

Scholarly Research Review

The scholarly research review is a multidimensional evaluation procedure in which standard peer review models can be adapted in line with the ethos of scientific research, including accessible identities between reviewer and author, publishing review reports and enabling greater participation in the peer review process. Scholarly research review methods are employed to maintain standards of quality, improve performance, provide credibility, and determine suitability for publication.

Responsible Peer Review Procedure: Responsible peer review ensures that scholarly research meets accepted disciplinary standards and ensures the dissemination of only relevant findings, free from bias, unwarranted claims, and unacceptable interpretations. Principles of responsible peer review:

- Honesty in all aspects of research
- Accountability in the conduct of research
- Professional courtesy and fairness in working with others
- Good stewardship of research on behalf of others

The responsibilities of peer review apply to scholarly researchers at all stages of peer review: Fairness, Transparency, Independence, Appropriateness and Balance, Participation, Confidentiality, Impartiality, Timeliness, Quality and Excellence, Professionalism, and Duty to Report.

Scholarly Research Review Traits:

- Scholarly Research Review Identities: Authors and reviewers are aware of each other's identity
- Scholarly Research Review Reports: Review reports are published alongside the relevant article
- Scholarly Research Review Participation: The wider academic community is able to contribute to the review process
- Scholarly Research Review Interaction: Direct reciprocal discussion between author(s) and reviewers, and/or between reviewers, is allowed and encouraged
- Scholarly Research Pre-review Manuscripts: Manuscripts are made immediately available in advance of any formal peer review procedures
- Scholarly Research Review Final-version Reviewing: Editorial revision of the language and format is conducted on the final version of the manuscript for publication
- Scholarly Research Review Platforms: The scholarly research review process is independent of the final publication of the manuscript and it is facilitated by a different organizational entity than the venue of publication

All submitted manuscripts are subject to the scholarly research review process, in which there are three stages of evaluation for consideration: pre-review manuscripts, chair-review presentation, and final-review manuscripts. All submitted papers are presented in the conference proceedings regardless of their final publication status and therefore may still be withstood the editorial review process. Manuscripts are tracked and all actions are logged by internal and external reviewers according to publication policy. External reviewers' editorial analysis consists of the evaluation reports of the conference session chairs and participants in addition to online internal and external reviewers' reports. Based on completion of the scholarly research review process, those manuscripts meeting the publication standards are published 10 days after the event date.

Open Science Award

Open Science Award Description:

The International Research Conference (IRC) is an open science research organization dedicated to promoting advancement of science, engineering, and technology. The IRC's open science award program is pleased to announce research awards which are available to distinguished researchers who are currently based at or affiliated with a research university.

The purpose of this award is the recognition of open science research and publications. The award program coordinates and develops high impact scholarly research which seeks to promote multiscale approaches. The open science originates with the premise that universal scientific knowledge is a product of collective scholarly efforts. The social collaboration involves all stakeholders and knowledge belongs to the global society. Scientific outputs generated by public research are public good that should be available to all at no cost and without any barriers or restrictions.

The open science award is granted annually for outstanding achievements and excellence in scientific research. Any researcher who is interested in this award can submit their own and /or the colleagues' scholarly research articles for consideration for this honor. All respected researchers are warmly welcome to submit their research works for potential award consideration and evaluation. Qualitative and quantitative assessment of the open access articles submitted and published for consideration will be evaluation criteria for the award. The award emphasizes open science contributions, collaborations and communication, and the open publication of scholarly research knowledge.

This annual award will be given to one and up to three honorees (or research groups) in recognition of exceptional contributions to open science in the following three distinct research categories: Social Sciences, Life Sciences, and Physical Sciences. The selection committees (waset.org/Committees) are responsible for selecting the recipient(s) of the named award. The members of the open science award committee will promote excellence and transparency, allow broad input, recognition, diversity and commitment to equity so that the open science award is sufficiently representative of distinguished research groups.

Assignment of the open science award committee is performed primarily through the online submission and review system. The annual event is held to present awards and to celebrate distinguished researchers for their open science contributions.

Open Science Award Deadlines:

Online Nomination Deadline: January 01, 2019 - December 31, 2019

Scoring Deadline: January 01, 2020 - March 31, 2020

Selection Deadline: April 30, 2020

Award Ceremony Date: June 26, 2020

Open Science Award

Application Procedure:

Applicants must submit the following to <https://waset.org/profile/messages> with the email subject line reading “OSA_surname_given name,” e.g., OSA_Smith_John.

Please include the following attachments to your email application:

1. Applicants should hold, at a minimum, a Ph.D. or its equivalent degree.
2. Cover letter to the Award Committee indicating interest in the award.
3. Curriculum vitae.
4. Research statement. Please include a description of your research accomplished (not more than two pages, single spaced), and published full text original research article in pdf format.
5. Two letters of recommendation. The applicant must request the letters (or the dossier service).
6. High-quality copies or scans of transcripts showing degrees (Bachelor, Masters, and Doctoral) and coursework.

Postdoctoral Fellowship Award

Postdoctoral Fellowships Description:

The International Research Conference (IRC) is an open science research organization dedicated to promoting the advancement of science, engineering, and technology. The IRC's postdoctoral fellowship award is pleased to announce Fellowships which are available for postdoctoral researchers who are currently based at or affiliated with a research university. The postdoctoral fellowship award coordinates and develops high impact scholarly open science research which seeks to promote multiscale approaches. In addition, the fellowship award presents a unique opportunity for researchers who want to influence the future of open science through collaboration, communication, publication and data sharing within the global science community.

This postdoctoral fellowship award is looking for researchers with a passion for open science, open sources, open publications and data sharing. Applicants should already be working to promote research practices in a more collaborative, iterative and open dimension. Fellows will spend four months starting in June of 2019 as community catalysts at their own institutions creating, disseminating, and mentoring the next generation of open scientists, open data practitioners and researchers. The goal is to build lasting changes in the global open science community. Throughout the fellowship term, Fellows will receive training and support from the open science postdoctoral Fellowship award to develop and hone their skills around open science, open sources, data sharing, open science policy and licensing. Fellows will also craft policies and codes, write curriculum, teach their institutional peers, and be engaged in helping their local open science communities learn about open sources and open data practices.

Expectations: The open science postdoctoral Fellowship award anticipates applicants who:

- Create change within their university or other institution throughout open science, research, data sharing, and article publications.
- Create knowledge, policies and codes, curriculum and educational resources to promote open science.
- Participate in open science research workshops, symposia, conferences, and other activities.
- Participate in and help to lead regular open science research community call for proposals or papers.
- Serve as open science mentors and leaders within their research communities.
- Serve as reviewers for submitted open science abstracts and research papers for scholarly journals and conferences.
- Promote open science by communicating, publishing and sharing their high impact peer-reviewed research on an ongoing basis.

Postdoctoral Fellowship Award

Note: Fellows are encouraged to continue their personal research for up to 20% of their time during the course of their fellowship (i.e., one day a week). Fellowship applicants must have buy-in from their advisors in advance and include their advisors' contact information on the application. The applicant's advisors will be interviewed should the applicant move on to the second round, and their support will be a critical consideration for the awarding of Fellowships.

Fellowship Terms and Conditions:

Award Scholarship Description:

Application Deadline: April 30, 2019

- Fellowships are awarded to enhance the concept of open science and are open to scholars from all fields of science, engineering, and technology.
- The selected Fellow will receive a monthly stipend of \$500.00 for four months during 2019 (June, July, August, and September). Fellows are responsible for remitting all applicable taxes and other government charges as required by their country of residence and by law.

Nationality: Fellowships are available to postdoctoral researchers in any country.

Requirements:

Fellows must:

- At a minimum, hold a Ph.D. or its equivalent by June 1, 2019, and should not have received the degree before 2014.
- Applicants should have working proficiency in the English language and should demonstrate their ability to read, write, and speak English.
- Applicants should be full-time academics or affiliated with a research university or institute.
- Funding will be direct to the Fellow and not distributed through their institution.
- Be able to travel.
- Obtain support from their advisors. Fellows will be based at their home institutions. Please note that a letter of support from the advisor is mandatory for consideration.
- Have experience participating in open science research.

Postdoctoral Fellowship Award

Application Procedure:

Applicants must submit the following to <https://waset.org/profile/messages> with the email subject line reading “Postdoc_surname_given name,” e.g., Postdoc_Smith_John.

Please include the following attachments to your email application:

1. Cover letter to the Search Committee indicating interest in the position.
2. Curriculum vitae.
3. Dissertation abstract.
4. Research statement. Please include a description of your proposed research that would be accomplished during the fellowship (not more than two pages, single spaced).
5. Two letters of recommendation. The applicant must request the letters (or the dossier service).
6. High-quality copies or scans of transcripts showing degrees (Bachelor, Masters, and Doctoral) and coursework.

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Investigation of Verbal Feedback and Learning Process for Oral Presentation

Nattawadee Sinpattanawong

Abstract—Oral presentation has been used mostly in business communication. The business presentation is carrying out through an audio and visual presentation material such as statistical documents, projectors, etc. Common examples of business presentation are intra-organization and sales presentations. The study aims at investigating functions, strategies and contents of assessors' verbal feedback on presenters' oral presentations and exploring presenters' learning process and specific views and expectations concerning assessors' verbal feedback related to the delivery of the oral presentation. This study is designed as a descriptive qualitative research; four master students and one teacher in English for Business and Industry Presentation Techniques class of public university will be selected. The researcher hopes that any understanding how assessors' verbal feedback on oral presentations and learning process may illuminate issues for other people. The data from this research may help to expand and facilitate the readers' understanding of assessors' verbal feedback on oral presentations and learning process in their own situations. The research instruments include an audio recorder, video recorder and an interview. The students will be interviewing in order to ask for their views and expectations concerning assessors' verbal feedback related to the delivery of the oral presentation. After finishing data collection, the data will be analyzed and transcribed. The findings of this study are significant because it can provide presenters knowledge to enhance their learning process and provide teachers knowledge about providing verbal feedback on student's oral presentations on a business context.

Keywords—business context, learning process, oral presentation, verbal feedback

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Designing Space through Narratives: The Role of the Tour Description in the Architectural Design Process

A. Papadopoulou

Abstract—When people are asked to provide an oral description of a space they usually provide a *Tour* description, which is a dynamic type of spatial narrative centered on the narrator's body, rather than a *Map* description, which is a static type of spatial narrative focused on the organization of the space as seen from above. Also, subjects with training in the architecture discipline tend to adopt a Tour perspective of space when the narrative refers to a space they have actually experienced but tend to adopt a Map perspective when the narrative refers to a space they have merely imagined. This pilot study aims to investigate whether the Tour description, which is the most common mode in the oral descriptions of experienced space, is a cognitive perspective taken in the process of designing a space. The study investigates whether a spatial description provided by a subject with architecture training in the type of a Tour description would be accurately translated into a spatial layout by other subjects with architecture training. The subjects were given the Tour description in written form and were asked to make a plan drawing of the described space. The results demonstrate that when we conceive and design space we do not adopt the same rules and cognitive patterns that we adopt when we reconstruct space from our memory. As shown by the results of this pilot study, the rules that underlie the Tour description were not detected in the translation from narratives to drawings. In a different phase, the study also investigates how would subjects with architecture training describe space when forced to take a Tour perspective in their oral description of a space. The results of this second phase demonstrate that if intentionally taken, the Tour perspective leads to descriptions of space that are more detailed and focused on experiential aspects.

Keywords—Architecture, Design process, Embodied cognition, Map description, Oral narratives, Tour description.

Islamic Perspective on Business Ethics for Economic Development in Nigeria

Afees Adekunle Onitiri

Abstract—It is not a fallacy to say that business has always played a pivotal role in the economic and social life of Nigerian citizenry. Islam being a religion that touches all aspects of human endeavor not only permits but also encourages its adherents to engage in Halal (Lawful) businesses. The Holy Prophet Muhammad (p.b.u.h) was a full-time businessman for a considerable period of time and his truthfulness made his first wife Khadijah developed intimate love for him and even entrusted all her businesses in his care. The growing of business fraud in Nigeria is at an alarming rate whereby most of the commercial banks lured customers into major financial problems which have caused a breakdown of core values and ethics. These banks would lend money to customers and in return add a specific amount as interest which is totally unacceptable in Islamic transaction system. It was in this vein that this study explores the Islamic regulation on the adaptability of Islamic business ethics to propose a new framework for the way and manner Nigerians cheat one another during business transactions. The paper employ descriptive analysis through Qur’anic, Ahadithand existing literature on Islamic business ethics in carrying out the study. At the end of the study, we advised that all business moguls in Nigeria should adopt the Islamic mechanism for business activities to curtail all forms of exploitation and imbibe the ethics of fairness, equity in all business transactions.

Keywords—Islam, business ethics, economic development, halal

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An Islamic Analysis of Suicide Attacks in Pakistan

H. Syed Hamid Farooq Bukhari

Abstract—Amid the two decades ago, suicide assaults have risen as a practically every day marvel in Pakistan. Contrasted with past floods of suicide bombings in the Middle East, the assaults here present somewhat extraordinary qualities, arranging them closer to the affliction belief system created by the Iranian routine amid the war against Iraq during the 1980s. Suicide aircraft will in general be extremely youthful, various they taught in religious schools. This study recommends that the fast advancement towards a developing number of suicide assaults, which, disregarding the aimless killings of blameless unfortunate casualties connected to them, have been to a great extent acknowledged as an instrument of deviated fighting, could have been encouraged by a few highlights in the encompassing social orders. Suicide assaults are an intermittent component of numerous contentions. While fighting gallantry furthermore, suffering are permitted in specific conditions in the midst of war, a suicide plane may perpetrate no less than five wrongdoings as indicated by Islamic law, in particular executing regular citizens, ruining their bodies, abusing the trust of aggressors and regular people, submitting suicide and annihilating non military personnel items or properties.

