly and essential healthcare workers). Here, machine learning methods are being leveraged to utilize vast amounts of data for comprehending the complex jumble of aspects and circumstances and precisely organizing the vaccination efforts. In this connection, different data sources, e.g., demographic data, social and environmental data, social media data, are taken into consideration for analysis purposes. In the U.S.A, Oracle has stepped up to provide the country's healthcare organization with National Electronic Health Records Database, as well as, Public Health Management Applications package so that the data related to Covid-19 could be adequately collected for actionable analytic insights.

At the current stage of the Covid-19 era, the distribution of the Covid-19 vaccine among billions has become an immense and daunting job in human history; since how much, where, and when are the main concerns, in addition to specialized logistic demands like maintained temperature. Adding to the difficulty, due to the high price, the doses cannot be easily wasted. It has to happen not only once, but the vaccination has to be performed twice on a particular spread of time. However, the use of data-oriented machine learning techniques has already expedited the capabilities of the distribution authorities to precisely allocate the limited supplies of the vaccines. Recently, to avoid the slipping of the most vulnerable group through the unintentional cracks, the Massachusetts Institute of Technology (MIT) in the The U.S.A has developed a machine learning-based prediction model for squarely determining the coverage of a certain proportion of the population.

Earlier, at the Covid-19 vaccine development stage, machine learning techniques have evidently advantaged, as done previously in other epidemics. These approaches have helped rapidly discover the unexplored viral pathways to devise new candidate COVID-19 therapeutics. For example, by providing an ample number of samples with the desired biomolecule, these methods systematically predict inhibitor candidates. According to Keshavarzi Arshadi, A., et al., some of the commonly used machine learning techniques employed on Covid-19 vaccine discovery are Random Forest (RF), Support Vector Machines (SVM), Long Short-Term Memory (LSTM), Deep Convolutional Neural Networks (CNN), and Recurrent Neural Networks (RNN). On the part of predicting protein interaction and modeling molecular reactions in carbohydrate chemistry, natural language processing tools are also used. On the other end, for predicting the projection of new cases, screening of potential Covid-19 candidates and treatment, and contract tracking, machine learning, and artificial intelligence methods have been employed. In their survey of machine learning and artificial intelligence applications pertaining to Covid-19, Lalmuanawma Samuel et al. found CNN-based ResNet-101 a significantly effective tool for radiologists since it can diagnose Covid-19 patients with more than 86% accuracy. Such deep learning techniques have also been utilized for face mask detection and social distancing enforcement in public places.

In Pakistan, at the time of writing this article, over ten thousand Covid-19 related fatalities have been reported, and over five hundred thousand individuals have been confirmed to have contracted this virus; mostly found in Sindh province followed by Punjab. The least effective remained so far is Gilgit Baltistan province. Luckily, compared to the Americas, Europe, and other Asian countries, healthcare facilities have not been tried yet up to the breaking point. The Government of Pakistan and its nation have shown strong unity in keeping this evil in control. The National Command and Operation Centre (NCOC) has been the core monitoring unit established by Prime Minister Imran Khan, which serves as a one-window operation unit for unified efforts against Covid-19 by collecting and analyzing data for real-time surveillance. With state-of-the-art technologies, data scientists and machine learning experts in NCOC are actively reporting the latest projections and future predictions to the country's leadership for making swift and smart strategic decisions. In addition to increased testing, Pakistan leadership designed a smart lock-down strategy which not only has been successful in combating the increase in new cases (flattening the curve), but also effectively minimized the socio-economic impact of Covid-19. Being a developing country with near one-fourth of the population lives below the poverty line (as per Asian Development Bank), the demagnification of Covid-19 related downturn means avoiding devastating impacts on the livelihoods of the vulnerable working class and their families. On top of that, the country's healthcare systems are also being strengthened by several worth mentioning responses such as engaging experts in policymaking, strengthening entry and testing points, producing PPE's locally to protect the healthcare workforce, establishing isolation wards in hospitals, and induction of more healthcare workers. Observed by World Health Organization, Pakistan's response to Covid-19 has been acknowledged as "So far Pakistan has fared well in its fight against COVID-19. In a country with over 212 million inhabitants, to date, roughly 303000 cases have been recorded and the curve of new infections has flattened since its peak in May and June 2020." [5]. Despite relative success, a country with the fifth most population in the world, Pakistan needs continuous vigilance to combat Covid-19, along with facing several other multifaceted challenges on multiple fronts.

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BUSINESS INSIDER

TRANSPARENCY IN GLOBAL ECONOMY: IS BLOCKCHAIN TECHNOLOGY THE ANSWER?

You must have come across the term "Blockchain" more often than not in recent times. The rising global interest in cryptocurrency trading in the last decade has put this term into the limelight. Since the opinion is divided upon the usage and trading of cryptocurrency, it is important to differentiate between blockchain and cryptocurrency. Blockchain is a database technology while cryptocurrency is a form of digital currency that is based on blockchain technology. The use of blockchain technology is not limited to cryptocurrency only. So, how it can help in achieving transparency in a global economy? It is important to have a brief overview of how blockchain technology works to better understand its usage and utility.

Traditionally, banks store records in databases. Databases are made up of data stored in tables. These large databases are stored on large servers made of several computers which are controlled by an entity. This centralized nature of databases means that although these databases can be accessed by many users, the control over how the databases and their data works are owned by a particular entity. As opposed to that, information in blockchain is stored in form of blocks, as the name implies. When a block is filled with information, the following information is stored in a new block and the previous block is locked. This database is formed with all these blocks linked together, thus the name blockchain. These blocks are linear and chronological (time-stamped). So, it can be said that all blockchains are databases but not all databases are essentially blockchains.

Another feature of blockchain technology is that it works on the decentralized principle of shared ledgers. It forms a peer-to-peer network. Information stored in one block is shared among many computers or users. This means that even if someone tries to alter the data in one block or node of the blockchain, they will have to alter the record in all the computers where that information is shared. This is virtually impossible, making blockchain technology quite secure to be manipulated. So, how does blockchain fit into the bigger picture of achieving transparency in the global economy and the financial world?

The 2008 financial crisis was one of the worst in human history. It saw the downfall of giants like the Lehmann Brothers. But what was the reason for this colossal collapse? According to Fintech journalists Paul Vigna and Michael Casey, the breakdown of trust was one of the primary reasons for the collapse of financial institutions in 2008, especially Lehmann Brothers. Public places their trust in financial institutions and their record-keeping practices. This trust allowed the bankers to window dress their results to show inflated assets on their balance sheets that had little to no market value at that time. Therefore, these assets were termed "Toxic Assets". Although, the 2008 financial crisis may have hurt this public trust in banks and financial institutions, the trust is still strong in these institutions and their record-keeping practices. Who's to say that this trust wouldn't be compromised again since banks and financial institutions are still following the same conventional record-keeping and reporting systems. However secure they may be, the control resides with an individual entity so the database is always prone to tampering or manipulation.

This is where blockchain technology can be useful. If assets' ownership and valuation are securely recorded in a shared ledger that is transparent and irreversible, the chances of repeating the 2008 debacle of hiding an organization's financial challenges will become virtually negligible.

Blockchain expert Alex Tapscott says that the use of blockchain technology can enhance the transparency of capital flows, thus minimizing the chances of future economic meltdowns. Blockchain technology will also allow central banks to view real-time transaction data of banks and financial institutes rather than running after them for periodic results and reporting. This will further enhance transparency.

The technology can assist the financial and assurance services sector as well since a blockchain-based system is hard to alter, thus reducing the detection risk. Blockchain technology has massive potential in its use by financial institutions, governments, and businesses to be more transparent. The technology is relevantly new and is still evolving. However, policymakers around the world should look towards devising a comprehensive and unified on-chain governance system that allows seamless integration of blockchain technology across the ecosystem in an economy. Transparency is the cornerstone of any social contract. Societies trust banks, financial institutions, and public companies with their wealth. Accurate record-keeping practices and transparent reporting will force these entities to be more vigilant with the public money and avoid such calamities like the 2008 financial crisis.

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BITCOIN & BLOCKCHAINS

Bitcoin is a cryptocurrency that enables direct payment over the Internet between two individuals by skipping the intermediary, such as a bank or credit card company. Bitcoin transactions, with fees that are much lower than what financial institutions charge, rely on cryptography to prevent double-spending, counterfeit, or theft.

In 2008, "Satoshi Nakamoto" (a pseudonym for a person or group whose identity is a mystery) wrote a paper outlining bitcoin's design. The rules state that the number of bitcoins in circulation will grow at a decreasing rate toward a maximum of 21 million coins. The currency is now maintained by an open-source community that has no centralized authority that regulators can target. Currently, nearly 11 million bitcoins are in circulation (Lee, 2013).