Keywords—attacks, Islam, Pakistan, suicide

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Thematic Analysis of Moral and Social Issues in Some Selected Chapters of the Qur'an

Folami Ahmadu Bolanle

Abstract—This paper intends to discuss important aspects of human life which have been overwhelmingly marginalized by people of different faiths, races, and tribes. It is not a fallacy to categorically state that the Qur'an has left nothing untouched in facets of life. The Islamic ethical values address the issue of moral conducts between man and other beings by making sure respect is reciprocated at all times towards one another, because this would facilitate mutual understanding whereby all and sundry will be able to accommodate each other on the basis of love. The present study explores the teachings of the Qur'an on moral ethics like backbiting/slandering, suspicion, dangers in alcohol consumption, settling of disputes, animal ethics, business ethics, e.t.c. This research work employed descriptive and analytical approaches by citing numerous verses of the Qur'an and traditions of the Prophet (p.b.u.h) to lay more emphasis on Islamic ethical principles with special reference to social life. The study became necessary due to our personal experience with emerging loss of total moral decadence mitigating the contemporary world, and the Qur'anic way out of the belligerent situation. The objective of this study is to examine how these teachings could be integrated into daily activities of the masses and use it as a manual guide for moral values. It therefore recommended that all hands must be on deck in making sure proper code of conduct as envisaged and expatiated in those chapters of Al-Qur'an are exhibited by all and sundry in order to live in a good and civilized atmosphere.

Keywords—Islamic ethics, moral conduct social issues, thematic analysis

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A Study of Defamiliarization Devices in the Translation of *The Moon Opera*

Wei Tao

Abstract—Defamiliarization is a literary term originally put forward by the Russian formalist Shklovsky. It refers to the fact that in literary creation, the author can describe things in strange and novel ways, thus extending the readers' perception time and increasing aesthetic pleasure. Later, the term is gradually applied to the field of translation, and defamiliarized translation skills evolve. Defamiliarized translation mainly refers to keeping the cultural and linguistic heterogeneity of the source language as much as possible in the process of translation, which makes aesthetic appreciation difficult. Literary translation can preserve the literariness and artistry of the original text by means of defamiliarized translation. Taking the English translation of Bi Feiyu's novel *The Moon Opera* as the object of study, this paper analyzes the translation means and effects of defamiliarization from the phonetic aspect, lexical aspect and syntactic aspect in order to provide some reflections on the translation of contemporary Chinese novels. In the translation process of the Moon Opera, out of respect for the original text, the original author and Chinese culture, the translator adopts defamiliarization translation through transliteration plus explanation, literal translation and free translation to retain the exotic flavor of the original text, producing the "alienation" effect and bringing a fresh aesthetic experience to the readers in the target language. This slightly challenging aesthetic process brings great aesthetic pleasure to the target language readers and promotes the communication between different cultures.

Keywords—Chinese-English translation, defamiliarization, defamiliarized translation skills, *The Moon Opera*.

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Spatial Cognition in Virtual Environment, Spatial Cognition in Video Games

Katerina Anagnostopoulou Politou

Abstract—If spatial configuration is the main generator of natural movement in real environments, what happens when the navigation in virtual environments is mainly governed by properties of characters and not by the mathematical spatial configuration of a plan? This study is focused on the field of spatial cognition, navigation and wayfinding in the context of Half-life video game, where individuals -players- mainly navigate through by virtue of their decisions to approach certain goals (missions). The objective is to capture the correlation between space-time and observed movement in the virtual environment by analysing the video game space and conducting an experiment. The case under study is "Half Life 2 - Episode 2"; a strategy video game, with mission to find the best routes out of the virtual environment settings. Observations of players' navigation are carried out supported by spatial analysis and a new methodology named time-convex to model space-time relationships.

Keywords—navigation, neuroscience, space syntax, spatial cognition, video games, wayfinding

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An Interesting Passage from the Pseudo-Nonnos Commentary on Sermon 4 by Gregory of Nazianzus in the Armenian Book of Causes

Manea Erna Shirinian

Abstract—Translated from the Greek philosophical writings or commentaries on them existed in Armenian literature as a whole remain largely unknown to specialists in Greek philosophy. Whilst there are several reasons for this situation the main principal cause is the large number of unpublished Armenian manuscripts scattered across the various collections (matenadarans). One of such manuscripts is the so-called Book of Causes. This extremely interesting collection is an Armenian aetiological compendium of the prolegomena to the all books of the Bible and to the works known under the title "subtle writings". Among the interesting data found in this book there is an intriguing passage about the death of Homer. The passage derives from Pseudo-Nonnus' writing, but also renders the tradition of the versions of the Life of Homer, in particular, containing readings which resemble most the Vitae Homeri by Pseudo-Plutarch, by Proclus and by Tzetzes. It is impossible to say that the Armenian passage is a translation of one of these three, because it shows specific characteristics, which are absent in these passages. Moreover, to our best knowledge there is no information or indications that Vitae Homeri were translated or were known in the Armenian milieu. The question is: from where did these variaae lectiones occur in the Armenian Book of Causes? None of these readings occur in the critical edition of Pseudo-Nonnos' Commentaries. On the other hand Pseudo-Nonnos seems to know the content of Vitae (or at least was acquainted with this tradition concerning the death of Homer), and of course he the author of the work in question knew more about it than is given in his commentary.

Keywords—antique traditions, biblical exegesis, isagogical manual, propaedeutic knowledge

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A Logical Theory Towards an Invariant Phenomenological State of Artificial Consciousness

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Abstract—As artificial intelligence evolves at an increasingly rapid pace, the question of why our most powerful computers have no sense of “id” and are completely void of “being”, has crept in from the fringes of pure science to the center of the domains of artificial intelligence, machine learning and deep neural networks. Pure research clinicians and researchers often scoff at the very existence of the phenomena of consciousness. Essentially, there is a friction between 1) the subjective nature defining what is human consciousness and 2) what can be proven and empirically replicated in the laboratory and have therefore often been considered by the scientific community as mutually exclusive paradigms. Accordingly, this paper sets forth a theoretical basis to replicate a singular sub-state of consciousness we humans experience. From studying patients with acute brain injuries in the post neurosurgery ward for several years and having implemented intracortical electrodes that lay under the skulls that communicate with artificial intelligence systems learning when an upcoming seizure will occur, one is struck how for days on end patients will be awake, but have no idea who they are because, their brain is still not on. In fact, but for a heart lung machine, dialysis and a feeding tube the patient would die. It is this state that the author replicates, where an invariant artificial consciousness can be awake, have a completely different operating system from the brain and know that its “id” is awake but the brain, be it that of a kitchen toaster or IBM’s Watson, has not been turned on. This paper further shows that until a machine completely separates consciousness and its “brain”, it is theoretically difficult to see it understanding love, empathy, loyalty, death and a general sense of being. Herein, we present a logical theory towards an invariant phenomenological state of artificial consciousness.

Index Terms—Machine Consciousness, Artificial Consciousness, Synthetic Consciousness

I. INTRODUCTION

IN 1957 Dorothy Dixon published her study on the development of mirror behavior in infants [18] where it was shown that infants progress through four stages to develop a sense of self. Initially the child has no reaction, then at a few months old it reacts as if seeing another child, the third critical stage is where the child tests their reflection making slow movements. The fourth and last stage occurs when children reach about the age of two years where children react to seeing themselves and become “self aware”. This fourth stage was replicated by Amsterdam *et al* where children used mirrors to locate red dots or rouge placed on their noses [1], [34].

Initially one may be predisposed to think that a machine cannot have a soul and therefore cannot recognize themselves in a mirror. However, this argument is inherently false at its

core. The author has asked high-school-level and freshmen engineering students how they could teach a humanoid to recognize itself in a mirror and without hesitancy, they espouse an algorithm that first includes storing 360° of images of the humanoid at various angles and lighting conditions and upon seeing a closely related image in the mirror it would instantiate a state of recognition. Then, upon asking these young students how to program the humanoid to recognize itself in a crowd of many identical humanoids, the typical response was to use a QR code, have the humanoid make a movement, or calculate the angle of deflection in the mirror to see identify itself.

To test the notion that mere self identification is equivalent to self awareness, we presume an entity we will name *Zeta* (ζ). Now, we consider the following five-part-axiom to determine whether ζ is a human being (H_{being}) or a humanoid (H_{noid}): 1. All human beings are self aware, 2. Any legitimate computer scientist can CREATE a coded machine that HAS the ability to recognize itself in a mirror, 3. Humanoids do not have any self awareness, 4. ζ is either a coded machine or a human being, and 5. If ζ is a Humanoid, then ζ can have the ability to recognizes itself in a mirror. Letting self aware $\rightarrow \beta$, coded machine $\rightarrow \gamma$, ability to recognizes itself in a mirror $\rightarrow \delta$ and *Zeta* $\rightarrow \zeta$ we see that

1. $\forall x(H_{being}(x) \rightarrow \beta(x))$
2. $\forall x\forall y(CREATE(x, y) \wedge \gamma(y) \rightarrow \exists z(HAS(x, z) \wedge \delta(z)))$
3. $\forall xH_{noid}(x) \rightarrow \neg\exists y(H_{noid}(x, y) \wedge \beta(y))$
4. $\exists x((\zeta, x) \wedge (\gamma(x) \vee H_{being}, (x)))$
5. $H_{noid}(\zeta) \rightarrow \exists z(H_{noid}(\zeta, z) \wedge \delta(z))$

This illustrates that, according to the mirror logic, H_{noid} ’s are self aware merely because they can recognize themselves in the mirror. This of course is very wrong, it contradicts itself and we know that only H_{being} ’s are self aware and that, up to this point in time, no machine or humanoid is self aware in terms of consciousness. Therefore, we can conclude that the mirror test does not discern between consciousness, or conscious entities. In fact there are numerous studies in the field of psychology that, because of an unawareness that, like the mirror test, their tests can indeed be simulated by advanced machines, do not prove self awareness. Before illustrating a means to prove self awareness we discuss why the author does *not* include self awareness in animals nor the issue of separating spirit and soul in terms of consciousness.

A. Self Awareness in Animals

Mirror testing with animals have been developed by psychologists, comparative psychologists and anthropological pri-

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matologists to studying self awareness [40]. Their attempts of using a non reflective surface to provide a baseline measure was found to be unaffected by the mirror because it failed to provide any salient stimulus at all [27]. Some of these experiments include, but are not limited to *i)* Reiss *et al's* experiments where dolphins demonstrated responses with the use of a mirror to investigate marked parts of their bodies [44], *ii)* Walraven *et al's* work showing that four out of seven pygmy chimpanzees could correctly identify their mirror-image, one infant was not able to do so, and the results were inconclusive [51] and *iii)* Patterson *et al* who concluded that gorillas are the only great apes to lack the capacity for self-awareness type actions as displayed by some of Walraven *et al's* work [41]. De Veer *et al's* work with primates and mirrors concludes that mirror self-exploration provides evidence for mirror self-recognition but that inter- and intraspecies differences in terms of presence or absence of mirror self-recognition are not yet sufficiently clear and that self-awareness is at best a polymorphic trait in chimpanzees (i.e. some have it and some do not) [14], [43].

Herein, the author has chosen to limit this work exclusively to machines and humans as the animal results are inconclusive.

B. Spirit and Soul

From an anecdotal point of view, the author grew up in South Africa where, as a young boy through to his late teens, he spent many hours with the indigenous tribes such as the Zulu, Xhosa and Bushmen. An elder of the Zulu tribe, known as the "Chief", explained to the ten-year old author on a hunt that humans have a spirit, a soul, and a brain, but that animals only had a spirit and a brain. That all dogs, for example, have a "dog spirit" and a dog brain. That is, if one treats many dogs the same way they will all act the same "dog" resultant way. But, humans, he said, have an additional element in that humans also have a soul and that it is our soul that makes different humans act differently even we're all treated the same way. The Bushmen and Xhosa tribes had very similar beliefs. In fact, from the sixth century B.C.E. the Greeks set forth a conjecture that sought to unravel crucial issues concerning the essence of soul, the location of intellect and the causes of neurological and psychiatric disorders [11]. Furthermore, in the annals of philosophical psychology one sees thousands of books defining some sort of three-part system that defines consciousness and our mind [7]. It has also impressed the author that many western and eastern religions also draw a deity (triune) comprised of three dimensions [20], such as in Christianity one has the Father, the Son and the Holy Ghost [20], [24].

As interesting and intriguing as these thoughts may be, this paper will not broach these objects. It will focus solely on defining and then proving an invariant phenomenological state of artificial consciousness for machine self awareness.

II. CONSCIOUSNESS & COMPUTATIONAL NEUROSCIENCE

To appreciate the paradigm that computational neuroscientists view and researches consciousness it is critical to comprehend where computational neuroscience diverges from

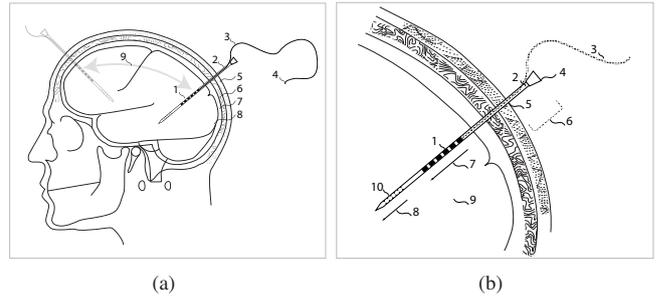


Fig. 1. Intracortical Electroencephalograph (ICE) Pin, Side Elevations: ((a) ICE 2 inserted through periosteum 5, skull 6, arachnoid and pia mater 7 into brain 8 in varying positions 9. Receiving electrodes 1 encapsulated by brain 8. Electrodes 1 transmit signals along wire 3 to end 4 where it is connected to computer. (b) Cannula and internal lumen 2 with drainage hole 4 and sharpened end 8. Electrodes 1 at electrode region 17 allow insertion through burr hole 5 traversing brain 9. External region 6 of cannula remains outside of skull. Connection conductors 7 combine into a single wire 2. Drainage holes 10 in drainage region 8 provide openings for fluid to flow 4. Support member inserted through 4 into internal lumen for accurate placement)

traditional domains of consciousness research such as psychologists, comparative psychologists, anthropological primatologists, behavioral neuroscientists, experimental neuropsychologists, neuro psychopharmacologists and psychophysicists, to name a few, view consciousness. In essence, computational neuroscientists physically insert our artificial intelligent agents, with the help of neurosurgeons into the white matter of rats, bovine, swine, goats, canine and humans in order to empirically measure the neurological systems, pathologies and nuances of billions of electrons streaming each second from cortical, sub cortical or as in the author's case intracortical (subdural) electrodes. Computational neuroscientists seldom ask a patient anything because we rely on the physiological process. We seldom conjecture or discuss what happened because the artificial intelligence system either correctly or incorrectly alerted the neurosurgeon as to an event, be it discerning between an epidural hematoma, a subdural hematoma, a subarachnoid hemorrhage or an intracerebral hemorrhage. The machine either was correct or not. Its a binary event in that the machine was either correct or it was not. Current modalities either provide indirect measurement of brain health or have limited sensitivity and specificity for accurately identifying critical and deleterious changes in brain health.