Before a bitcoin can be purchased, a user must install a virtual wallet onto a personal computer or mobile device. The wallet, which is similar to personal finance software, keeps track of your bitcoin balances and all transactions. To buy a bitcoin, real money must either be deposited through an online payment company or transferred directly from a bank account into an account on a third-party website that connects bitcoin buyers and sellers. Once the funds are available, a buyer can place an order for a bitcoin, similar to trading stocks, through an exchange such as Bitstamp. Bitcoins can also be purchased from third parties such as BitInstant, which sends the coins directly into the virtual wallet. Bitcoins can be used to buy from online vendors, such as George's Famous Baklava in New Hampshire, which sold a dark chocolate pastry for 14 bitcoins in 2011 (worth about $1900 today) (Lee, 2013). Bitcoins are also being bought and traded as investments.

Using Bitcoins for any transactions doesn't really require a user to understand the technical details behind the system. However anyone interested in truly understanding how the Bitcoin system actually works must first familiarize themselves with the workings of asymmetric cryptography (also called public-key cryptography) (Prypto, 2016).

Keys

Similar to asymmetric cryptography each Bitcoin user/account has a pair of cryptographic keys associated with it: the public key and private key. As their names imply the private key is meant to be secret and hence is only known to its owner while the public key is known to other users on the Bitcoin system. The functional purpose of both these keys is based on their characteristic differences. When a user creates a Bitcoin account which entails installing a Bitcoin wallet on their computer or mobile device they are provided with a secret and unique private key used to digitally sign each transaction to provide verification and authentication (more on this later). Bitcoin wallets use the private key to derive a corresponding public key. Public keys are hashed to create bitcoin addresses which are used to send and receive bitcoins (similar to email) however for security reasons it is recommended that a new bitcoin address be generated for each transaction (Prypto, 2016).

Blockchain

Bitcoin is referred to as a decentralized cryptocurrency system due to the shared public nature of its ledger called the blockchain, containing the records of all confirmed transactions in chronological order using cryptography to ensure integrity and authentication. Each block is comprised of bitcoin transactions made in the last ten minutes and contains the hash of the previous block in effect creating a chain of blocks (hence the term blockchain). This chaining of blocks through the inclusion of the preceding block's hash (all the way till the very first block) makes it virtually impossible to modify previous blocks since that would entail modifying all the blocks that came after it. It is for these reasons that are nearly impossible to double-spend bitcoins or fake the possession of bitcoins (Prypto, 2016).

Mining

The process of verifying transactions and adding them to the blockchain as having been confirmed as legitimate transactions is called bitcoin mining. Miners are bitcoin participants that use CPUs and GPUs to perform proofs of work, data that requires time and monetary resources to produce but is trivial to verify, for each block resulting in the creation of new bitcoins and receiving a small percentage of these bitcoins as payment for their efforts. This transaction fee, therefore, acts as an incentive to contribute to the security of the system.

The proof of work function used by the bitcoin system is hashcash. Bitcoin mining is called thus due to the similarity of resource requirements (time and money) and the steady creation of value between bitcoin mining and the mining of natural commodities such as oil and gold.

Hashcash proofs of work are used in Bitcoin for block generation. For a block to be accepted by network participants, miners must complete a proof of work that covers all of the data in the block. The difficulty of this work is adjusted to limit the rate at which new blocks can be generated by the network to one every 10 minutes. Due to the very low probability of successful generation, this makes it unpredictable which worker computer in the network will be able to generate the next block.

For a block to be valid it must hash to a value less than the current target; this means that each block indicates that work has been done generating it. Each block contains the hash of the preceding block; thus each block has a chain of blocks that together contain a large amount of work. Changing a block (which can only be done by making a new block containing the same predecessor) requires regenerating all successors and redoing the work they contain. This protects the blockchain from tampering.

To truly understand the bitcoin system, let us look at what a typical bitcoin transaction looks like using an example where person Alice wants to send some bitcoins to another person named Bob

1) Both Alice and Bob need to have bitcoin accounts. They must therefore decide which platform (mobile, desktop, hardware, or web) and which operating system (Windows, Mac, Android, iOS, or Blackberry) they want their bitcoin wallet on.

2) Based on their choices they will have several possible bitcoin wallet clients to choose from.

3) Once both Alice and Bob create their bitcoin wallet accounts they will both be assigned their pairs of private and public keys.

4) To send any bitcoins, Alice will need to have a bitcoin address. Similarly, to receive any bitcoins, Bob will also need to have a bitcoin address.

5) Their bitcoin clients will then use hash their public keys to create one-time-use bitcoin addresses.

6) Alice will then request her bitcoin client to send bitcoins to Bob's bitcoin wallet address.

7) Alice's bitcoin client will then digitally sign this transaction request with her private key to ensure authentication. This allows anyone on the bitcoin system network (and in this case Bob) to verify that the transaction request indeed is legitimate by decrypting it using the corresponding public key.

8) However, at this point, the actual transaction has not taken place since it must first be verified by bitcoin miners before it can be made part of the blockchain.

9) Charlie, Danny, and Ernie are all bitcoin miners and they have computers with powerful graphics processing units (GPUs) in a parallel configuration

10) Their computers then begin bundling the transactions requested in the last 10 minutes into blocks. Their computers then begin to calculate a hash value using the previous hash value, the current block, and a nonce.

11) The computers of all three miners keep trying different nonce values until they can find one that results in a new hash value that pattern matches the

current requirement (this is changed periodically and announced within the bitcoin system).

12) Charlie's computer can come up with a nonce that results in a hash value that matches the required pattern so he is rewarded with some bitcoins (this amount fluctuates) and the transaction block is then added to the blockchain resulting in the actual transfer of the bitcoins from Alice's wallet to Bob's wallet.

13) The record of this transaction has now become part of the blockchain and can't be altered since it is virtually computationally impossible to reverse engineer the details of every single transaction using only their hash values.

14) Over time the transaction of Alice and Bob will get buried under several other transactions and will be linked in a chain back to the first transaction and the current one.

Non-Payment Uses of the Blockchain

Bitcoin has shown exponential growth and acceptance across industries and countries in recent years. However, due to its inherent nature of being a decentralized system, it has faced animosity and criticism from traditional financial institutions. Despite this however several organizations especially banks and insurance companies have realized the potential of blockchain technology in non-payment use cases such as:

1) Document digitization for easier verification, authentication, tracking, and management

2) Contract management and record maintenance with authentication and verification

3) Digital assets record management for verification of ownership to prevent piracy and intellectual property rights infringement

4) Identity management for user authentication especially online reviews and reputations management

5) Escrow documents and services digitization and record management

6) Data communication tracking between Internet of Things (IoT) devices

7) Maintenance of medical records with better security and verification

8) Electronic voting with voter authentication and verification

9) Digital rights management (DRM) for digital assets

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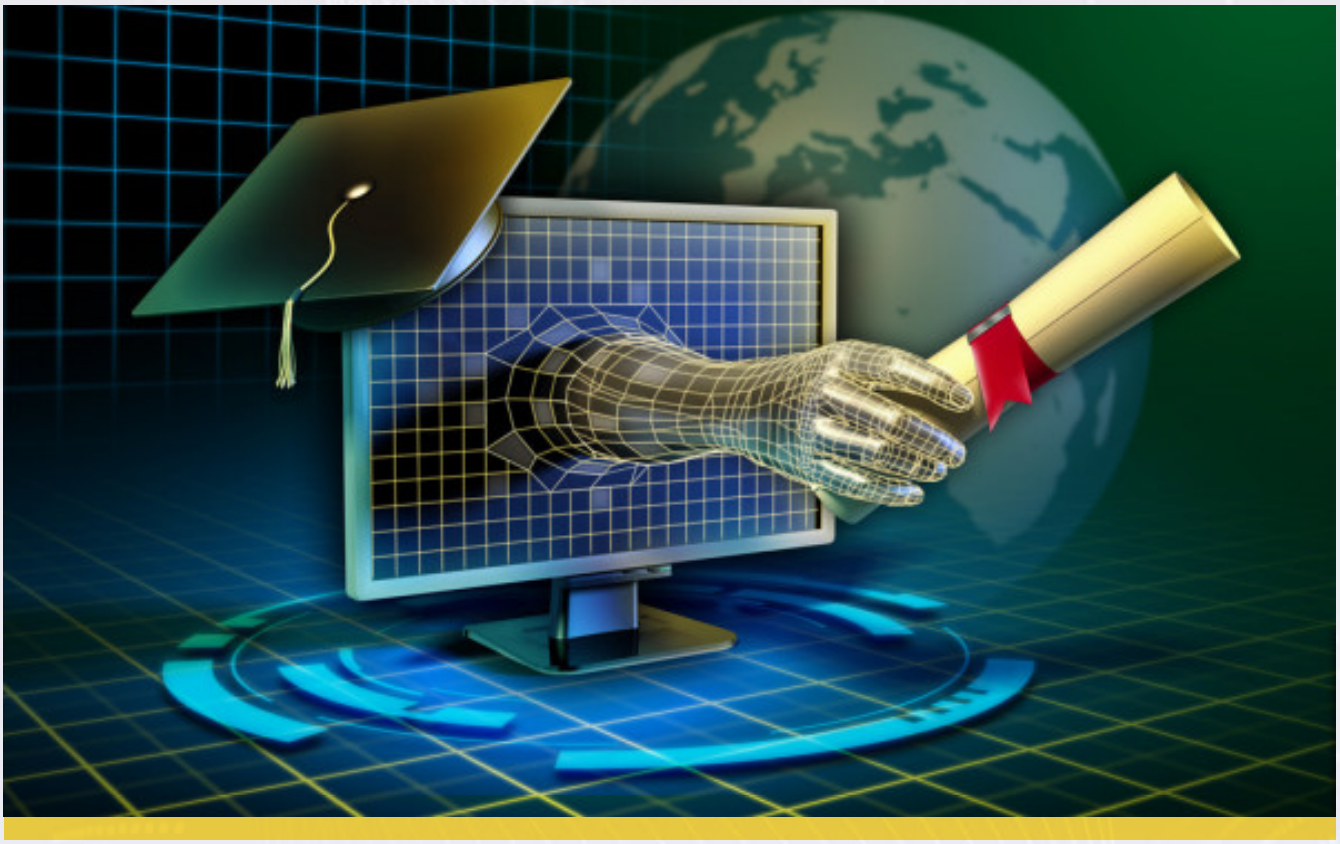
EXPLORING FROM TEXTBOOK TO EXPERIENTIAL LEARNING

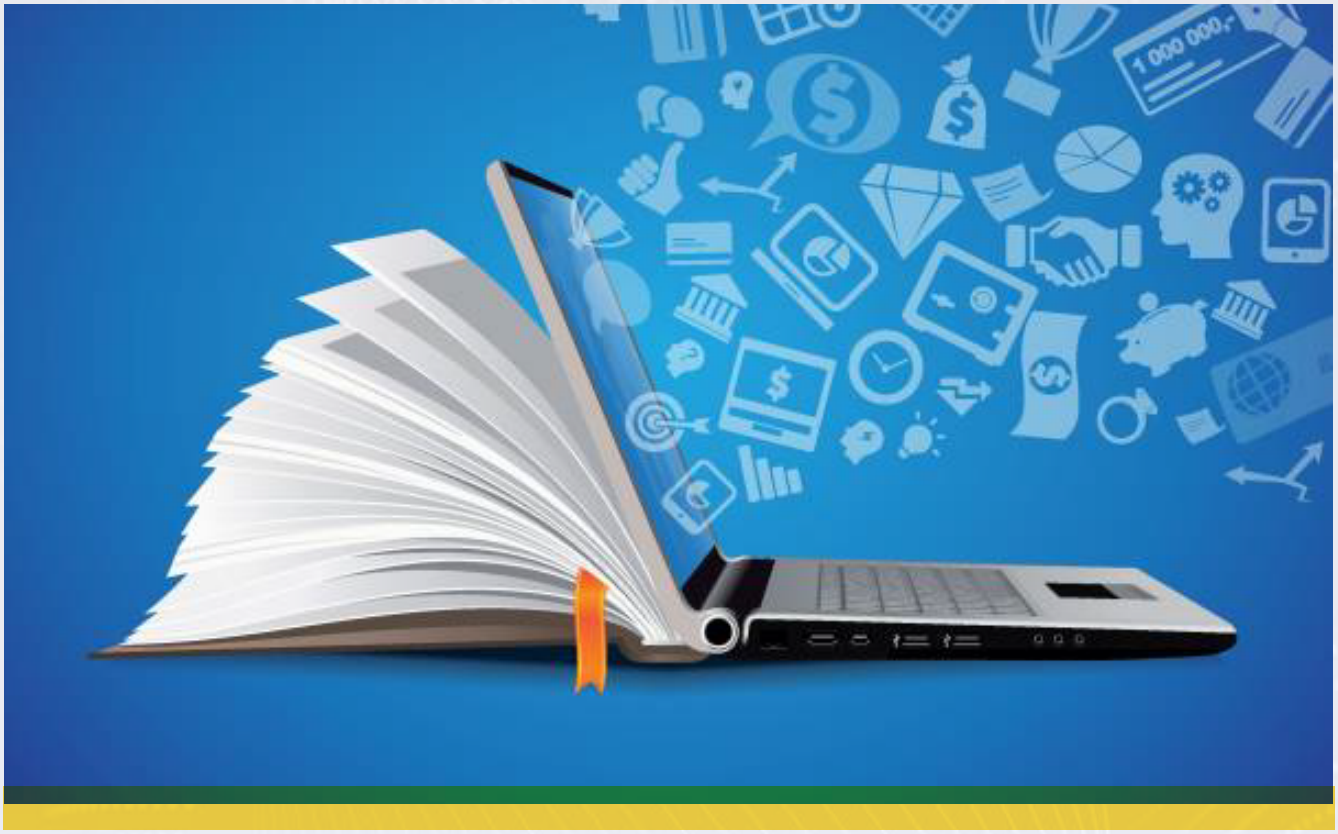
Classroom teaching is not only about the dissemination of knowledge. It enables students to learn effectively and helps them shape their futures. It enables students to learn effectively and helps them shape their futures. In general, students cram plenty of textbook content before any big assessment and put all their efforts into achieving a good grade. As goes the Chinese proverb, "Tell me, and I will forget. Show me, and I may remember. Involve me, and I will understand" (Confucius, 450 BC), there are a number of models developed by scientists and psychologists to teachers, demonstrate good attendance, and exhibit all overt signs of success.

A popular theory known as the VARK model – considers four types of primary learners: visual, auditory, reading/writing, and kinesthetic, experiential learner, (Fleming & Mills, 1992; Chelsi Nakano, 2016). It has been found that a lack of adequate understanding in terms of materials and concepts typically exists even among students who are well-trained, achieve high grades and test scores, receive accolades from teachers, demonstrate good attendance, and exhibit all overt signs of success.

In order to make learning more innovative, there is a need to direct students towards experiential learning. Experiential learning implies that students learn from their experiences or by doing certain things. This method focuses on a hands-on way of learning followed by reflecting on the results. According to J.W. Wilson, author of Cracking the Learning Code, "Experience automatically stimulates approximately 95 percent of all neurons that provide the massive neural firing that is the basis for all long-term memory." Generally, verbal presentation is only able to fire five to twenty percent of neurons. Simply experiential learning was initially all about the "Do and Review" rule, however, the following experiential learning cycle models evolved over the passage of time:



1-stage model	The first model, (experience), implies that for learning, experience alone is enough (James, 1980/2000; Bacon,1987; Neill, 2002).
2-stage model	Gaining experiences and reflecting on those experiences is an effective method to structure and facilitate experiential education (James,1980/2000; Bacon, 1987; Neill,2002)
3-stage model	The easiest is experience-reflection-plan, according to which experiences followed by reflection help pupils develop a plan for future experience (Greenaway, 2002).
4-stage model	Experience-reflection-abstraction-experimentation. According to this model, participants have a Concrete Experience, followed by Reflective Observation, then the formation of Abstract Conceptualizations before finally conducting Active Experimentation to test out the newly developed principles (Kolb, 1984; Smith, 2001; Greenaway,2002). For an expansion of Kolb's 4-stage model, see Willis & Ricketts (2004).
5-stage model	Experiencing-publishing-processing-generalizing-applying (Greenaway, 2002; Priest & Gass, 1997, Pfeiffer & Jones,1975)
6-stage model	"The Experiential Learning and Judgment Paradigm", consisting of experience-induce-generalize-deduce-apply-evaluate (Priest, 1990; Priest & Gass, 1997).



It can be said that the most elementary method to transform a group of learners in a powerful way is by introducing active learning strategies. By using these strategies, students in the classroom are made to work with course materials individually or in groups. As against open class discussions, active learning strategies are structured, timed, and created to give students the opportunity to learn by focusing on specific content in a particular way. Students have the tendency to grasp different concepts and materials better when they are actively engaged in them, rather than absorbing them passively. The best way to go on about is to set goals for an activity, decide what the teacher wants the students to learn or do at the end of the course and structure the activity accordingly to realize the goals. Experiential learning can be achieved through various types of activities, including group-based activities, where students can mix things up. Such activities are liked by students in general, given that the teacher explains the task clearly and take safeguards against freeloaders and slackers.

To make collaborative learning effective, there are basic principles to follow. If teachers are using groups for short-term activities (one task at a time) they must follow the principles of active learning. However, if the teacher intends to make students work in groups over a longer period of time (weeks) to accomplish certain tasks, then negativity and competition have to be eliminated from the group and be replaced with relationship building, helpfulness and respect so that students evenly distribute the task and ascertain that everyone in the group assumes responsibilities and work towards the successful completion of the task. Moreover, the teacher needs to ensure that group interaction between the members is as smooth as possible and this is done through the provision of clearly defined goals along with frequent feedback.