The author developed artificial intelligence for intracortical electroencephalography (ICE) [35], [53], [54] a technique by which specialized multicontact electrodes can be placed into the cerebral cortex through a burrhole generated at the bedside, as illustrated in Figure 1. To separate and classify each significant portion of the streaming ICE signal π in terms of the Fast Fourier Transform (FFT) coefficients of the artifact polluting the signal we extract the features of the ICE 4 times for each threshold π . Once artifact is removed we identify each relevant ζ^π where π is compared when ($\pi \in 1, 2.5, 5, \dots, 10$) for $n = 256$ and ($\pi \in 1, 2.5, 5, \dots, 10$) for $n = 2048$. Next we divide each signal π of the set of selected signals Π into equal-sized non-overlapping hops with size $2n$ samples $\Theta^\pi = \theta_1(\pi), \theta_2(\pi), \dots, \theta_r(\pi)$ where r is the size of $\frac{(\pi)}{2n}$. Once this is repeated for both

$n = 256$ and $n = 2048$ for each signal π we pick up hops $\theta_i(\pi)(1 \leq i \leq r)$ such that s hops for π form the set Γ^π ($\Gamma^\pi \subseteq (\Theta^\pi(\Gamma^\pi = (\gamma_1(\pi), \gamma_2(\pi), \dots, \gamma_r(\pi))))$). Once we have picked up our significant hops we perform FFTs on them such that the amplitude of the complex portion is calculated and stored as a pointer. A simple aggregation loop is then performed at each pointer as they turn up in the system. These results are now ready for the neurosurgeon's analysis. The issue is that with ICE, brain death and disorders of consciousness such as coma, vegetative state, and minimally conscious state are clearly distinct and unambiguously distinguishable.

Measuring EEG Fast Fourier Transform (FFT) coefficients through systems such as ICE and having an artificial intelligent agent procure a Decision Support System for the neurosurgeon creates a sparse landscape when the patient slips into a state of unconsciousness. Computational scientists working with neurosurgeons have two means of empirically measuring degrees of consciousness.

A. The First Clinical Measurement of Consciousness

The first clinical measurement of consciousness is a measure of the depression of either the brainstem or of both cerebral hemispheres as this reduces arousal [32], wakefulness and vigilance [33], [56]. However, it should be noted that Laurey *et al* showed that sometimes even an acute impairment of the brainstem can, at times, coexist with intact functionality of the reticular activating system [47] if the tegmentum of the rostral pons and mesencephalon are preserved [32], [42].

B. The Second Clinical Measurement of Consciousness

The second clinical measurement of consciousness is a measure of the functional integrity of the cerebral cortex and its reciprocal subcortical connections which affects content of consciousness such as awareness of the environment and of the self ("what is your name") [16], [29], [32].

The logical theory presented in this paper will rely on these two aforementioned clinical measurements of the brainstem and cerebral cortex. Suffice to say, it is appropriate to first review, non computational neuroscientific means of measuring and determining what is consciousness.

III. NON COMPUTATIONAL NEUROSCIENTIFIC MEASURES OF CONSCIOUSNESS. A BRIEF OVERVIEW

Because the author studies consciousness from the paradigm of computational neuroscience and the mathematical theory of machine intelligence, what may seem to previous researchers as being extraordinary intelligence, and therefore a step towards consciousness, are both ordinary and easily replicated by state-of-the-art machines and therefore representative of the brain, and not consciousness. In this regard we first review what those not skilled in the art of the mathematical theory of machine learning, artificial intelligence or deep neural networks, find extraordinary.

A. Sequence Knowledge

In recent years there has been a movement to define consciousness using conceptual definitions of "consciousness" and "conscious sequence knowledge" by implicitly measuring sequence learning [2], [9], [46]. Runger *et al* argue that conscious functionally can be defined as a global availability by referencing two forms of neuropsychological impairment, blindsightedness and prosopagnosia.

1) *Blindsightedness*: The blindsighted patients, who are blind in only certain areas of their visual field, were tested by flashing stimulus in the blind areas. The patients tended to sense some stimuli even though they were not supposed to see anything from the stimuli.

2) *Prosopagnosia*: For the patients suffering from prosopagnosia, the inability to overtly identify the faces of even their closest relatives caused through lesions affecting occipitotemporal regions of cerebral cortex [46], various tests were performed where guessing was correlated to consciousness [46], [48]. However, the author rejects both the basis of sequence knowledge and the conclusions of the blindsight and prosopagnosia experiments. In terms of blindsightedness, sensory stimuli can include wavelengths picked up by sensors in the human body separate from the visual cortex and in terms of prosopagnosia, both Rough Set Theory and Fuzzy Logic machine learning algorithms are able to have a machine perform what humans may call guessing and in fact have very little to do with consciousness at all.

Accordingly this paper will not consider sequence knowledge as a basis for proving machine consciousness.

B. Consciousness as a Correlate of Vigilance

Modern day research efforts view consciousness as a state of wakefulness known as phenomenal consciousness, or as the experience of information that has entered our awareness and is reportable to others and referred to as conscious access or access consciousness [5], [15].

1) *Phenomenal Consciousness*: also known as P-Consciousness, as described by Block; "is experience, we have P-conscious states when we see, hear, smell, taste and have pains" [5]. The author will not completely reject the theory of P-consciousness because even though artificial intelligence researchers can make a machine recognize and associate past events, knows as Classification Rules and/or Association Rules, with sight, sound, smell and taste, the machine can sense when a part of its system is broken but it is unable to define it in terms of pain.

Therefore because we cannot program a machine to define pain, this paper will include P-Consciousness in its algorithms.

2) *Access Consciousness*: Given that P-Conscious content is phenomenal, A-conscious content is representational. Block argues that "A-consciousness is a functional notion" [5] that is inferentially promiscuous [49], and therefore the poised for reasoning, and poised for rational control of (2) action and (3) speech. Since P-Conscious content is *phenomenal*, it makes sense that A-conscious content is *representational*.

Block justifies the A-Consciousness states with the blind-sight experiments invalidated in §III-A *infra*. Furthermore, autonomous reasoning [36], control of actions [6] and speech [17], [30], is a daily occurrence in machine learning.

Therefore this paper will not include Access Consciousness as a basis for machine consciousness algorithms.

C. Stillbirth

Before discussing the issues of electricity flowing through the human brain and its effects on consciousness is appropriate the one discuss int inverse of the neurological disorders in terms of life and death, and that is the issue of stillbirth. Stillbirth is defined as fetal death at or after 20 to 28 weeks of pregnancy [13]. In essence, the baby is born without a beating heart. Here, the APGAR score which measures a newborns state of health. The test assesses five determinants, rated 0 to 10, that make up the acronym APGAR, Appearance (skin color), Pulse (heart rate), Grimace response (reflexes), Activity (muscle tone) and Respiration (breathing rate and effort) [10], [38]. When a baby is born without a beating heart doctors will perform resuscitation for up to 10 to 15 minutes. If the baby's heart has not started then doctors go through the heart wrenching decision on calling off the resuscitation and telling the mother her baby is dead [25].

In terms of consciousness, we do know that a baby who is born stillborn, without a beating heart, needs to get oxygen to its brain or it will begin to atrophe and cause diseases such as cerebral palsy, autism, attention deficit hyperactivity disorder (ADHD), seizures, and behavioral problems [19], [50], which in proves that the baby's brain was functioning when it was in the mother's womb a few minutes earlier. This brings the difficult question of whether the baby had consciousness while it was being resuscitated and then died or if because the baby never took its first breath that there was never consciousness?

Dehaene working with his wife Ghislaine Dehaene-Lambertz and Sid Kouider have been monitoring the signs of consciousness fetuses and newborns [31], and again Dehaene goes back to his '*global neuronal workspace*' in the brain [4], [15], [16]. It is a workspace that generates consciousness when the different parts of the brain engage and communicate with each other at a high level. For the infant tests Dehaene flashed the image of a woman's face, for different durations and concluded that he saw the same phenomena in infants as he did in adults. He concluded that new born's brain waves are linear as a function of the amount of evidence that you give to the brain. Meaning that for a short duration one get a small level of excitement and more excitement as the card remains still for longer periods meaning that, as Dehaene claims, its a linear phenomenon [31]. The problems with this hypothesis is that it means that the brain must be on for their to be consciousness, something we will mathematically dispute alter in this paper and that fetuses are conscious, something we cannot prove.

In essence, we have no idea whether a still born baby is dying as the doctors frantically work at resuscitating the baby or if it was never alive, meaning without a consciousness. Therefore, we will not include stillborn criteria and hypothesis in this paper's machine consciousness algorithms.

IV. ELECTRICITY AND NEUROLOGICAL DISORDERS

In 1904, one of the founders of modern day consciousness studies, William James stated:

Thus, for these belated drinkers at the Kantian spring, we should have to admit consciousness as an 'epistemological' necessity, even if we had no direct evidence [28].

Because the brainstem controls breathing, digestion, heart rate and other autonomic processes, if the brain stem has no electricity one dies. We do however have empirical evidence that when the brain is dead, as in zero electricity going through the brainstem which includes the medulla, the pons and the mid-brain, that but for a heart-lung machine, a kidney dialysis system and a feeding tube keeping the patient alive, the patient would immediately die. It's not complicated. When there is no electricity in the human brain, there is no electricity to make the sternum contract and make us breathe and therefore the human dies. Practically all non computational neuroscientific measures of consciousness such as mirror tests, P-Consciousness and A-Consciousness and sequence knowledge tests, to name a few depend entirely on the brain being "ON". They all depend upon electrical activity flowing through the neurons. In computational neuroscience there is a vast amount of work studying five pathological states of consciousness. Note. This paper will not attempt to quantify and measure these states, it merely proves that state of one's theoretical replication leaves the door open to quantifying some of the remaining states. Laureys *et al* defines these five states as brain death, coma, vegetative state, minimally conscious state and locked-in syndrome as follows.

1) *Brain Death*: is declared when brainstem reflexes, motor responses, and respiratory drive are absent in a normothermic, nondrugged comatose patient with a known irreversible massive brain lesion and no contributing metabolic derangements [3], [55]. Some countries require both the demonstration of an irreversible coma in combination with the loss of brainstem reflexes and irreversible apnea [52]. In other countries the combined clinical finding of coma, apnea, and loss of all tested brainstem reflexes is sufficient for diagnosing brain death, irrespective of the primary location of brain lesion. [32], [52].

2) *Coma*: is a state of deep unconsciousness that lasts for a prolonged or indefinite period, caused especially by severe injury or illness and characterized by the absence of arousal and thus also of consciousness [32], [42]. Patients lay with their eyes closed and have no awareness of self and surroundings. However, there is a mountain of anecdotal evidence pointing to patient's remembering events even though no electricity was flowing through their brains. This is discussed in the next section.

3) *Vegetative State*: patients are awake but unaware of themselves or their surroundings. Electricity is only traveling through the brainstem, which is the midbrain, medulla and pons. These patients may show signs of wakefulness such as opening their eyes, however they will not be able to respond to their surroundings. Plum defines it as "a merely physical life devoid of intellectual activity or social intercourse ... an

organic body capable of growth and development but devoid of sensation and thought” [32], [42].

4) *Minimally Conscious State*: patients show limited consciousness of self or environment by being able to (1) following simple commands, (2) gestural or verbal yes/no response (regardless of accuracy), (3) intelligible verbalization, or (4) purposeful behavior [32]

5) *Locked-in Syndrome*: introduced by Plum and Posner in 1966 [42] to reflect the disruption of corticospinal and corticobulbar pathways and is defined by the presence of sustained eye opening which is used as a primary mode of communication that uses vertical or lateral eye movement or blinking of the upper eyelid to signal yes/no responses. [23], [42]

Suffice to say that with all of the aforementioned neurological disorders, we do not have any proof that a person is less of a soul or more of a soul, or has less human right depending on what of these neurological states one is in. Conversely, humans in any of these states are absolutely alive, with consciousness that remembers many events for some of those that recover from these states, even though there was no electricity powering the memory synapses.

V. HUMANOIDS AND THE ID

“The ego is first and foremost a bodily ego; it is ultimately derived from bodily sensations ... the id, cut off from the external world, has a world of perception of its own. It detects with extraordinary acuteness certain changes in its interior, especially oscillations in the tension of its instinctual needs, and these changes become conscious as feelings in the pleasure-unpleasure series. [21]

Russia’s Advanced Research Fund is developing high-tech software for the Fedor the humanoid who can drive many types of vehicles, pick locks, weld, drop in on a parachute from outer space, and shoot an array of weapons, perfectly and unjam the weapons if need be. Russia apparently has 5,000 FEDORs [8], [39]. The issue is that even though Fedor can for instance pick a lock and hide in a house, or hot wire a car and drive away or shoot a gun a kill people, if a group of people approach Fedor, he does not have the ability to decide if he loves them, hates them, should pick a lock and hide in the house, jump in the car and run away, pick up his weapon and kill these people or run towards them in joy.

Indeed, for each Fedor there exists a person in Russia, or over ether somewhere, who is controlling Fedor. In other words, no matter how smart Fedor’s AI brain is, he does not have self awareness, and id, and ego, a sense of being or a sense of consciousness. Fedor has no ability to fear, perceive his imminent death or to love and feel loyalty. Fedor only has a brain and Fedor has no consciousness.

A humanoid with two operation systems of artificial consciousness and artificial intelligence is still conscious even if the artificial intelligence is turned off so long as the artificial consciousness is still turned on. However is the artificial consciousness and artificial intelligence is turned off, the we will agree that the humanoid is not alive. Potentially it could be alive if one had the ability to pair up both systems.



Fig. 2. *FEDOR (Final Experimental Demonstration Object Research):Russia’s anthropomorphic humanoid. FEDOR can drive many types of vehicles, shoot many types of weapons accurately. FEDOR can also use tools, pick locks, and drill. However, even though it can parachute in from outer-space, land in the US, refuel his battery, drive vehicles and shoot perfectly, it has no sense of “id” and therefore for each FEDOR there is a Russian somewhere in the ether controlling him because it has no consciousness.*

Similarly, we are human beings even if there is no electricity flowing through our synapses. Fedor is a humanoid regardless of whether his Ai is that of a toaster or that of IBM’s Watson. We are humans regardless of whether we have a bright young Einstein mind, a the mind of an elderly Alzheimer’s patient who cannot recognize their family or remember their name. Regardless of how intelligent or unintelligent one is, the soul, the consciousness, the self awareness is aware that they are capable of reciting endless mathematical formulae or that they cannot remember how to get dressed, the self awareness is just as bright, and just as humanly conscious regardless of the capabilities of that person’s brain.

We also know that the brain can be turned off. Even when there is little to no electricity flowing through the brain, a comatose patient’s heart beat will go down when she hears her husband’s voice. We have a world of anecdotal evidence pointing to something that is still inside the human body even when there is no electricity in the brain. FEDOR cannot do this. When FEDOR’s artificial intelligence unit is off, FEDOR is dead. Conversely, when a human’s brain is off, there is still a sense of life, soul or consciousness that we do not understand. However we can represent that mathematically.

We have all experienced those moments when we awake in another city in some hotel, tired from traveling and for a few moments we are awake but our brain is not tuned on. Patients in the post neurosurgery ICU often stay in this state for days. Yes we may call it a certain level of coma or brain dead but actually, even though there is little to no electricity being measured by the ICE intracortical electrodes embedded deep in the patient’s brain - they remember things and events.

VI. HYPOTHESIS

This paper's hypothesis is that if one can recreate a situation in a humanoid wherein it can be on, but its brain still off, it will open the doors to synthetic consciousness, or artificial consciousness. Moving another step forward it is logical that if a system can be aware of how intelligent or insanely inadequate its operating system is, we have created a lower form of artificial consciousness. The author's hypothesis is that once this entirely separate system to its operating system can communicate to its brain to run away, hide away or fight, as in the Fedor hypothetical, man will have come a step closer to creating artificial consciousness. But in order to test the hypothesis that the consciousness is an entirely different operating system to that of the brain, one needs to first create some use cases. We present two use cases to form a basis for the ground truth of his hypothesis: Consciousness and the brain are separate entities, therefore in a humanoid a phenomenological artificial intelligence system will be a completely separate system to that of the humanoid's artificial intelligence. Hence, if a humanoid can exemplify a two-state operating system as in the following two tests, it would therefore be a step towards creating artificial consciousness in humanoids.

A. Override Logic Test

Unlike current state-of-the-art machines, humans have the ability of override their brain's logic with decisions based upon love and loyalty. If a house is burning down and the roof is about to collapse at any second, even if the brain of a human deduces 100% that running into the house will mean certain death or at the very least severe burning of the skin, a mother will still run into that house, find her child and bring it out. Here the mother's love for her child overrode her brains logical deductions. In this case we see that another operating system, the consciousness, is commanding the human brain and overriding the output from the brain. There is a very similar test of the soldier who dashes out into the bullet strewn war field to rescue is friend, one can extrapolate the mother going into the burning house analysis below to the soldier rescuing his friend. Both are real. Both have had many instances of happening in real life.

From a phenomenological state of artificial consciousness, one operating system called the artificial intelligence is a mutually exclusive unit to that of the other operating system called the phenomenological artificial consciousness system (artificial consciousness). The operating system for the artificial intelligence of a humanoid has deduced that the roof of the aforementioned burning house is about to collapse and the weight of the roof and the heat of the fire will destroy the humanoid. Entering the house at this time is a 100% bad, very wrong, decision. However, the second operating system, the artificial consciousness has seen the baby's face many times, acknowledged that it is in fact part of its own id. Acknowledged that caring for the well being and life of the baby is superior to any other goal. Upon having the artificial consciousness realize the baby's life is in danger it will override the first operating system's output to enter the

house and force the humanoids artificial intelligence to find the baby and rescue it.

1) *The Hypothalamus in the Override Logic Test:* There is the argument that emotional states derive from the hypothalamus [12], [22] and it is true that many emotional states are derived from enzymes secreted by the thalamus into the blood to the neuroreceptors, however depression or happiness is a subset of being where consciousness is being and being controls. It does not matter if the the mother was happy or depressed when she realized her baby was in the house. It does not matter that her brain told her to not go into the burning house, the mother's being would override the subset emotions of joy or happiness secreted by the hypothalamus and she also overrode the brain's output to tell her not to run into the house, the mother's being overrode all systems and told those systems, the brain - to make her arms and legs and body run into the house and pick up her child and then run out.

Considering that the hypothalamus, or in other words the brain is responsible for certain emotional states and that certain states are states of being. Referencing Rudin [45], we can formulate this by supposing that we place all of our states of anxiousness, happiness, love, hate, fear, sleepiness, ..., anything we experience into a space which we will define as a vector space with the name *Delta* (Δ). This means that the vector space Δ contains in it all of the aforementioned emotional states and states of mind and we will refer to these emotional dimensions that live in Δ either as an x coming from the consciousness or as a y coming from the brain. Furthermore, we group subsets of these emotions (x, y), into compartments we call *Phi* (Φ) We can therefore say that if a vector space Δ is spanned by a set of r vectors, then

$$\dim \Delta \leq r. \quad \text{and} \quad (1)$$

$$\Delta \text{ is a vector space, and } \dim \Delta = n. \quad (2)$$

- (a) A set Φ of n vectors in Δ spans Δ if and only if Φ is independent.
- (b) Δ has a basis, and every basis consists of n vectors.
- (c) If $1 \leq r \leq n$ and y_1, \dots, y_r is an independent set in ϕ , then ϕ has a basis for containing $\{y_1, \dots, y_r\}$

Proof for (a). Suppose $\Phi = \{x_1, \dots, x_n\}$. Since $\dim \Delta = n$, the set $\{x_1, \dots, x_n, y\}$ is dependent, for every $y \in \Delta$. If Φ is independent, it follows that y is in the span of Φ ; Hence Φ spans Δ . Conversely, if Δ is dependent, one of its emotional states can be removed without changing the span of Δ . Hence, Δ cannot span Φ by Theorem 1. This proves (a).

Proof for (b). Since $\dim \Delta = n$, Δ contains an independent set of n vectors, and (a) shows that every such set is a basis of Δ ; (b) now follows from Theorem 1.

Proof for (c). To prove (c) let $\{x_1, \dots, x_n\}$ be a basis of Δ . The set $\Psi = \{y_1, \dots, y_r, x_1, \dots, x_n\}$ spans Δ and is dependent, since it contains more than n vectors. The argument shown in Theorem 2 shows that one of the x_i 's is a linear combination of the other members of the set, then remaining set still spans Δ . This process can be repeated r times and leads to a band of Δ which contains $\{y_1, \dots, y_r\}$, by (a) [45].

B. Sense of Loss Test

The second test to show that the state of consciousness is a separate entity to that of the brain is the Sense of Loss Test. If the brain is a function of being then the functionality of the brain would have an impact of how much loss one would feel, or in other words the more enlightened, advanced and evolved the brain is then it could have an effect that one has when the human experiences loss. However this is not the case. Here we will use three actors to demonstrate that the brain has nothing to do with a sense of loss.

On this test we postulate that there is a married couple that have been married for 70 years. They love each other very much. Doctors know that when one partner dies, the other partner invariably will die soon thereafter [26], [37]. People in this scenario experience a prolific sense of loss.

1) *Case One:* An Amazonian woman who barely knows anything outside the experiences of her village in the middle of the Amazon jungle. She cannot read, write, or calculate complex logic functions. She is 87 years old and loses her husband to whom she has been married to for 70 years.

2) *Case Two:* An amazing Nobel Awardee Professor of Physics at MIT. Very few people on planet earth have a brain more evolved and razor sharp than this man. He can calculate complex problems in his head, recite lemmas and proofs with ease and carry out predicate logic on the fly. He also has traveled the world has great grandchildren and is very sophisticated. He is 87 years old and loses his wife to whom he has been married to for 70 years.

3) *Case Three:* A post neurosurgery 87 year-old woman who upon having emergency neurosurgery for a hemorrhage induced from an acute brain injury she occurred in a terrible car accident, learns that her husband of 70 years died next to her in that same care crash. The author has witnessed this patient who has very limited brain functionality, memory loss and blurred consciousness form the anesthesia and pain pills.

In all three of the aforementioned cases. The surviving spouse cried and is severely impacted by the fact they will no longer be with their spouse of 70 years. The Amazonian woman does not cry less or more than the Professor, the woman in the car crash does not cry less or more than the Amazonian Woman or the Professor sue to her loss of brain functionality. Regardless of brain functionality or brain enlightenment, the consciousness, not the brain suffers a severe state of shock and loss the moment it realizes they will no longer be with their spouse of 70 years. IF the brain had anything to do with this the Professor may be able to calculate this is life, this happens, its part fo the deal and logically accept it but he does not, he cries in pain and is subjected to around the clock monitoring. If the Amazonian woman's brain is not so evolved would we conclude her husband is a bigger or smaller part of her life than the professor? No, the old 79 year old lady weeps like a baby in the Amazon Jungle. Similarly, did the drugs and brain resection stop the patient the Author saw with his own eyes at Anschutz Medical School fro weeping like a baby? NO indeed. Regardless of what the brain's state was all three cases' consciousness suffers the same amount of loss no matter what the brain says, instructs or cannot deduce.

VII. CONCLUSION AND FUTURE WORK

Artificial consciousness will always have to be equal to all other system's artificial consciousness regardless of whether its brain is, as mentioned earlier, that of a toaster, or IBM's Watson, or as in humans - that of Einstein or an Alzheimer's patient, the system communicating to the brain will be a normalized system void of any ability to be more conscious than another. like Kantian's categorical imperative, all humans will abide by the same law, all souls will abide by the same law, no soul is more important than another soul, and no humanoid's consciousness will have a better sense of self awareness than another, regardless of how intelligent, how much cache, how much memory, how much data and algorithms one may have compared to another humanoid's brain.

The author is currently developing an operating system that will be controlled by a central super computer that will set forth the artificial consciousness equally to a plurality of systems. Some systems will be comprised of a small trivial motherboard with a Raspberry Pie system developed by freshmen engineers and at the other end of the spectrum will be housed a four-series set of NVIDIA cards capable of trillions of floating point calculations per second. It is the author's belief that once these two mutually exclusive operating systems coexist with the consciousness being equal to other consciousness humanoids, and that they can command their individual AI systems, then the first step of artificial consciousness will have been created. At this point and only at this point can we teach it that its primary goal is to stay alive and command its brain to act in a way to always survive. Then later on, aspects such as loyalty, love, humor, joy and so on can be trained, regardless of how intelligent or unintelligent is brain, its completely separate operating system is.

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Dr. Rory Lewis has a PhD in Computer Science and a Juris Doctor in Law. Dr. Lewis' research is in machine learning and artificial intelligence systems for computational neuroscience, unmanned autonomous vehicles and political engineering. In the nineties, during and after his tenure at Syracuse College of Law, Dr. Lewis worked at the nation's premier Law firm Fulbright & Jaworski LLC prosecuting high-tech litigation cases involving microprocessor electrical circuitry intellectual property violations such as in *Intel vs. AMD* where he worked both in San Francisco and Houston. In the early 2000's Dr. Lewis returned to academia to pursue a PhD in Machine Learning. Here he studied under the Professor Zbigniew W. Ras who was the PhD student for the "father" of Rough Set theory Zdzisław Pawlak. Upon graduating from the University of North Carolina Dr. Lewis was offered a tenure track position at the University of Colorado where within one year he won Inventor of the Year for using Rough Set Theory, Fuzzy Logic, Knowledge Discovery in Data Bases (KDD) and machine learning to predict when addicts would relapse. At the same time, Dr. Lewis and his PhD students designed and implemented machine learning systems for intracortical electrodes used at Anschutz Medical School at the Denver Campus used in both the departments of neurology and pediatrics. In early 2009, Dr. Lewis formed the second nation-wide iOS class, after Apple's engineers taught at Stanford. Dr. Lewis was awarded tenure in 2017 and was promoted to Associate Professor. During Dr. Lewis' sabbatical he worked with the Pentagon in various levels with artificial intelligence with Full Motion Video (FMV) and artificial consciousness.

**EFFECT OF ORAL-WRITTEN MODE OF ASSESSING SENIOR SECONDARY SCHOOL TWO
ENGLISH LANGUAGE STUDENTS' ACHIEVEMENT IN DESCRIPTIVE ESSAY**

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ABSTRACT

English Language plays a central and strategic role in the school system because almost all the school subjects are taught using English language. However, students' achievement in this subject at senior secondary school is not encouraging. Therefore, this study examined the effects of oral-written mode of assessment on senior secondary school students' achievement in descriptive essay. It also examined the moderating effects of students' gender and class on students' achievement in descriptive essay.