Case studies having uncertain solutions are designed so that the multifaceted and poorly structured problems, those students will come across later in life or during their jobs, could be replicated. It is more popular in advanced courses wherein application of whatever has been learnt is the foremost goal, however, it is also useful in even basic classes because students are able to learn facts in a certain context and are therefore able to grasp them more intensely. Additionally, adequate communications and reasoning skills in social situations are induced in students who use the problem-based learning strategy.

Students can also learn through different projects and class assignments related to community-based initiatives, for instance, creating a website for a social cause, making YouTube videos, participating in civil rights movements, etc. Field trips are also especially useful in exploring a particular subject. For example, field trips to banks, stock markets, botanical gardens, or historical monuments depending on the field add to the learning. Similarly, undergoing mock stock market trading – a process that gives investors and traders the knowledge they need to avoid simple mistakes and make successful transactions during a 'real' trading session – can help students interested in financial markets understand the functioning of stock-related transactions and trades.

Every day, we gain various experiences through which we are learning nothing because learning requires that the activity captures the attention of the learner and is understood in a meaningful fashion. Experiential learning is specifically useful and strong because it assists students in questioning things rather than simply finding answers to different questions. In summation, experiential learning has a lot of potential for educational innovation because through this type of learning, students are able to combine classroom studies with their experiences and this, in turn, makes them more successful in their careers in the long run.

The generation of new ideas, taking risks, and coming up with new methods to resolve problems are related to student engagement in several areas. Through understanding, every concept or subject can become easier. Therefore, in my opinion, the best strategy is to inculcate different concepts in such a way that it becomes a part of a student's lifetime memory. The belief in motivating students to do their best work, setting higher expectations, and extending support to students so that they can meet those expectations are key to make education more effective and fruitful. When students are assigned different challenges and are provided with the required support, their motivations to show their maximum potential are enhanced. What's more, learning environments and modes of instruction also make a big difference when it comes to student's perceptions related to course-related challenges. Courses must be designed to develop skills that could be helpful for students in their future careers. Skills such as communications skills, group work, presentation skills, analytical, research, and independent learning skills, project management, and computer skills all must be included in courses so that students can make the most out of their education.

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EARTHAYINGS

CHALLENGES OF OFFSHORE AND ONSHORE GEO-HAZARDS IN COASTAL BELT OF PAKISTAN

Under an influence of urban development in coastal cities of Pakistan, it is pertinent to foresee possible impacts of geohazards. Urban development projects in coastal belts are accompanied by construction activities on the reclaimed surfaces which impose changes in land morphology and aggravate the destruction of the geo-ecological environment. Geohazards in southern Pakistan or the Arabian Sea region are diversified in their mechanism and their association with active tectonic elements of Arabian, Eurasian and Indian Plates. Geohazards are geographically distributed from microscale to macroscale, however, these are different in their magnitude and impacts on livelihood and infrastructure in non-coastal areas, coastal belt, and unique for the offshore regions.

Geohazard is a geological state that may lead to widespread damage or risk to the infrastructure and livelihood. Literature review suggests that the potential geohazards for the onshore and coastal belt of Pakistan are tectonic earthquakes, mud volcanoes, surface landslides, debris flows, urban floods, and the presence of voids/weak zones in the ground. Whereas, the geohazards in near-shore and offshore environments of Pakistan are coastal erosion, tsunamigenic earthquakes, appearance and disappearance of islands, submarine slope failure, submarine mass slide, shallow gas hydrate dissociation, shakiness of subsea floor environments, mud diaper, buried channel systems turbidity currents, submarine cliffs, abrupt slopes, shallow active faults, and rising sea level.

Reliable geohazards assessments rely on geophysical surveying cloned with geotechnical engineering experiments, geochemical laboratory investigation, field observations, and in-situ observations while drilling. Thereby, the geohazards can affect the local and regional socio-economic systems of Pakistan. Favorable research tendencies may catch the attention to work on geohazards in the onshore and offshore environments of southern Pakistan.

Onshore Geohazards:

Civil engineers have concerns about soil behavior for the foundation of mega structured buildings in coastal belts around the globe. The construction of megastructures is a technical and risky project that demands careful study to ensure stable ground and failure-protected construction structures. For instance, the massive beds of limestone are recognized as the stable platforms, however, dissolution character of the carbonate rocks in the presence of the acidic groundwater may cause voids, cavities/weak zones, sinkholes, and caverns. The carbonate rocks which are susceptible to karst terrane generally contain the

caves, fractures, faults, and/or sinkholes in the shallow subsurface. These rocks with weak zones may include cavities, high angle vertical fracture, and poorly cemented material are considered sensitive zones for mega-construction projects.

The identification of the dissolution features in the subsurface of Karachi and its surroundings is a real challenge. The wide spectrum of geophysical methods such as electrical resistivity tomography, seismic refraction, ground-penetrating radar is helpful to investigate such anomalies in the subsurface anisotropic medium based on heterogeneities in physical properties of rock and soil types. We have employed the electrical resistivity tomographic

imaging, borehole seismic measurements integrated with the geotechnical examination of rock samples to delineate the horizontal and vertical extent of weak zones (void, cavities) and overall ground stability conditions in the shallow subsurface environments. The geotechnical estimation of core samples provides direct measurements on local ground stability conditions at centimeter-scale which contributed towards safe foundation design for construction of multi-story mega infrastructure in expanding outskirts of Karachi city. The key findings are presented in the Thesis documents of MS scholars supervised by the author of this article and jointly published research papers in scientific journals. It is recommended that the geophysical imaging cloned with geotechnical studies should be practiced to know the stable ground for construction of infrastructure and safety of livelihood which will help to reduce the fear of geohazard's impacts.

Coastal Geohazards:

Preliminary recognition of geohazards in the coastal zone could be conducted through remote sensing (satellite and drone imaging technologies) and GIS modeling. I have processed multispectral bands of OLI sensor of Landsat 8 to study the Land Use and Land Cover Changes in the frontal coast of Karachi city. The results were published in scientific research journals which reported coastal erosion, the impact of anthropogenic activities degrading the coastal environment of Karachi for somehow any reason. These scientific methodologies shall be expanded to the entire coast of Pakistan (Sindh and Balochistan) to overwhelm possible geohazards in coastal environments.

As global earthquake activity continues to impact communities, infrastructure, and livelihood, the necessity of better identification and characterization of seismic hazards becomes ever challenging. In my PhD research work, I have found seismological insight about geohazards triggered by tectonic prone earthquakes in coastal areas of Pakistan using data integration (tectonic model, active earthquake sources, b-value). These results are published in my recent articles on the seismological insight of southern Pakistan. These studies may be helpful to assess the probabilities of future earthquakes and associated tsunami in the region to frame mitigation plans for future and ongoing development activities of the seaports along the Pakistan coast.

Offshore Geohazards:

The geophysical exploration surveys, geochemical and geotechnical investigations of sea-floor rock samples, and in-situ drilling observations are occasionally employed around the globe to map the marine geohazards. Rather than physically touching the seabed, geophysical surveys based on physical properties of submarine sediment and seafloor rocks such as density, magnetism, elastic property, sediment electrical conductivity, and radioactivity level, perform through indirect approaches to explore the geomorphology and topography of submarine as well as its geological structure. However, submarine crustal structures and physical-mechanical properties of submarine rock and soil were studied directly through the drilling sampling and in-situ tests when it comes to geotechnical engineering investigations. Marine geophysical surveys including multi-beam echo sounding system, side-scan sonar system, laser scan technology, sub-bottom profiler, marine magnetometer, ship-board high-resolution seismic exploring system, and underwater photo-imaging carried out to map and model submarine geomorphology, topography, and geological structures under seawater. The choice of the scientific method is important to decide their application. The frequency of signals sent by shipboard seismic system or multibeam sonar help to achieve shallow depth of penetration below the seabed to map seafloor bathymetry, surface roughness, soft sediments composition, and submarine landslide geometry.

composition, and submarine landslide geometry. Geophysical observations with high-power systems but low frequencies, such as air-gun and sparker, can penetrate up to 15 km beneath the seabed to map hydrocarbons and other geological treasures hidden underneath massive ocean bodies.

Besides, thorough knowledge of marine geophysical and geological surveying methods, technological advancements in data acquisition, and numerical simulation augment the precession of marine geophysical data interpretation.