The study adopted a pretest-posttest, control group, quasi experimental design with a 2x2x3 factorial matrix. The participant consisted of 140 Senior Secondary II students drawn from four intact classes from four schools randomly selected from four Local Government Areas randomly selected from Oyo town in Oyo State. Two schools were assigned each for the treatment group and the control group. The following instruments were used for the study: Descriptive Essay Achievement Test ($r = 0.78$); Descriptive Achievement Test Marking Scheme; Check List of Oral-Written Assessment and Teachers' Instructional Guide on Descriptive Essay ($r = 0.81$). Seven null hypotheses guided the study and tested at 0.05 level of significance. Data were analysed using Analysis of Covariance, Estimated Marginal Means and Scheffé post-hoc test.

The result revealed that treatment had a significant main effect on students' achievement in descriptive essay ($F_{(1,127)} = 25.407, P < .05, \eta^2 = .167$). Students exposed to oral-written assessment had a higher achievement scores ($\bar{x} = 36.15$) than those exposed to written assessment ($\bar{x} = 28.55$). There was no significant main effect of gender on students' achievement in descriptive essay ($F_{(1,127)} = .349, P > .05, \eta^2 = .003$). The result also revealed that the effects of class was not significant on students' students' achievement in descriptive essay ($F_{(2,127)} = .679, P > .05, \eta^2 = .006$).

Oral-written mode of assessment enhanced students' achievement in descriptive essay. It is therefore, recommended that teachers and curriculum developers should adopt the use of oral-written assessment for better improvement of students' achievement in descriptive essay.

Keywords: Oral-written assessment, written assessment, Gender, Class

Word count: 285

Introduction

In any educational system, assessment is an inevitable ingredient because it is needed to make informed decisions regarding students learning abilities, their placement in appropriate levels and their achievement. According to [1], assessment refers to the process of forming a judgment about the quality and extent of student achievement or performance, and therefore by inference a judgment about the learning that has taken place. Such judgments are mostly based on information obtained by requiring students to attempt specified tasks and submit their work to a university teacher or tutor for an appraisal of its quality. Generally, students know which of their works are to be assessed. All types of tasks, and the conditions under which they are to be completed, are included:

tests, term papers, laboratory projects, field reports, oral seminar presentations, studio productions, professional placements, assignments and examinations.

Assessment, when properly carried out, influences learning and when made authentic, provides feedback and revision to improve learning. According to [2], assessment can be made valid, fair, ethical, feasible and efficient tools for learning using multiple measures. On the other hand, the success of any assessment depends on the effective selection and use of appropriate procedures as well as on the proper interpretation of students' performance.

Assessment is the process of gathering and interpreting evidence to make judgments about a student learning [3]. It is the crucial link between learning outcomes content teaching and learning activities. Assessment is used by learners and their teachers to decide where the learners are at in their learning, where they need to go and how best to get there. The purpose of assessment is to improve learning, inform teaching, help students achieve the highest standards they can and provide meaningful reports on students' achievement.

Assessment in Nigeria over a long period of time has been mainly through written mode particularly in language related discipline, where reading, writing, listening and speaking skill are taught and this has remained persistent. The mode of assessment hitherto has not reflected this fact. The predominant mode of students' assessment in Nigerian schools is the traditional mode. In this mode, students are assessed using paper and pen to measure their gain. This mode of assessment has imposed serious limitations to the overall determination of achievements of students especially in English language class

Mode of assessment in English is of importance to us because English language as a subject has been taught and used as a medium of communication in Nigeria for decades. It occupies a very conspicuous position among other languages when its various functions are considered. It is a compulsory subject for students right from primary to tertiary level and a credit pass in it is required for any student seeking admission into a tertiary institution after secondary education. It is, however, unfortunate to note that candidates' performance is below expectation, most especially at the school certificate level because in Nigeria for example achievement and mastery are only measured through examinations like classroom tests, quizzes, essays etc applied as achievement tests, performance tests and skills evaluation which only require them to write. It is therefore not surprising to note that students' performance over the years has been unimpressive as reflected in table 1 below.

Table 1: A summary of the Statistics of performance of students in English language in May/June WASSCE 2002-2012

S/N	Year	No of Candidates Examined	Credit Pass(A1-C6)	Ordinary Pass (D7-E8)	Fail (F9)
			No (%)	No (%)	No (%)
1	2002	909,888	229,824 (24.03)	320,298 (32.81)	387,642 (42.61)
2	2003	929,271	269,824 (29.03)	320,185 (33.91)	314,255 (33.8)
3	2004	833,204	252,271 (29.83)	257,054 (29.41)	323,879 (38.07)
4	2005	1,064,587	272,922 (25.63)	371,095 (34.85)	393,201 (36.93)
5	2006	1,154,266	375,001 (32.48)	39,994 (34.13)	342,311 (29.65)
6	2007	1,252,510	379,779 (30.32)	463,827 (37.03)	378,902 (30.25)
7	2008	1,274,166	446,288 (35.02)	405,942 (31.85)	400,126 (31.40)
8	2009	1,355,725	563,294 (41.55)	400,424 (29.54)	314,965 (23.23)
9	2010	1,351,557	337,071 (24.09)	543,349 (40.2)	471,137 (34.86)
10	2011	1,540,250	472,906 (30.76)	618,924 (40.18)	448,420 (29.10)
11	2012	1,672,224	649,156 (38.82)	602,306 (36.02)	420,762 (25.16)
12	2013	1,689,188	1,085,472 (64.26)	252,005 (18.28)	201,203 (17.48)
13	2014	1,692,435	529,425 (31.28)	705,108 (23.45)	787,207 (45.27)
14.	2015	1,593,442	616,370 (38.68)	501,699 (33.89)	380,849 (27.43)

Source: Test Development Division WAEC Office, Ogba, Lagos.<http://www.nairaland.com/1855405/mass-failure-waec-releases-may>

However, many reasons have been advanced for habitual dismal performance of students in English Language such as incompetence of many teachers, inappropriate modes of teaching, lackadaisical attitude of teachers to the teaching of English language, poor reading and writing culture of students, to mention but just a few.

Researchers like [4], [5], [6] blamed the poor performance of students in Senior Secondary Certificate Examination on students' poor writing skill. [4] in his submission noted that the mass failure of students in English Language begins from students' poor performance in essay writing which takes the largest share of the total marks allotted to the subject by the West African Examinations Council or the National Examinations Council. The mark allotted to essay writing is 45% of the total mark of English Language Paper 1 among other aspects of the language usually tested such as comprehension and summary.

If the purpose of an English language examination especially in essay is to test the students' overall language proficiency rather than their writing ability, oral-written mode of assessment is to these researchers would be a better way of assessing them. It can show a teacher at a glance whether or not the students have a general grasp of the subject, as well as their major strengths and weaknesses. This mode of assessment will give the teacher a clear and objective idea of the student's level of proficiency, uncultured by judgements about skills in other areas such as paragraphing, capitalisation, spelling ability and neatness of handwriting. In addition, it saves a huge amount of time normally spent reading and marking piles of examination scripts besides English is expected to be used more orally outside instead of being written, in spite of the fact that written skill is important. It is this that informs this research which aims at experimenting a new mode of assessing students' achievement in English language. The oral assessment mode is used in this research work so that it can be compared with the written mode, to compare which one will be more effective in bringing out the best in senior secondary school students' language achievement especially in essay.

Gender has been linked with student achievement in various studies. Gender is a variable that plays an important role in learning. It refers to varied socially and culturally constructed roles, qualities, behaviour and so on that are ascribed to women and men of different societies. According to [7] gender is the behavioral, cultural and psychological characteristics associated with boys and girls which may influence their achievement in essay writing. [7] in his study found no significant difference in the mean achievement scores of male and female students in essay writing. Beside this, inconsistent findings have been discovered on gender differences and academic achievement [8 and 9]. There is therefore the need to find out if gender have effect on students' academic achievements in descriptive essay writing in English language.

In the light of the above, the researcher intends to investigate the effect of two modes of assessing senior secondary school two English language students' achievement in descriptive essay. The study also examined the main effect of gender on students' achievement in descriptive essay

Statement of the Problem

The dominant mode of assessing students is through writing and that has been largely responsible for students' poor performance because other aspects of language learning such as oral and listening skill are not accommodated in the written mode of assessment. Many studies have adduced various reasons for students' poor performance and have come up with different suggestions on how to improve it without a look at how the students are being assessed. It is known over the years that many students have excellent writing skills but are deficient when it comes to speaking. Also, some students have excellent speaking skills but are deficient when it comes to writing effectively. It thus becomes imperative to compare oral and the written mode of assessment in English language descriptive essay.

Hypotheses

Three null hypotheses guided the study and are tested at 0.05 level of significance.

H01: There is no significant main effect of Treatment on Students' Achievement in Descriptive Essay

H02: There is no significant main effect of Gender on Students' Achievement in Descriptive Essay

H03: There is no significant Interaction effect of Treatment and Gender on Students' Achievement in Descriptive essay.

Methodology

Research design

The study adopted a pretest-posttest control group, quasi experimental design with a 2x2 factorial matrix.

Variables in the Study

The independent variable: The independent variable in this study is treatment at two levels, namely: (i) Oral-written assessment of descriptive essay

(ii) Conventional mode (written assessment) of assessment of descriptive essay

Moderating variable: Gender (Male and Female)

Dependent variable: achievement in descriptive essay

Selection of participants

The participant consisted of 140 Senior Secondary II students drawn from four intact classes from four schools randomly selected from four Local Government Areas randomly selected from Oyo town in Oyo State. Two schools were assigned each for the treatment group and the control group.

Research Instruments

Four instruments used in the study were:

- A. Descriptive essay achievement test
- B. Descriptive essay achievement test marking scheme
- C. Checklist of Oral-written Assessment (COA)
- D. Teachers instructional guide on descriptive essay

Descriptive Essay Achievement Test

This achievement test was used to measure students' pretest performance in descriptive essay. It was adopted from the West African Examination Council's (May/June 2014) English language Paper 1. This is because it is a standardized paper which could be marked on an objective basis, based on WASSCE Marking Scheme.

Descriptive Essay Achievement Test Marking Scheme

The scoring guide for essay writing used by the West African Examination Council was adopted and was used to mark the pretest descriptive essay achievement test.

Checklist on Oral-Written Assessment

The scoring guide in assessment of descriptive essay was developed by the researcher and used to mark the posttest. This was used to assess the experimental groups posttest descriptive essay achievement. The draft form of this instrument was given to the researcher's supervisor and two experienced English Language educators from the University of Ibadan for content validity. The experts were requested to screen the items for the content validity of the instrument and judge whether or not it is appropriate to ensure that the test is objectively assessed. Suggestions made were effected to improve the instrument.

Teachers Instructional Guide on Descriptive Essay

This was prepared to teach both the experimental and the control groups. It contains the lesson steps to take to teach descriptive essay effectively. It also contains the activities students are to perform in the course of teaching.

Data collected were analyzed using T-test, Analysis of Covariance (ANCOVA) and Estimated marginal means (EMMs).

Results

H01: There is no significant main effect of treatment on students' achievement in descriptive essay

Table 2: Table showing the main effect of Treatment on Students' Achievement in Descriptive Essay

Source	Sum of Square	Df	Mean Square	F	Sig.	Eta Square
Corrected model	5610.686	2	2805.343	100.527	.000	.595
Pre-test	1209.079	1	1209.079	43.326	.000	.240
Treatment group	1463.054	1	1463.054	52.427	.000*	.277
Gender	91.357	1	91.357	2.409	.123	.017
Treatment * Gender	33.019	1	33.019	1.195	.276	.009
	3823.164		27.906			
Error	9433.850	137				
Corrected total		139				

* = denotes significant at $p < .05$

Table 2 above showed that there was significant main effect of treatment on students' achievement in descriptive essay ($F_{(1,137)} = 52.427, P < .05$). The effect size of 27.7% is fair. Thus, the null hypothesis was rejected. In order to

determine the magnitude of the mean scores of the group’s performance, EMMs was carried out and the result was presented in Tables 2

Table 3: Table showing the Estimated Marginal Mean Scores from the analysis

Treatment	Mean	Std. Error
Treatment groups	36.15	0.689
Control	28.55	0.689

Table 3 revealed that the students in treatment group had the highest adjusted mean score ($\bar{x} = 36.15$) while the control group had the lowest adjusted mean score ($\bar{x} = 28.55$).

H02: There is no significant main effect of gender on students’ achievement in descriptive essay

The results showed in Table 2 that there was no significant main effect of gender on students’ achievement in descriptive essay ($F_{(1,137)} = 2.409, P > .05, \eta^2 = .017$). Therefore, hypothesis 2 was not rejected.

Table 4: Table showing the Estimated Marginal Mean Scores by Gender

Gender	Mean	Std. Error
Male	33.23	0.769
Female	31.59	0.715

Table 5 revealed that male students had the highest adjusted mean score ($\bar{x} = 33.23$) while their female counterpart had the lowest adjusted mean score ($\bar{x} = 31.59$). But their mean difference was not statistically significant.

H03: There is no significant two-way interaction effect of treatment and gender on students’ achievement in descriptive essay

The results in Table 1 showed that there was no significant two-way interaction effect of treatment and gender on students’ achievement in descriptive essay. The null hypothesis 3 was not rejected.

Discussion

Main Effect of Treatment on Students’ Achievement in Descriptive Essay

The findings revealed that there was significant main effect of treatment on students’ achievement in descriptive essay. The results further revealed that students assessed in descriptive essay writing using oral-written assessment performed significantly better than those assessed using written assessment mode. The higher performance by the experimental group could be as a result that oral-written assessment mode encompasses all the skills (listening, speaking, reading and writing in English) of assessing students in descriptive essay. This finding of

significant effect of treatment on students' achievement in descriptive essay is in accordance with [10] who asserted that oral assessment can encourage deep approaches to learning. Students will learn differently for an oral exam, trying to find out what is essential to the course material and to get a thorough understanding. It also supported the conclusion of [11] who concluded that paper and pencil tests can be effective when assessing listening and reading comprehension skills, they are not appropriate assessment methods for performance skills such as speaking and writing. In a balanced assessment program, a variety of assessment techniques should be incorporated into daily instruction.

This result, however novel it is, has shown that there is a viable alternative to the urgent mode of sensing student ability in essays in English. The dual mode of assessment being suggested here has a basis in theory and literature because it has shown that oral/written mode can be used to solve the perennial problem of students' poor use of English. Two, the mode has also given further justification for the fact that language is primarily speech and oral use of language is the ultimate aims of teaching and learning any language in schools. Although writing skills helps to preserve documents more and much longer, it is not the basic reasons for language teaching. This is why writing is a secondary skill that complements speaking. This important factor has to be given adequate place in students' assessment.

Language teachers are being called upon to be more innovative and resourceful in teaching and assessing students after a very hard work at equipping the students to acquire and demonstrate the skills necessary to show that students have learnt the given language meaningfully. What the researchers are suggesting here is akin to what current researchers have suggested as a positive step to solving the problem which has characterised the teaching and testing comprehension by teachers and has posed a serious problem to assessing students' comprehension skills. What is clear from these important innovations is that teachers, curriculum planners and examination bodies have to go beyond what they have been doing that has failed to portray students' abilities in the other skills of language. Although adopting this dual mode of assessing students may face some challenges initially, the challenges can be overcome with doggedness and genuine interest in tackling students' problems in the all-the-important subject.

Main Effect of Gender on Students' Achievement in Descriptive Essay

The study revealed that gender has no significant influence on the students' achievement in descriptive essay writing. This could be as a result of the innovative assessment approach adopted by the researchers. It agrees with [7] in his study who found no significant difference between male and female students in essay writing.

Two-way Interaction Effect of Treatment and Gender on Students' Achievement in Descriptive Essay

The result also revealed that the interaction effect of treatment and gender on students' achievement in descriptive essay writing was not significant. This could mean that the treatment is suitable to both sexes with respect to descriptive essay.

Conclusion

The researchers feel that this is just the beginning of a continuous ongoing process. Extensive ground work is needed to bring about a shift in students' assessment from traditional written to oral-written mode of assessment in essay. To be effective, assessment should recognise the diversity of learners and allow for difference in styles and rate of learning. To accurately assess English Language learners, variation in students' English Language skills must be considered at all levels.

Recommendations

Therefore, the following recommendations are made with a view to improving and facilitating the teaching and learning of reading in schools.

- English Language Teachers: The results from this study show that English Language teachers could employ oral-written mode of assessment to facilitate higher achievement in students in English language especially in descriptive essay. In a typical English Language class, there are two groups of students: those who can speak fluently but are deficient in writing and those who can write very well but deficient in speaking. English teachers are advised to employ the oral-written mode of assessment to put a balance on their learning outcomes.
- Teacher Trainers: The universities and colleges of education might need to modify their teacher training programmes to re-orientate teachers toward alternative modes of assessment such as oral-written. This would take care of the individual differences of the students in language skills. They should also make known to students in training the current research findings on assessment.

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Topics of Blockchain Technology to Teach at Community College

Penn P. Wu, Jeannie Jo

Abstract—Blockchain technology has rapidly gained popularity in industry. This paper attempts to assist academia to answer four questions. First, should community colleges begin offering education to nurture blockchain-literate students for the job market? Second, what are the appropriate topical areas to cover? Third, should it be an individual course? And forth, should it be a technical or management course? This paper starts with identifying the knowledge domains of blockchain technology and the topical areas each domain has, and continues with placing them in appropriate academic territories (Computer Sciences vs. Business) and subjects (programming, management, marketing, and laws), and then develops an evaluation model to determine the appropriate topical area for community colleges to teach. The evaluation is based on seven factors: maturity of technology, impacts on management, real-world applications, subject classification, knowledge prerequisites, textbook readiness, and recommended pedagogies. The evaluation results point to an interesting direction that offering an introductory course is an ideal option to guide students through the learning journey of what blockchain is and how it applies to business. Such an introductory course does not need to engage students in the discussions of mathematics and sciences that make blockchain technologies possible. While it is inevitable to brief technical topics to help students build a solid knowledge foundation of blockchain technologies, community colleges should avoid offering students a course centered on the discussion of developing blockchain applications.

Keywords—Blockchain, pedagogies, blockchain technologies, blockchain course, blockchain pedagogies.

I. INTRODUCTION

THE fast-growing demand of blockchain-capable workers has created a talent shortage, and academia of all levels should start finding ways to fill the talent gaps. Yet, is blockchain a competency-appropriate technical topic for students of community college?

In a nutshell, blockchain is a decentralized, secure digital ledger. It is the underlying technology of the globally recognized cryptocurrency, Bitcoin, and is used by Bitcoin for governing all transactions. As defined by Don Tapscott, co-founder and executive director at the Blockchain Research Institute, blockchain is “an incorruptible digital ledger of economic transactions that can be programmed to record not just financial transactions but virtually everything of value” [10]. Blockchain is a digital mechanism that enables people who do not know each other to engage in trusted transactions with full confidence in the integrity of the assets being exchanged. It has been used to transform financial services, reactivate the booming IoTs (Internet of Things), secure

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transaction records, and resolve privacy issues. Traditionally, electronic transactions require a trusted third party such as banks, governments, notaries, and accountants. Blockchain can eliminate these middlemen to improve the transaction efficiency at lower cost. Blockchain-based applications may also enhance the IoTs [15]. In search of answers, the author proposes to evaluate the appropriateness from seven aspects, as listed in Table I.

TABLE I
EVALUATION CRITERIA

Aspect	Definitions
Technology Maturity (TM)	The level of readiness of blockchain technology for solving real-world business problems.
Impacts on Management (IM)	How blockchain has affected and changed the management practices.
Real-World Applications (RA)	The use cases of blockchain in industries.
Subject Classification (SC)	The category and classification of blockchain in college-level of education by subjects, business, computer science, law, or a new subject by itself?
Knowledge Prerequisites (KP)	The knowledge and skills required to learn and comprehend concepts and technologies of blockchain.
Textbook Readiness (TR)	The availability textbooks and/or reference book of blockchain.
Recommended Pedagogies (RP)	The appropriate teaching methodology suitable for dissemination of knowledge and skills of blockchain.
Instructor Pool (IP)	The level of difficulty to find qualified instructors.

The next sections will discuss these aspects in detail to provide a foundation to rate the topical areas of that are addressed by currently available college-level blockchain courses. Then, draw a conclusion based on the results of evaluation.

II. TECHNOLOGY MATURITY

Blockchain is built on top of a peer-to-peer network; however, it is a collaborative effort among multiple entities to strive for management of decentralized, transparent, cross-border, tamper-proof, and trusted records. The bare minimum technology is a set of: (a) smart contracts, (b) a cryptographic algorithm, (c) APIs to payment systems (such as the API released by Mastercard), (d) a decentralized network, and (e) an open blockchain.

IBM, Oracle, and SAP are probably the three largest players in the business application domain of blockchain technology [3]. J. P. Morgan Chase, SWIFT, Microsoft, and Accenture are active players of blockchain, too [2]. Ever since its first realization made by the legendary Satoshi Nakamoto (possibly a pseudonym) in 2008, exciting blockchain technologies were introduced constantly; all these blockchain players are competing towards global implementation of blockchain

technologies at full speed. However, blockchains have some shortcomings that still need to be resolved. First, it has limited scalability. While the Visa network is capable of processing at least 40,000 transactions per second, Ethereum and the Bitcoin blockchain are capable of processing approximately 15 and 7 transactions per second, respectively [9]. Second, the adoption of a universal browser-based API is born but still needs greater collaboration among all browser makers including Microsoft, Google, Facebook, Apple and Mozilla [4].

On the other hand, blockchain has shown some maturity for supply chain management and the technologies have been implemented in some industries with the “Hyperledger” platform which is a technology more suitable to building business applications [3]. In the marketplace, many enterprise platforms including Ethereum, Hyperledger, R3 Corda, Ripple, Quorum, and others are readily implemented, while the Blockchain Interoperability Alliance was formed in 2017 facilitating interoperability. It is reasonable to say that blockchain seemingly will not reach the maturity phase soon, but its technology surely is not in its infancy any longer and has reached a point that actual enterprise implementation is made possible by collaborative efforts. There are still challenges associated with blockchain, but the challenges are less technical [3]; therefore, academia should not overlook

blockchain.

III. IMPACTS ON MANAGEMENT

The introduction of blockchain has significantly impacted many industries including finance, real estate, retail, healthcare, arts and entertainment, government, legal, food, energy, hospitality, education, insurance, and many others. The impact is not limited to domestic enterprises, but global industries.

From the management’s perspective, the critical impacts are the competitive implications and business opportunities associated with how blockchain is affecting operations like supply chain, smart contract, and record management as well as processes to authenticate intellectual property, secure transaction records, and resolve privacy issues. Reference [14] describes how blockchain technology can apply to supply chain optimization to enhance logistics and distribution in a mega city. Since blockchain can significantly lower the cost of digitized operations with higher efficiency, it has begun reshaping the organizational structure of enterprises to maintain competitive advantage. Table II is a sample list of impacts that should be deeply addressed and reviewed.

TABLE II
IMPACTS ON MANAGEMENT

Topical Area	Description
Transaction Processing	Managing regulated currencies (like US dollars), financial instruments, and derivative contracts with a shared, flat ledger managed by a trusted processing node.
Operation Management	Optimize supply chain, reduce risks in sourcing and category management, and increase transaction transparency.
Record Management	Secure and authenticate intellectual property at lower cost and higher efficiency.
Organizational Structure	Organizations will move from hierarchical structure to non-centralized structure with less in-house manpower-intensive jobs and more loosely-bonded information workers.
Secured Trading Platform	Companies of all sizes can issue “tokens” (like stocks for investors to buy and sell) to raise funds for business operations in a transparent platform that is open 24/7 for trading with low fees.
Digital Marketing & Strategy	Blockchain builds public accountability to eliminate the need of digital middlemen and give control over sharing their information.
Media Management	All media, particularly social media, are working on using blockchain to resolve the worsening “fake news” issue.
Implementation Strategies	All tech-related projects are facing the challenge of timing, and so is the implementation of blockchain. Enterprises need to evaluate how agile methodology and its related models could possibly contribute to the rapid implementations.

Even when the blockchain technologies, particularly distributed ledgers and smart contracts, have evolved into a practical operation-optimization mechanism, how an enterprise can embrace the power of such technologies remains an important business-centered topic. Before massive corporations, including Walmart and Amazon, announced their blockchain projects, all levels of management, from executive to operational, need a non-technical overview to understand how blockchain technologies work in an enterprise business environment.

IV. REAL-WORLD APPLICATIONS

Blockchain is the technology that powers Bitcoin, yet is not designed for Bitcoin. Blockchain technology is useful in a large variety of business scenarios where digital consensus and a distributed ledger can help to secure transaction settlement and reduce costs. In addition to decentralized cryptocurrencies like Bitcoin and Ethereum, blockchains have

been used for smart contracts [14], enforcing healthcare and medical records to comply with privacy requirements of HIPAA rules [12], enabling identity owners to control personal information through the digital identity management [6], and protecting records of artist ownership, royalty, and distribution in the music industry [8]. Marketing could use the technology as well. It can remove the intermediary and middleman from digital advertising. Initially, the transparency of blockchain can build a trust relationship between the brand owners and their customers. A blockchain-enabled customer relationship management has the ability to process every step of customer claim with transparency, because all steps in the process can be openly analyzed and validated; therefore, it could eventually lead to a more mutually trusted environment for negotiating and approving contracts without the need of notary [5]. Furthermore, the advertisers can see exactly where their target audiences are going. Accounting can use it for invoice reconciliation. Financial institutions, particularly

banks, are also implementing the technology for: (a) asset management for trade processing and settlement, (b) insurance claim processing, and (c) cross-border payments [7]. In the next few years, the education industry will use blockchains to validate student records including identity, grades, transcripts, student loans, and any other digitized records [11]. All the above mentioned, “use cases” imply that blockchain could apply to all digital records in almost every sector and industry in the real world.

V. SUBJECT CLASSIFICATION

Academia is not slow in responding to the rise of blockchain. As of the time of writing this paper, top-ranking universities like Duke, UC Berkeley, Carnegie Mellon, and Princeton offer blockchain-related courses; however, there is not yet a consensus about which subject area blockchain should be categorized. For example, UC-Berkeley offers a course titled “Blockchain, Crypto-economics, and the Future of Technology, Business and Law” which is cross-discipline course that teaches how blockchain brings opportunities at the intersection of technology, business and law. This could be the first course cross-listed in three departments: engineering, law and business. The University of Southern California offers a blockchain course from its School of Engineering as an introductory course that covers basic blockchain technologies and applications. The Department of Electrical and Computer Engineering of the University of Illinois offers a technical course that focuses on the discussion of Smart Contracts and Blockchain Security. A preliminary research conducted by the author found two common alternatives: business and computer science. At a community college that has both Business and Computer Information System (CIS) departments; Fig. 1 illustrates how the authors classify topics of blockchain for the sake of evaluation (as shown in Table III of a later section).