Research on marine geohazards has been becoming more globalized. The vastness of oceans invites vigilant research scientists to study the marine geohazards in wide-ranging coastal and marine ecosystems. Review of research studied related to marine geohazard in China, America, Europe, and Japan helped me to suggest that the disparity between Pakistan offshore and developed countries shall be narrow through collaborative research programs considering the scientific guidelines adopted in various mega projects such as COSTA, MaGIC, SEASWAB, SEEGeo, and IODP. Under the influence of global climate change, future studies on marine geohazards shall be advantageous with international cooperation and multi-disciplinary data integration to rescue in this fear state of geohazards.

During past decades, lots of data of marine geologic and geophysical exploration surveys have been conducted but detailed reports or raw data for re-evaluation are seldom available to emerge research groups desires to work in this specialized domain of marine geohazards. It is aimed to utilize recent datasets to model geographically distributed geohazards, subsea floor stability disaster forecasting, warning alert, and reduction strategies in offshore and onshore environments of southern Pakistan. Future Perspective of marine geohazard studies may be a unique research program of Bahria University (Karachi Campus) which may upsurge the applied knowledge of basic geophysical science to 'geophysical engineering'.

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CLIMATE-RESILIENT INFRASTRUCTURES IN URBAN CITIES

Cities are increasingly important players in the fight against climate change. This is a global phenomenon, but it is at the local level, where individuals, governments, and economic players all generate GHGs. National governments, as well as subnational and nonfederal actors, must take common global responses. Cities play a social and economic transformational function in society. Given that the urban population will continue to rise, linking urban planning to climate change adaptation is critical. Since 1950, the world's urban population has risen fast, from 746 million in 1950 to 3.9 billion in 2014, and it is anticipated to rise to 6.3 billion by 2050, accounting for around 70% of the global population. While urbanization has increased, so have global carbon emissions from fossil fuel combustion, which have increased by about 500 percent between 1950 and 2005. Cities consume 60 to 80 percent of all energy and produce up to 70 percent of all human-caused GHG emissions.

The current wave of urbanization presents an opportunity to promote climate- and sustainability-related factors in urban design. GHG emissions are closely tied to materials, energy use in a metropolis, and garbage production. Given that we will create as much urbanized land in the next 15 years as we have in the entire history of humanity, it is evident that climate resilience is required to combat the detrimental effects of climate change on cities. The idea of resilience has proven to be beneficial in dealing with climate risk and unexpected events, as well as in strengthening attempts to survive and prosper in the face of climate change. While acknowledging the complexities of rapidly increasing urban regions and the uncertainties associated with climate change, urban climate change resilience (UCCR) encompasses climate change adaptation, mitigation efforts, and disaster risk reduction. Instead, resilience is built through a series of activities that build on each other over time.

People and institutions would learn from past experiences and apply it to future decisions, enhancing and progressing these actions. Urban regions with frail systems and huge populations of the socially or economically downtrodden are the most vulnerable to external shocks and pressures (including climate change). Vulnerable persons are the ones that suffer the most as a result of their excessive exposure to hazards or their reduced ability to adapt and respond (due to physical limitations or financial capacity).

Climate change has two types of direct effects: shocks and abrupt impacts like hurricanes, typhoons, and heatwavesthem, and stressors or long-term impacts like sea-level rise, average temperature rise, and long-term changes in rainfall patterns. Severe flooding (stopping port or train operations, affecting travel to work and preventing goods from reaching market); blackouts (as energy generation is affected by storms); increased risk of water- or vector-borne diseases (due to rainfall and temperature changes); and heat stress (exacerbated by temperature changes) are all indirect effects of these shocks and stresses on urban areas. Climate risk analysis begins with a determination of the possibility of hazards as a result of anticipated climate change (i.e. changes to temperature, rainfall, or the frequency of storms).

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COMPARATIVE NARRATIVE
"THE SNOB – A CRITIQUE ON SNOBBISH CULTURE"

Taimoor: I'm done. I'm done. I'm done.

John: Let's see if you're Donne (done). How many works of him have you done? T: None.

J: And you call yourself Donne! Oh, what a pun! T: No, I'm not a nun.

J: Let's do some fun. Have you read Shakespeare?

T: Yes. Romeo and Juliet! What a lovely love story of those little lovers! J: Is it all you know?

T: No, I know a lot more.

J: That's good. Name some.

T: 40 rules of love. What a beautiful name! J: That's rubbish.

T: Oh no. It's all about Rumi. And I love Rumi. J: Glad to know you love Rumi.

Please share some of his works.

T: Oh. All the quotes on Facebook are written by Rumi! Are you a newbie! J: What?! Ah, you must be joking.

T: No no. I'm serious. And Shakespeare too writes for Facebook. Seems like you've never got in touch with social media. It is very social, you know!

J: I can see that.

Okay. Leave Rumi and Shakespeare. What are your views about novels? Which novel are you reading these days?

T: Actually I have a whole carton of books. The carton is full of books, I have been piling up since 2013. I think I have spent 52,000 Rs. from 2016.

Well, I will watch Downton Abbey today. I've fallen in love with the minority culture shown in that TV show.

J: You're calling it a minority culture?!

T: Yes! Since that's what we've been following till now. Look at my taste of culture, it's very Americanized, isn't it?

J: You're funny!

T: At least somebody's calling me funny. When I saw the previous statuses of my Facebook account and compared them with the present ones, I realized how funny I used to be. That's what happens when you're a Marxist.

J: You still are funny!

And did I hear you calling yourself a Marxist?

T: Thanks. Indeed.

(Taimoor dramatically) "Religion is the sigh of the oppressed creature, the heart of a heartless world, and the soul of soulless conditions. It is the opium of the people."

J: So in other words you don't believe in religion, do you?

T: 'The first requisite of the happiness of the people is the abolition of religion.'

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LEGALLY SPEAKING
SILVER LINING OF CORONAVIRUS

Something strange is happening which I mostly saw in fiction movies. Not only is disease and death sweeping the planet. Not just the closing of borders and restaurants and universities, the hoarding of wipes and disinfectants, the orders, unimaginable for Earth, to "take refuge there." Something else is happening. The air in Pakistan, India, America, Italy, and others after hitting China is now surprisingly clean. The Grand Canal in Venice, normally soiled by boat traffic, is clear. In Seattle, New York, Los Angeles, Chicago, and Atlanta, the smog of pollution has risen. Even global carbon emissions have declined.

The coronavirus has caused a surprising shutdown of economic activity and a drastic reduction in the use of fossil fuels. In China, measures to contain the virus in February alone have reduced carbon emissions by about 25%. The Energy and Clean Air Research Center estimate that this equates to 200 million tons of carbon dioxide, more than half of Britain's annual emissions. In the short term, the response to the pandemic appears to have a positive effect on emissions. But in the long term, will the virus help or harm the climate?

To be clear, the coronavirus pandemic is a tragedy: a human nightmare unfolding in overcrowded hospitals and unemployment offices, rushing towards a horizon obscured by an economic catastrophe and full of omens of suffering to come. But this global crisis is also a turning point for the other global crisis, the slowest with even higher challenges, which remains the backdrop against which modernity is developing. As the Secretary-General of the United Nations recently noted, the threat of coronavirus is temporary, while the threat of heatwaves, floods and extreme storms causing loss of life will remain with us for years to come.

Our response to this health crisis will shape the climate crisis of the coming decades. Efforts to revive economic activity (stimulus packages, rescue packages and return to work programs under development) will help to shape our economies and our lives for the foreseeable future and will have an impact on carbon emissions that have a worldwide impact. The planet for thousands of years.

Last week (which looks like a hundred years ago while sitting under quarantine), there could be some Freudian transfer of the coronavirus to the climate, that fear and urgency will be removed from the crisis that is moving faster and settling in the slowest, becoming a catalyst for much-needed action. Until now, it seems that all transfers are working in the opposite direction: social blockages and distancing provide a litany of mature actions necessary for the transfer of nebulous fears and fears of the climate. In this context, consumerism provides perverse relief: You can finally go buy dry goods to prepare for the apocalypse.

But personal consumption and travel habits really change, leaving some people wondering if this could be the start of a significant change. Maybe when you stoop down with cabinets full of essentials, your sense of the consumer goods you need will diminish. Perhaps even after the acute phase of the coronavirus crisis has ended, you will be more likely to work remotely. Lifestyles that include, for example, frequent long-distance travel already seem ethically questionable in light of the climate crisis and, in an era irrevocably marked by the pandemic, these lifestyles can be considered as extremely irresponsible Perhaps among the relatively Rich, it seems inconceivable to get on a plane during a weekend or destination wedding.

Radical changes in individual habits, especially in rich countries with high per capita consumption, could lead to lower emissions, which would be an unequivocal good. But personal habits may be less important because of direct reductions in carbon emissions and more because of "behavioral contagion," a social science term that refers to how ideas and behaviors spread through a population and it can, in terms of climate action, lead to changes in voting and even policy.

In other words, to make sense of global emissions, the changes in consumption patterns resulting from the virus should extend beyond individuals to the larger structures that shape our lives. In China, it was not teleworking or frozen aircraft that caused the 25% drop in emissions. If anything, the short-term positive climate effects we see today dramatically remind us that changing patterns of personal consumption will mean little in the future if we also fail to decarbonize the global economy.

It is tempting to say that humans are smallpox on Earth. This is where we withdraw, nature bounces. When images of dolphins and swans apparently appeared on the newly cleared channels of Venice appeared on social networks, it was easy to believe (but not entirely true) that the virus had forced people to enter and that "nature" was had recovered in our absence. This is the bad climate lesson to be learned from the pandemic.

Humans are part of nature, they are not separated from it, and human activity that harms the environment also harms us. In China, just two months of pollution reduction likely saved the lives of 4,000 children under the age of 5 and 73,000 adults over the age of 70, writes Marshall Burke, assistant professor in the Stanford Department of Earth System Sciences. The real question may not be whether the virus is "good" or "bad" for the climate, or whether wealthy people will take fewer flights, but whether we can create a functional economy that supports people without threatening city life.

Lastly, the most important thing to keep in mind is that this time will pass too, but we need to learn our mistakes and we should rectify our way of living because GOD just press the reset button of an Earth and taught us a very good lesson if we learn from it. At the present time, I request you all to get yourself vaccinated. And think that what we did so wrong that GOD put us all under this fear of death and also we need to think what changes we will unitedly bring to this earth. As very beautifully Allah expresses in HOLY QURAN:

"My mercy encompasses all things" (Quran 7:156)

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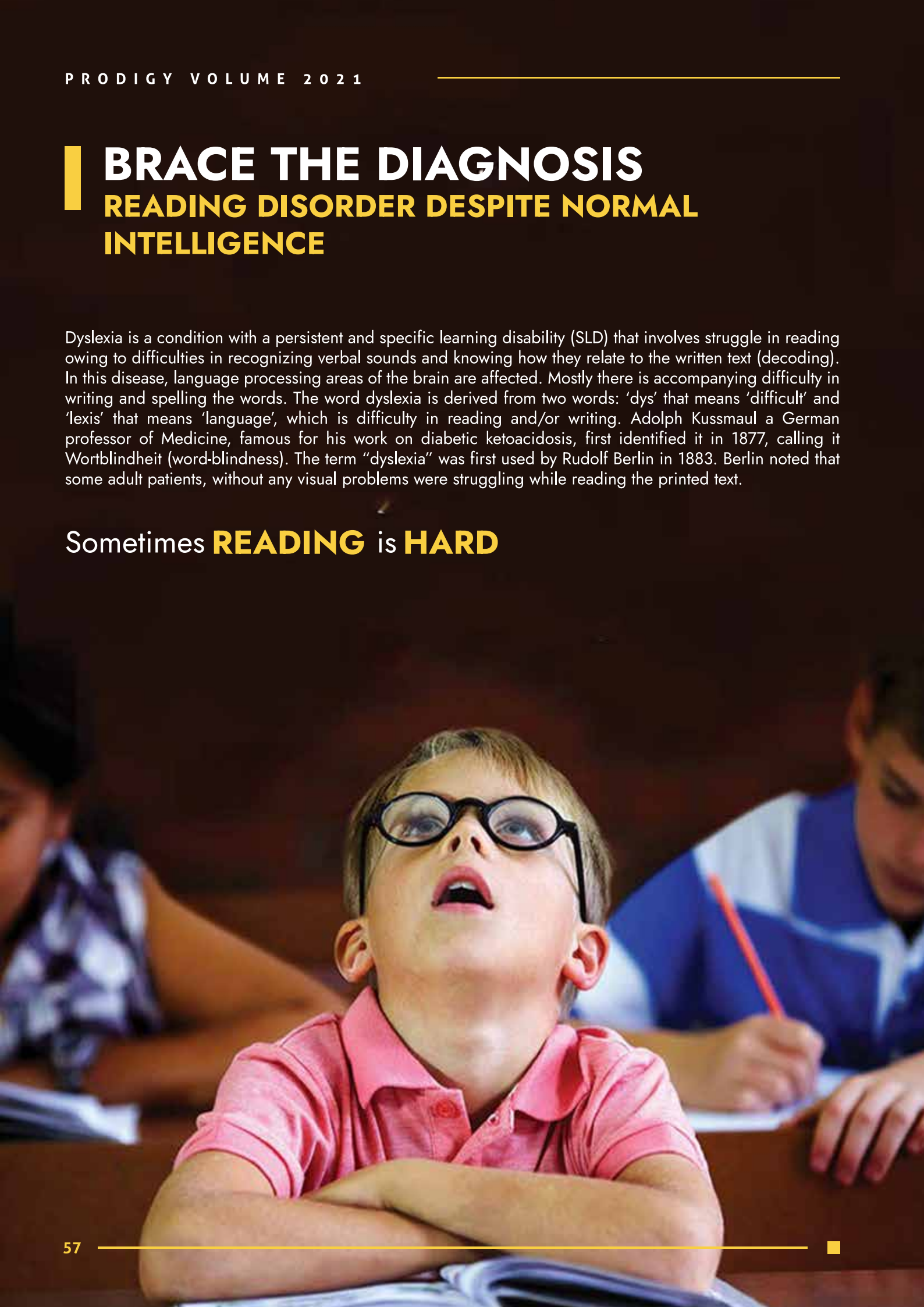
BRACE THE DIAGNOSIS

READING DISORDER DESPITE NORMAL INTELLIGENCE

Dyslexia is a condition with a persistent and specific learning disability (SLD) that involves struggle in reading owing to difficulties in recognizing verbal sounds and knowing how they relate to the written text (decoding). In this disease, language processing areas of the brain are affected. Mostly there is accompanying difficulty in writing and spelling the words. The word dyslexia is derived from two words: 'dys' that means 'difficult' and 'lexis' that means 'language', which is difficulty in reading and/or writing. Adolph Kussmaul a German professor of Medicine, famous for his work on diabetic ketoacidosis, first identified it in 1877, calling it Wortblindheit (word-blindness). The term "dyslexia" was first used by Rudolf Berlin in 1883. Berlin noted that some adult patients, without any visual problems were struggling while reading the printed text.

Sometimes **READING** is **HARD**



Every person who attended the school has gone through the phase of learning, how to read, write and spell specific words. These learning skills vary from person to person. Learning is a complicated process, especially in languages based on alphabets such as English where the first step of reading is to crack the code (phonemes of letters). The person must be able to read precisely, smoothly, and understandably according to age and educational level. Although dyslexia is around 5-10% prevalent throughout the world, in Pakistan it is reported higher. People with dyslexia take their weakness as a stigma may develop a distorted self-image of being "dumb" and less proficient than others. This discourages such students to continue education.

In reality, dyslexic individuals are very creative and are gifted with more intellectual potentials as compared to non-dyslexic individuals. There are many famous figures from all fields of life, in history who were dyslexic. Some famous scientists include Alexander Graham Bell, Pierre Curie, Michael Faraday, Albert Einstein, and many more.

Types of Dyslexia:

A. Etiology based classification:

Dyslexia can be divided into two main types based on the cause of the disease:

1) Developmental

2) Acquired

1. Developmental dyslexia:

This term is used to describe specific learning disabilities that occur during fetal life when the brain is under development.

1) A genetically inherited condition is described as primary dyslexia.

2) If there is no genetic cause but dyslexia occurs due to insults to the brain during development it is called secondary dyslexia.

2. Acquired dyslexia:

If a person (adult or child) sustains injury due to trauma or disease after brain development, it can lead to dyslexia, called acquired or trauma dyslexia.

B. Function-based classification:

Dyslexia can also be classified based on the degree of severity and function compromised:

1) Phonological dyslexia

2) Surface dyslexia

3) Deep dyslexia

4) Letter position dyslexia

5) Attentional dyslexia

6) Vowel letter dyslexia

7) Neglect dyslexia

8) Vowel letter dyslexia

1. Phonological dyslexia:

There is difficulty in breaking down word syllables into phonemes (sound) and matching phonemes with their graphemes (written). Thus there is difficulty in decoding the words.

a) Children cannot read fabricated words like "Jeet".

b) Sounds at the start of a word may not be correctly perceived.

c) Difficulty in recognizing rapid sound inputs and consonant sounds such as p, b, even these letters may be missed during reading.

d) Trouble evaluating the order of sounds and syllables in words resulting in a reversed reading of words.

e) Decreased memory of sounds and their sequences.

f) Blending sounds into words is troublesome.

g) Skipping one sound and replacing it with another. Thus guessing and weird spellings of words

h) Difficulty in perceiving and pronouncing vowel sounds.

I) Difficulty remembering spelling that is improved by repetition.