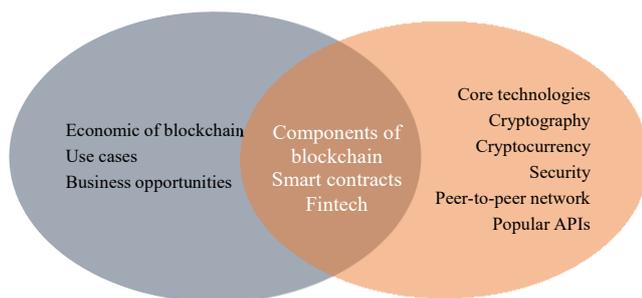


Fig. 1 Topics of blockchain

On the business side, Professor David Yermack of New York University’s Stern School of Business, for example, has offered a digital-currency class since 2014. However, the instructional objectives seem to center on “fintech” which is a rising topic (and could be a new subject) to study how financial technologies are revolutionizing enterprises. The instructional content focuses more on helping students connect business strategy to technology to enhance competitive opportunities.

On the technology side, Stanford’s “CS 251: Bitcoin and

Cryptocurrencies” is a highly CS-centered course which focuses on all aspects of cryptocurrencies [13]. Topical areas include hash functions, mining, Merkle trees, smart contracts, tokens, mining algorithms and hardware, various types of cryptocurrency wallets, Bitcoin clients, merchants, and payment processors. The CS side of instructions lean more towards discussion of cryptography, encoding, digital signature, distributed ledger, immutable records, decentralized networks, data transparency, and audit trail. To most community college students, discussing blockchain technologies from the CS angle is relatively difficult and probably requires intensive subject matter to fully internalize and understand.

VI. KNOWLEDGE PREREQUISITES

For an introductory course to blockchain that discusses about the business aspects of applications to nontechnical audiences, students should have some business background including accounting, finance, marketing, and management to gain an understanding of how blockchains work and how they can create value for their business through cost-savings and efficiencies. For an introductory course that discusses the technical aspects of blockchain, students must have some CS-related background, particularly. Some background in basic computing technologies, such as programming, networking, and database management, is a plus, while knowledge in cryptography, distributed computing, and mechanism design are probably necessary.

VII. TEXTBOOK READINESS

A group of computer science professors at Princeton University published a textbook [7]. This book offers a solid illustration of what cryptocurrencies are with a detailed explanation about the collection of technologies that construct the blockchain and how and why value can be stored and transferred securely and publicly on distributed networks. Interestingly, this book is not designed for most non-technical students to comprehend the essential content from the ground up within a one-semester blockchain course. Table III is a sample list of books that could be used as supplementary textbooks.

Taking into consideration the profiles of community college students, all these books are good references, yet it might be difficult for an instructor to choose any of them as the sole textbook to cover the basics of blockchain on either the business or CS side.

VIII. RECOMMENDED PEDAGOGIES

Unlike traditional universities, courses taught at community colleges are more career-oriented, less theoretical, and expectedly practical. For a course that covers technical topics, effective pedagogies are the ones that lean towards the following characteristics.

- Hands-on learning: Interactive learning activities and workshop-based pedagogy work better than traditional textbook and lecture pedagogy.

- **Group learning:** Students showed a better learning outcome through peer-based discussions and competency-based collaborations. All students are organized into small groups to contribute to the learning group based on their technical competencies. While the term competency refers to a set of capabilities of an individual to perform a specific task properly, a competence-based collaboration may force students to demonstrate their knowledge, skills, behavior, and professionalism.
- **Project-based learning:** Scenario-based projects could better engage students in hands-on learning activities that put what they learn into practice.
- **Case study:** Students can be actively engaged in figuring out the principles by abstracting from the examples and this could develop their skills in problem solving, analytical tools, decision making in complex situations. One example is the partnership between the US Food and Drug Administration and IBM’s Watson Health.

These pedagogies inevitably set some instructional limitations because they require a time-consuming preparation of instructional materials and initial investments of equipment and software (such as APIs).

IX. INSTRUCTOR POOL

Finding quality instructors to teach blockchain courses is a challenge, even for top-ranking universities [1]. Many startups do not have master or higher degrees to be qualified for teaching at college level, especially those devoted to the development of technologies; this phenomenon makes the shortage of instructors more severe at the CS side.

X. EVALUATION RESULTS

The author adopts a rating scale of 1 to 5, to indicate the degree of appropriateness to teach the topical area of blockchain at community college: 1 is easy, 2 is appropriate, 3 is manageable, 4 is difficult, and 5 is impossible. The term “manageable” means the instructor can adjust the pedagogies to resolve instructional issues, “difficult” means both instructors and students will struggle to meet the objectives, while “impossible” simply means “not doable” for community colleges. In Table IV, the author abbreviates the “seven aspects” with two letters like “TM”, which is short for “Technology Maturity”. Results of the evaluation show the author’s perspectives about the practicability for teaching an introductory course blockchain at community colleges.

TABLE III
SAMPLE SUPPLEMENTARY TEXTBOOKS

Author	Year	Title	Publisher
Andreas Antonopoulos	2017	Mastering Bitcoin: Programming the Open Blockchain	O’Reilly Media
Artemis Caro	2017	Blockchain: The Beginners Guide to Understanding the Technology behind Bitcoin & Cryptocurrency	CreateSpace Independent Publishing
Daniel Drescher	2017	Blockchain Basics: A Non-Technical Introduction in 25 Steps	Apress
Alan Norman	2017	Blockchain Technology Explained: The Ultimate Beginner’s Guide about Blockchain Wallet, Mining, Bitcoin, Ethereum, Litecoin, Zcash, Monero, Ripple, Dash, IOTA and Smart Contract	CreateSpace Independent Publishing Platform
Abraham White	2018	Blockchain: Discover the Technology behind Smart Contracts, Wallets, Mining and Cryptocurrency	CreateSpace Independent Publishing

TABLE IV
RATINGS

Topical Area	Subject Area	TM	IM	RA	SC	KP	TR	RP	IP	Total
Economic of blockchain	BS	2	1	2	1	2	3	2	2	15
Use cases	BS	2	1	2	1	2	3	2	3	16
Business opportunities	BS	1	1	2	1	2	2	3	2	14
Components	BS / CS	2	2	3	3	2	3	4	3	22
Fintech	BS / CS	2	1	2	3	2	2	2	3	17
Smart contracts	BS / CS	3	3	3	3	3	3	3	4	25
Peer-to-peer network	CS	2	3	3	1	3	3	3	3	23
Core technologies	CS	4	3	3	1	5	3	4	4	27
Cryptography	CS	3	4	4	1	4	3	4	4	27
Cryptocurrency	CS	3	4	4	3	4	3	4	4	29
Security	CS	5	4	3	1	5	3	4	4	29
Popular APIs	CS	3	4	3	1	4	5	4	4	28

It is necessary to note that “core technologies” include topics like record immutability, digital tokens, registry of transactions, hash functions, mining, Merkle trees, smart contracts, mining algorithms, and all other highly technical topics. Although blockchain can be used to secure transactions, the algorithm used to drive blockchains is not immune from hackers-related vulnerabilities. For example, in August 2016, a cryptocurrency exchange agency called

“Bitfinex” was compromised and lost 120,000 bitcoins.

Results of evaluation, as shown in Table III, indicates that the business side of blockchain topics are more appropriate for the level of readiness of community college students. An ideal student is a person with foundational knowledge of business including basic management, accounting, and computing. Some background in finance and operation management will help but is not required.

The CS side of blockchain topics requires students to learn applied cryptographic principles (asymmetric vs. symmetric encryption, digital signatures, hashing, message authentication, generating and safely transferring key pairs) as well as knowledge in building and scaling decentralized and distributed systems. These CS-related topics are more appropriate for an upper-division course that guides CS majors.

XI. CONCLUSION

Like many emerging technologies, it is very early to assert how blockchain will impact business operations. Since a comprehensive course about the technical aspects of blockchain and its uses in cryptocurrencies requires students to have sophisticated foundations of upper-division CS- or math-related courses, it is more feasible to offer community college students with a business course that teaches them key vocabulary and basic concepts of blockchain and how they are impacting the world of business.

An ideal course to offer at a community college is an introductory course for students to understand what blockchain is and how it applies to business. This course may not engage students in sciences and technologies that drive blockchain, although the discussion of some technical topics is inevitable, the authors recommend not to offer community college students a course for learning how to program blockchain applications.

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Narrative Research in Secondary Teacher Education: Examining the Self-Efficacy of Content Area Teacher Candidates

Tiffany Karalis Noel

Abstract—The purpose of this study was to examine the factors attributed to the self-efficacy of beginning secondary content area teachers as they moved through their student teaching experiences. This study used a narrative inquiry methodology to understand the variables attributed to teacher self-efficacy among a group of secondary content area teacher candidates. The primary purpose of using a narrative inquiry methodology was to share the stories of content area teacher candidates' student teaching experiences. Focused research questions included: (1) To what extent does teacher education preparation affect the self-efficacy of beginning content area teachers? (2) Which recurrent elements of teacher education affect the self-efficacy of beginning teachers, regardless of content area? (3) How do the findings from research questions 1 and 2 inform teacher educators? The findings of this study suggest that teacher education preparation affects the self-efficacy of beginning secondary teacher candidates across the content areas; accordingly, the findings of this study provide insight for teacher educators to consider the areas where teacher education programs are failing to provide adequate preparation. These teacher candidates emphasized the value of adequate preparation throughout their teacher education programs to help inform their student teaching experiences. In order to feel effective and successful as beginning teachers, these teacher candidates required additional opportunities to apply the practical application of their teaching skills prior to the student teaching experience, the incorporation of classroom management strategy coursework into their curriculum, and opportunities to explore the extensive demands of the teaching profession ranging from time management to dealing with difficult parents, to name a few referenced examples. The teacher candidates experienced feelings of self-doubt related to their effectiveness as teachers when they were unable to employ successful classroom management strategies, pedagogical techniques, or even feel confidence in navigating challenging conversations with students, parents, and/or administrators. In order to help future teacher candidates and beginning teachers in general overcome these barriers, additional coursework, fieldwork, and practical application experiences should be provided in teacher education programs to help boost the self-efficacy of student teachers.

Keywords—self-efficacy, teacher efficacy, secondary preservice teacher education, teacher candidacy, student teaching

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Parents and Stakeholders' Perspectives on Early Reading Intervention Implemented as a Curriculum for Children with Learning Disabilities

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Abstract—The valuable partnerships between parents and teachers may develop positive and effective interactions between home and school. This will help these stakeholders share information and resources regarding student academics during ongoing interactions. Thus, partnerships will build a solid foundation for both families and schools to help children succeed in school. Parental involvement can be seen as an effective tool that can change homes and communities and not just schools' systems. Seeking parents and stakeholders' attitudes toward learning and learners can help schools design a curriculum. Subsequently, this information can be used to find ways to help improve the academic performance of students, especially in low performing schools. There may be some conflicts when designing curriculum. In addition, designing curriculum might bring more educational expectations to all the sides. There is a lack of research that targets the specific attitude of parents toward specific concepts on curriculum contents. More research is needed to study the perspective that parents of children with learning disabilities (LD) have regarding early reading curriculum. Parents and stakeholders' perspectives on early reading intervention implemented as a curriculum for children with LD was studied through an advanced quantitative research. The purpose of this study seeks to understand stakeholders and parents' perspectives of key concepts and essential early reading skills that impact the design of curriculum that will serve as an intervention for early struggler readers who have LD. Those concepts or stages include phonics, phonological awareness, and reading fluency as well as strategies used in house by parents. A survey instrument was used to gather the data. Participants were recruited through 29 schools and districts of the metropolitan area of the northern part of Saudi Arabia. Participants were stakeholders including parents of children with learning disability. Data were collected using distribution of paper and pen survey to schools. Psychometric properties of the instrument were evaluated for the validity and reliability of the survey; face validity, content validity, and construct validity including an Exploratory Factor Analysis were used to shape and reevaluate the structure of the instrument. Multivariate analysis of variance (MANOVA) used to find differences between the variables. The study reported the results of the perspectives of stakeholders toward reading strategies, phonics, phonological awareness, and reading fluency. Also, suggestions and limitations are discussed.

Keywords—stakeholders, learning disability, early reading, perspectives, parents, intervention, curriculum

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Effects of Tales as Models towards Reducing the Aggressive Behaviors of Student with Autism Spectrum Disorder

Sawitree Wongkittirungueang

Abstract—The purpose of this research was to investigate using tales as models to decrease physical aggressive behaviors of a student with autism spectrum disorder: case study, he was studying in the secondary school level 1, at Demonstration School, Khon Kaen University. He has been diagnosed by doctor as being in high functioning autism. Also has been readable, calculate and study full Inclusion in an inclusive classroom; however he has been aggressive behaviors that affect classroom learning. Especially, 5 behaviors; (1) vulgar language (2) to hurt friends with scratch, pinch and hit (3) impolite expression, such as sputum, spit in public (4) inappropriate expression (5) out of the classroom without permission, which all of its had been problematic to children and classmates. The samples were selected by purposive sampling. The tools consisted of the lesson plans to reduce aggressive behaviors and the record of observation and behavioral. The researcher spent time by observing and recording in 3 phases; first stage was baseline, second stage was experiment and the final phase was withdrawn. Data were collected, analyzed, percentage, mean, slope of the graph, and descriptive descriptions. The result showed that the aggressive behaviors of 5 behaviors decreased after using of tales as a model for social reinforcement to reduce aggressive behaviors, indicating that aggressive behaviors of 5 behaviors; pre-trial period, trial period and withdrawal were 70.76% and 58.45% 1.54% respectively.

Keywords—Tales, aggressive behavior, autism, autism spectrum disorder.

I. INTRODUCTION

NOWADAYS, Thailand has paid more awareness to the quality in children and youth, especially their education. The aim for this development is going to be good adults, who can live their good life, take care of themselves, and adjust themselves to the change, for coexistence in Thai society and the world. The development emphasizes for the opportunity in equal education such as formal, non-formal, and informal educations for every citizen. Hence, the current education follows the education reforming corresponding to the constitution of the Kingdom of Thailand, 2007, section 49 [1] Office of The Constitutional Court, 2007) legislated “A person shall enjoy an equal right to receive education for the duration of not less than twelve years which shall be provided by the State thoroughly, up to the quality, and without charge. The indigent, the disabled, Persons of infirmity or persons suffering a state of difficulty shall be accorded the right under paragraph one and entitled to such support from the State as to

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enable them to receive education comparable to that received by other persons.”