2. Surface dyslexia:

Trouble reading text as the words are not recognized by vision. There is

a) Interchange of the letters that look alike in shapes such as b and d, p and q.

b) Interchange of words that may be dynamically inverted such as was and saw.

c) Limited visual word memory: only some words are identified from a text and even those are pronounced with difficulty.

d) Reading place and a line is lost as the eyes move from one end of the line to the other end. Thus the reader does not understand what is being read.

e) Overlooking letters as well as words while reading

f) Hiding one letter as the gaze moves rapidly to the next letter thus the first letter is neglected.

g) Irregular words such as "sight" are difficult to learn and remembering their spelling is tough.

h) As words are visually remembered with difficulty, it is hard to retrieve those words.

i) As reading the words is cumbersome it is easy for the child to first spell the word and then try to read it from the print.

j) Forgetting the shape of the letters while writing.

k) Spelling is written following sounds such as 'laf' instead of laugh

3. Deep dyslexia:

A severe type characterized by semantic, visual, derivational errors as well as trouble reading functional words such as "the" and "so". It may result from brain injury as an acquired condition.

4. Letter position dyslexia (LPD):

A severe type characterized by semantic, visual, derivational errors as well as trouble reading functional words such as "the" and "so". It may result from brain injury as an acquired condition.

5. Attentional dyslexia:

There is swapping of alphabets among adjacent words, such as "pair cane love" is read as "lane love or even lane cove".

6. Letter identity dyslexia:

Trouble naming a letter or differentiate visual forms, names or sounds of letters, or uppercase and lowercase such as B and b.

7. Neglect dyslexia:

The visual field is perceived partially due to damage to brain tissue. If the first parts of words are misinterpreted it is "left neglect" or if the last chunks of words are not understood, it is "right neglect". Here the words are guessed.

8. Vowel letter dyslexia:

Here vowels are substituted, transposed, and added such as 'bit' can be read as 'bat', 'but' or even 'boat'.

Mental functions affected in Dyslexia:

a) Cognitive deficit in Dyslexia: All dyslexic individuals present with phonological problems variably as core difficulty along with associated symptoms. Thus automaticity is reduced in reading and double-time required for the tachistoscopic presentation of a word. There is weakness in solving mathematics, naming speed, in processing general information. It is observed that dyslexia is accompanied sometimes by attention deficit hyperactivity disorder (ADHD) as well as autism.

b) Motor Skill Deficit in Dyslexia: Some motor task compromise is associated with dyslexia such as swimming, riding a bike, failure to throw a ball up or catching it, clapping multiple times, walking reverse in a straight line for six steps, bad handwriting, and tying the shoelaces. Denckla published in 1985 that "the part of the 'motor analyzer' that is dependent on the left hemisphere and is important for timed, sequential movements is deficient in the first decade of life in this group of children whom we call dyslexic." Thus dyslexic children lack motor automatization. Sensitive analysis can also point out balance problems. Dysgraphia, mirror writing, and reverse reading of letters or words are also motor deficits.

c) Double Deficit: Double deficit is a co-occurrence of letter-sound awareness and lower RNA score.

Other disorders related to Dyslexia:

Dyslexia may co-exist with ADHD, dyscalculia, dysgraphia, and dyspraxia (a difficulty in motor and coordination movements also called "clumsy child syndrome").

Risk factors for Dyslexia:

a) Genetic predisposition: Genetics & positive family history also proven by twin studies, increases the risk of a child being dyslexic. Language delay may be a strong indicator of the child being dyslexic.

b) Poor Home literacy Environment: The literacy rate and activities of the immediate relatives matter in dyslexic persons. Poor literacy status of the family or less habit of reading and writing adversely affects dyslexic children. Conversely, a trend of reading and writing of family members will provide a child with greater stimulus and opportunities to read print material and will help positively.

c) Poor Home literacy Environment: The literacy rate and activities of the immediate relatives matter in dyslexic persons. Poor literacy status of the family or less habit of reading and writing adversely affects dyslexic children. Conversely, a trend of reading and writing of family members will provide a child with greater stimulus and opportunities to read print material and will help positively.

d) Less interest in reading: Dyslexic people avoid reading or seek fewer opportunities to read as compared to fluent readers which will reduce the chances of improvement in reading skills.

e) Phonological Deficit: Inability to pronounce specific letters or encounter difficulty in non-word repetition in the preschool phoneme recognition in the school.

Screening & Diagnosis:

Dyslexia presents differently and with different severity depending on the age, setting, upbringing, educational status, and many other factors related to the individual being assessed. Diagnosis of dyslexia can be described according to two internationally accepted diagnostic criteria guidelines.

1) One is the International Classification of Diseases (ICD-10) where diseases are classified and a specific international code is designated for each disease. In ICD-10 the diagnostic code for dyslexia is R48.0 and a subheading of developmental dyslexia is coded as F81.0. The main symptoms of dyslexia in ICD-10 are as follows:

a) A cognitive disorder with a poor capability to understand written language regardless of normal visual acuity.

b) Dyslexia can be developmental or acquired.

c) Developmental dyslexia manifests itself by a significant decrease in reading achievement for age, intellectual performance, and educational status, since birth.

d) Deterioration in processing printed words which include misinterpretation, skipping, or switching of characters. Vocal and quiet reading problems can include defective and sluggish understanding. Thus the recognition and understanding of written words, as well as expression are hampered. Additionally, there is a problem with spelling the words and writing skills. It runs in families as an autosomal dominant pattern with males more frequently reported. It is less severe than alexia which means inability to read.

2) Diagnostic and statistical manual of mental disorders (DSM-5) is a guidebook prepared by hundreds of international experts of mental health. This guidebook is written to provide uniform definitions, classification, diagnostic criteria, treatment strategies, and research guidelines of all mental disorders. According to DSM-5

a) Dyslexia is an SLD. It hinders specific learning skills that are the basis for further academic activities and achievements.

b) Main symptoms include problems in reading, writing, solving math, memory, paying attention, following directions, clumsiness, telling time, and staying organized.

c) One of the symptoms of learning difficulties persists for at least 6 months regardless of the additional help or directed instruction. Another parameter for diagnosis is significantly lower specific academic skills for the age.

d) Speech may start late. Some individuals may present the symptoms late. Other conditions with overlapping symptoms must be ruled out before confirming a dyslexia diagnosis.

Rapid Automatized Naming (RAN):

Phonological function involves the spontaneous processing of a task called RAN that depends on short-term memory. A lower RAN is related to phonological awareness during processing at the brain level. Both RAN and phonological awareness are consistent features of dyslexia. In RAN tests items normally recognizable on sight are presented visually and their naming speed is tested. This test signifies the mental capabilities of visual and coordination skills and processing of phonological representations. RAN test is of two types. One is non-alphanumeric where visual stimuli used can be objects and colors, used for preschool children. The second is alphanumeric where the visual stimuli are both letters and digits used to test school-going children.

For screening, Response To Intervention (RTI) procedure can be used at the school level. It will help to point out children facing learning difficulties. These children can then be offered additional learning help tailored to the individual students and the progress is monitored for the effectiveness of the intervention.

Besides RTI a formal assessment for diagnosis of dyslexia can be conducted for children as well as adults. Multiple steps for evaluating intellectual as well as academic performance are included in this process. Auditory and speech skills, phonemic awareness, and the ability to rapidly name letters are tested. Individuals (especially children) are asked to read individual words as well as words in sentences to check their comprehension.

Management of Dyslexia:

Dyslexia persists for life. However, with support people can improve reading as well as writing. If intervened at an early stage the difficulty in academic activities and achievements can be resolved. The use of a multisensory approach (involving visual, auditory, kinesthetic-tactile (VAKT)) and individualized training may be helpful according to the individual's progress. Dyslexic students and adults may be offered special consideration such as extra time may be given for academic and professional activities and examinations. Audiotaped lectures/examinations/meetings will help dyslexic individuals to perform better. Mental health support may also be required to take care of emotional disturbances that may arise due to difficulty in reading and writing.

Dyslexic features manifest commonly at preschool age therefore children may be screened at this age to intervene earlier. Unfortunately, children may present variably according to the predisposing and protective factors present in individual cases. Positive family history is a high-risk factor for dyslexia but if the child develops letter-naming skills earlier the risk is reduced significantly.

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RECENT DEVELOPMENTS RELATED TO POINT OF CARE TESTING (PCOT) IN THE HEALTH CARE SYSTEM

Point of care" testing (POCT) is also known as bedside testing which involves any type of diagnostic test that can be performed as close as possible to the patient, be it at their bedside or near them.

Point-of-care (POC) or with-patient testing allows physicians and medical staff to accurately achieve real-time, lab-quality diagnostic results within minutes rather than hours. Through the use of portable blood analyzers, testing at the "point of care" streamlines the diagnostic process and helps to ensure that patients can receive the most effective and efficient care when and where it is needed. POC testing enables staff to make rapid triage and treatment decisions when diagnosing a patient's condition or monitoring treatment response. By simplifying the testing process, clinicians can focus on what matters most providing effective, quality patient care.

In the early days of medicine, few medical tests existed that were done at the patient's bedside. By the 1950s, centralized clinical laboratories could run large numbers of tests at a low cost. It was common to send samples away to laboratories and then wait days to weeks. Point-of-care testing is also crucial in emergencies and the operating room. If someone is having a stroke, a first responder or other healthcare practitioner needs to measure prothrombin time/international normalized ratio (PT/INR) to test blood coagulation before he or she can give stroke medications. Point-of-care tests are also used to measure coagulation during open-heart surgery and organ transplant for results.

As the need for faster test results has grown and certain testing devices have become portable and easy to use, medical testing has evolved once again. Today, results from clinical laboratories remain a crucial component of healthcare, but it is now complemented by tests performed outside of the laboratory, wherever the patient is.

Point-of-care testing spans so many areas of medicine that it is best defined by where it's done, anywhere outside the centralized laboratory rather than by the kinds of tests that are performed. It may be referred to by many different names, such as near-patient testing, remote testing, satellite testing, and rapid diagnostics. In general, point-of-care testing encompasses any tests that are performed at or near a patient and at the site where care or treatment is provided. Results are typically available relatively quickly so that they can be acted upon without delay.

Point-of-care tests can happen in a wide variety of locations: in your home, at a healthcare practitioner's office, in the emergency department, in an infectious disease containment unit, in ambulances, at an accident scene, in the military, in the radiology department, on a cruise ship, or even on the space shuttle. And a wide variety of people can perform point-of-care tests, including laboratory professionals, emergency first responders, radiologists, doctors, nurses, physician assistants, or other healthcare practitioners.

In the emergency room, early detection can help determine if people with flu-like symptoms have influenza or if they have a higher-risk infection like Middle Eastern Respiratory Syndrome (MERS). In the healthcare practitioner's office, the rapid strep test allows for earlier treatment of strep throat and reduces the risk of complications from not treating it. At home, glucose meters allow people with diabetes to tailor their insulin therapy. It makes up the largest segment of the point-of-care testing market.

POC diagnostic devices are used to test glucose and cholesterol levels, do electrolyte and enzyme analysis, test for drugs of abuse and infectious diseases, and do pregnancy testing. Blood gases, cardiac markers, and fecal occult blood tests can also be done with POC diagnostic devices. There are several advantages to doing the tests at the point of care, including quick results and faster implementation of therapy, if needed.

The convenience of point-of-care testing mustn't tempt users to apply them beyond their intended purpose or misinterpret results. For example, glucose meters and point-of-care hemoglobin A1c tests are designed only for monitoring diabetes and should not be used for diagnosis or screening. For the last two decades, efforts have been underway to develop new technologies to bring more tests to the point of care and to make the tests more sensitive and specific. Molecular techniques such as polymerase chain reaction (PCR) will likely be used to deliver new infectious disease tests at the point-of-care testing.

The other focused area explored is lab-on-a-chip systems. These miniature devices are designed to rapidly automate every step of a laboratory test using very small sample sizes, without the need for manual handling of the sample. A lab-on-a-chip (LOC) is a device that integrates one or several laboratory functions on a single integrated circuit (commonly called a "chip") of only millimeters to a few square centimeters to achieve automation and high-throughput screening, LOCs can handle extremely small fluid volumes down to less than pico-liters. Lab-on-a-chip devices are a subset of microelectromechanical systems (MEMS) devices and are sometimes called "micro total analysis systems" (μTAS). LOCs may use microfluidics, the physics, manipulation, and study of minute amounts of fluids.

When biological samples from serum, urine, saliva, or blood are applied to the biochip (held in a disposable cartridge), the presence of a disease antigen causes a shift in the phase angle of the surface acoustic wave passing across the chip surface. This is translated into an electronic signal. This signal can then be detected and its presence (or absence) determined, providing an unequivocal pass/fail result for the particular disease being tested for. Unlike other rapid test systems, this can provide a measure of the target biomarker, rather than just a simple yes or no result. This is particularly useful in monitoring the disease and evaluating the effectiveness of the treatment.

For the detection of cancer, the latest advancement is the development of biosensor devices, which detect panels of microRNAs in the blood, linked to the development and progression of cancer. This biosensor can analyze 'molecular fingerprints' of microRNAs to reveal precise and important information about the stage and subtype of prostate and breast cancer.

The information could help determine the best choice of therapy for individual patients. The devices offer a less invasive and more efficient alternative to current diagnostics. They are designed to analyze markers associated with cancer in the blood more accurately.

Point-of-care (POC) detection technologies that enable decentralized, rapid, sensitive, low-cost diagnostics of COVID-19 infection are urgently needed around the world. With many technologies approved for commercialization in the past 10 months, the field of COVID-19 POC diagnostics is rapidly evolving. Currently, there are three types of COVID-19 tests: molecular diagnostics, antigen tests, and antibody tests. Molecular diagnostics tests indicate the presence of the SARS-CoV-2 RNA, antigen tests detect specific proteins from the virus, and antibody tests determine whether the individual has developed antibodies to the virus.

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FROM STEM TO STERN
SUSTAINABILITY OF MARINE FISHERIES IN PAKISTAN

In the present world, fisheries and aquaculture have become a market-driven, dynamically developing food industry sector. Coastal states have striven to take advantage of their opportunities by investing in modern fishing fleets, infrastructure, and services in response to the growing international demand for fish and seafood. Pakistan is also one of those countries with immense potential of boosting revenues and creating direct and indirect jobs by realizing the fisheries sector's potential. However, this potential is yet to be optimally exploited. As a result, fisheries contribute modestly to the national and provincial economy in Pakistan.

Pakistan has about a 1,000 km long coastline and an area of approximately 240,000 sq. km of Exclusive Economic Zones. Besides, the Northern Arabian Sea, bordering Pakistan, has been ranked amongst the highest biological productive zones in the world. The prevailing oceanic currents created by the winds of the Southwest Monsoon bring cold, nutrient-rich water to the ocean surface, fostering intense phytoplankton activity that is the basis of high biological productivity in the Arabian Sea. We need to promote these resources through immense measures for ensuring sustainable development of fisheries in the maritime areas taking stark and immediate measures for the sustainability of fisheries resources.

However, while undertaking measures to promote fisheries in Pakistan, it will be imperative for the decision-makers to address the thwarting factors in this regard. First of all, a fundamental requirement for managing the exploitation of marine resources will be to control the numbers and means used to exploit them. This factor critically applies to Pakistan. In Pakistan, most of the marine fisheries depend on conventional/ traditional methods. Some of them are destructive not only for living resources but also for environmental degradation and need to be prohibited in letter and spirit. The unauthorized use of fine mesh fishing nets is a major hurdle in sustainable fisheries development in Pakistan. Small pelagic species such as mullet, silver whitings, and other small-sized fishes, especially juveniles of large commercially important fish, are trapped using the illegal nets. The other net (gillnet), used by a majority of local fishermen to catch fish, is also a destructive tool and has been termed a "wall of death" by experts as it can injure and kill threatened and endangered marine species, for instance, dolphins, turtles, and whales. Decision-makers need to take cognizance of the matter forthwith.

Second, for the sustainable fisheries in Pakistan's maritime zone, one of the biggest challenges is the prevention and significant reduction in marine pollution of all kinds from land-based activities, including marine debris and nutrient pollution. Combating marine pollution is directly linked to ocean health and the sustainability of living resources. Innovative solutions to reduce the menace of plastic debris and untreated domestic and industrial effluents are essential to prevent and mitigate detrimental impacts on marine environments.

Third, it is important to understand the impact of oceanographic conditions and climatic changes on the fisheries in Pakistan. There is a serious risk that climate change will have a severe impact on fishery resources and fish farming communities at a global scale because of the increased number of people at risk, especially in coastal and low-lying areas, causing loss to livelihoods, displacement, and migration of human populations from floods, storms and changes in fisheries distributions.

Bahria University has taken the great initiative by launching higher education and research in the maritime sector to promote the country's Blue Economy and meet the emerging CPEC related HR challenges. Accordingly, Bahria University has established the Department of Maritime Sciences at its Karachi Campus. The Bahria University has become the role model for other Universities to contribute for the valuable role in bringing together all the relevant stakeholders to think, plan and pursue the path of development of the Blue Economy of Pakistan. It is hoped that through efforts undertaken at the Department of Maritime Sciences, the longstanding void of education and research in the field of maritime sciences will soon dwindle.

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(BBS)[1] Bahria University Karachi

Glossary

1. Bahria Business School (BBS)
2. Bahria Humanities and Social Sciences School (BH3S)
3. Bahria School of Engineering and Applied Sciences (BSEAS)
4. Bahria University Medical and Dental College (BUMDC)
5. Institute of Professional Psychology (IPP)
6. Well Being Center (WBC)

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