Autism, one of the nine disorders determined by the Ministry of education since 2009, is a developmental disorder in many areas characterized by troubles particularly with social interaction, communication, and repetitive behavior. People with autism have delay in development of their thinking, language, behavior, and social skills leading to many abnormalities i.e. social disturbance, difficulty in understanding language, and abnormality in behavior. Their development can be improved by giving opportunities for autism children to learn in regular school. However, there are many problems for normal and autistic children in learning together such as hurting the others, inattention, and thinking or doing something repeatedly due to their aggressive, self-motivated, hyperactive, and repetitive behaviors. Aggressive behavior is a dangerous act that may occur from various causes [2]. So, this behavior is classified as unpleasant behavior which probably happens to anyone. When the trouble behavior is found, teachers should overcome using reinforcement and punishment strategies. The target of reinforcement is for understanding of autistic children in pleasant and unpleasant behaviors [3]. Tales is another way to improve and reinforce their morality and ethics because imaginary tales can provide entertainments with morals for their innocence [4]. Previously, Rumas [5] studied the use of storytelling to improve ethical characteristics of kindergarten 2 students. The results indicated that the student exhibited the improved ethical behaviors such as generosity, discipline, pride in Thai, and appreciation of nature and environment. Sanganun [6] also used storytelling model to decrease aggressive behaviors of a 12-year-old student with hearing loss. The average value of physical and sign-language aggressive behaviors decreased in stage 2 and 3 which are periods of using and stop using the model, respectively.

According to importance of the decrease in aggressive behaviors, the aim of this research is to use storytelling as a model for the improvement of aggressive behaviors in autistic children in order to support their learning in general class with regular children.

II. OBJECTIVE

To study the effect of using tales as a model for reducing aggressive behaviors of students with autism: a case study.

III. RESEARCH METHODOLOGY

A. The target group

The student with autism spectrum disorder as being in high functioning autism: case study, he was studying in the secondary school level 1, Demonstration School, Khon Kaen University, Thailand.

B. Tools

- The lesson plans for reduce aggressive behaviors.
- The record of observation and behaviors.

C. Methodology

This research is a single subject design research with multiple baselines across situations divided into three phases.

Stage 1 is baseline stage which is observation and recording only one behavior for five days.

Stage 2 is treatment stage which involved the activity to the observed behavior for each situation. The activity was done ten times starting when the behavior tended to be steady (five days a week for two weeks).

Stage 3 is withdrawal stage. In this stage, the behavior was recorded continuously for another five days. Periods, situations, environment, and locations is the same for every recording.

D. Data analysis

1) Aggressive behavior frequency data from observation and recording were calculated into percentage.

2) Described observation form was used to descriptively analyze each type of behavior.

IV. RESEARCH RESULT

In this work, the study of using tales to decrease aggressive behaviors in autistic children was in line with the objectives mentioned above. Researcher concluded and discussed the results by analysis from images and video recording in the behavior observation and recording forms. The observation was performed 5 times before the tales, 10 times during the tales, and 5 times after the tales. The analyzed data were categorized for each behavior as follows.

A. Figure 1 the average percentage of aggressive behavior : vulgar language in stage 1,2 and 3

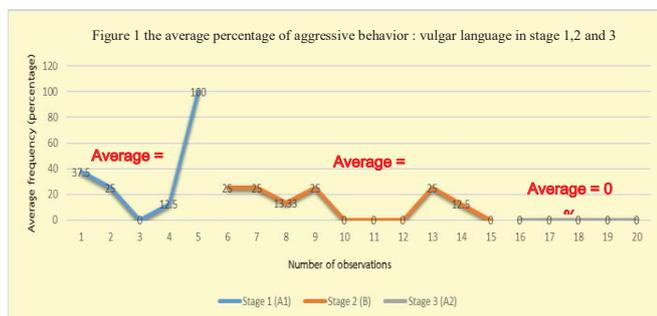


Figure 1 shows the average percentage of aggressive behavior : vulgar language in the first, second and third stages accounted for 35 %, 16.25 % and 0 %, respectively.

B. Figure 2 the average percentage of aggressive behavior : to hurt friends with scratch, pinch and hit in stage 1, 2 and 3

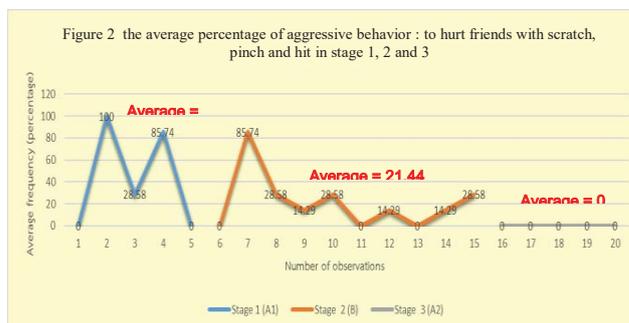


Figure 2 shows the average percentage of aggressive behavior : to hurt friends with scratch, pinch and hit in the first, second and third stages accounted for 42.87%, 21.44 % and 0 %, respectively.

C. Figure 3 the average percentage of aggressive behavior : impolite expression, such as sputum, spit in public in stage 1, 2 and 3

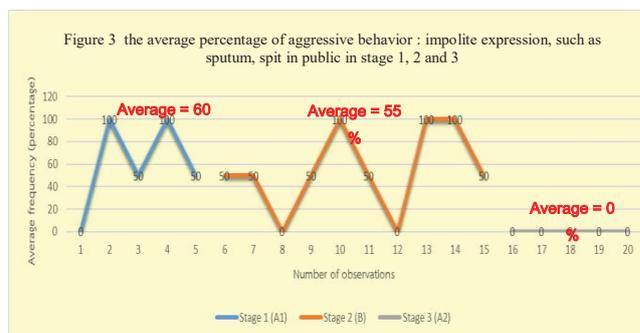


Figure 3 shows the average percentage of aggressive behavior : impolite expression, such as sputum, spit in public in the first, second and third stages accounted for 60 %, 55 % and 0 %, respectively.

D. Figure 4 the average percentage of aggressive behavior : inappropriate expressions in stage 1, 2 and 3

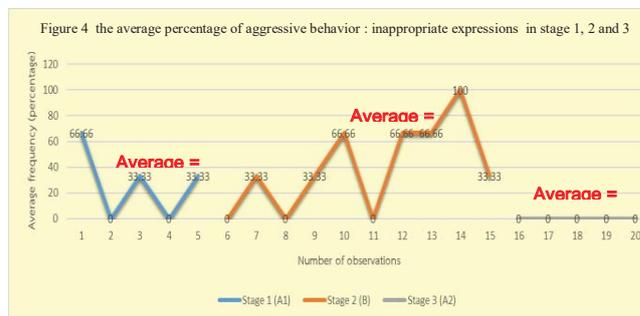


Figure 4 shows the average percentage of aggressive behavior : inappropriate expressions in the first, second and third stages accounted for 26.67 %, 30 % and 0 %, respectively.

E. Figure 5 the average percentage of aggressive behavior : out of classroom without permission in stage 1, 2 and 3

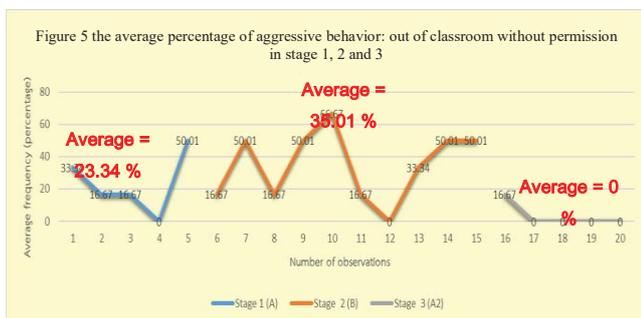


Figure 5 shows the average percentage of aggressive behavior : out of classroom without permission in the first, second and third stages accounted for 23.34 %, 35.01 % and 3.33 %, respectively.

F. Figure 6 the average percentage of aggressive behaviors of 5 aspects in stage 1, 2 and 3

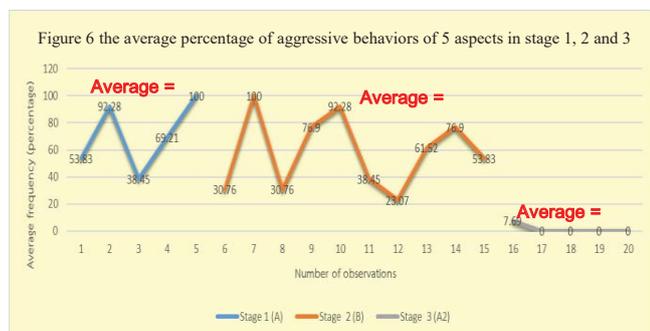


Figure 6 shows the average percentage of aggressive behaviors of 5 aspects in the first, second and third stages accounted for 70.76 %, 58.45 % and 1.54 %, respectively.

V. CONCLUSION

From the results, it was found that frequency of five aggressive behaviors in autistic children including vulgar language, hurting others (hitting, punching, pinching, and scratching), impolite acting (expectorating and spitting), inappropriate manner (putting hand into mouth), and leaving the class without permission. These behaviors changed in every stage. In stage 1 (A1), the behaviors were observed and found to be normal. In stage 2 (B), the frequency of aggressive behaviors tended to decrease after the use of storytelling model. The observation and recording after storytelling in stage 3 (A2) showed that the frequency of five aggressive behaviors in autistic students decreased and could be separately discussed as follows.

1) Aggressive behavior: vulgar language in stage 1 (A1) was observed and recorded normally without change behavior. From the observation, the frequency of this behavior was 2.8 or 35%. In stage 2(B), the frequency of this behavior decreased to 1.3 or 16.25% after the tales was used as social reinforcement. Withdrawal stage (A2) showed that the frequency of vulgar language in autistic children decreased to 0 or 0% as shown in statistic graph 1

2) Aggressive behavior: to hurt friends with scratch, pinch and hit in stage 1 (A1) was observed and recorded normally without change behavior. From the observation, the frequency of this behavior was 3 or 42.87%. In stage 2(B), the frequency of this behavior decreased to 1.5 or 21.44% after the tales was used as social reinforcement. Withdrawal stage (A2) showed that the frequency of to hurt friends with scratch, pinch and hit in autistic children decreased to 0 or 0% as shown in statistic graph 2

3) Aggressive behavior: impolite expression, such as sputum, spit in public in stage 1 (A1) was observed and recorded normally without change behavior. From the observation, the frequency of this behavior was 1.2 or 60%. In stage 2(B), the frequency of this behavior decreased to 1.1 or 55% after the tales was used as social reinforcement. Withdrawal stage (A2) showed that the frequency of impolite expression, such as sputum, spit in public in autistic children decreased to 0 or 0% as shown in statistic graph 3

4) Aggressive behavior: inappropriate expression in stage 1 (A1) was observed and recorded normally without change behavior. From the observation, the frequency of this behavior was 0.8 or 26.67%. In stage 2(B), the frequency of this behavior decreased to 1.2 or 30% after the tales was used as social reinforcement. Withdrawal stage (A2) showed that the frequency of inappropriate expression in autistic children decreased to 0 or 0% as shown in statistic graph 4

5) Aggressive behavior: out of the classroom without permission in stage 1 (A1) was observed and recorded normally without change behavior. From the observation, the frequency of this behavior was 1.4 or 23.34%. In stage 2(B), the frequency of this behavior decreased to 2.5 or 35.01% after the tales was used as social reinforcement. Withdrawal stage (A2) showed that the frequency of out of the classroom without permission in autistic children decreased to 0.2 or 3.33% as shown in statistic graph 5

6) Aggressive behaviors of five aspects in stage 1 (A1) were observed and recorded normally without change in behaviors. From the observation, the frequency of 5 behaviors were 9.2 or 70.76%. In stage 2(B), the frequency of ones decreased to 7.6 or 58.41% after the tales were used as social reinforcement. Withdrawal stage (A2) showed that the frequency of behaviors of five aspects in autistic children decreased to 0.1 or 1.54% as shown in statistic graph 6

VI. DISCUSSIONS

From this research, the use of tales and social reinforcement by appreciating with compliment, accepting, as well as agreeing with nodding, smiling, and hugging could decrease aggressive behavior in autistic students. It can be implied from the difference in frequency of aggressive behaviors. The period of experiments were 30 minutes starting from 8.00 – 8.30 a.m. The observation and recording data indicated that an average frequency of aggressive behaviors is 70.76% and 1.54% before and after the experiment. The reason for the decrease in aggressive behaviors are followed

A. Tales as model for aggressive behavior decrease.

The result from using Storytelling as model to decrease aggressive behavior in autistic students showed that the students paid more attention in listening to the story. This is

due to the enjoyment from the story leading to learning and development in ethics for pleasant behaviors (Intira Rumas, 2002) [5] Consequently, the model for the autistic students was chosen from their interest and characteristics. Corresponding to the mention from Sompote Eiumsupasit (1999) [7], the story model should be chosen appropriately so that the observer can closely and frequently observe the students together with the use of reinforcement. Moreover, the observer should conclude the behaviors characteristics of the model in order to understand and realize better. From the study, storytelling was used as model for the decrease of aggressive behaviors in autistic students and they were provided the desire which they never received before that is the pleasant behavior. This activity helped the students to imitate the peasant behavior and decrease the aggressive behaviors. Importantly, the autistic students were proud in themselves when they received compliment, admiration, and love after behaving pleasingly.

B. Case study for reinforcement

It was found that reinforcement can decrease the aggressive behavior of autistic students. Generally, they preferred to be admired by teacher. The autistic students should be suddenly reinforced after performing appropriate behaviors corresponding to Sompote Eiumsupasit (1999) [7]. The continuous reinforcement causes to be permanently appropriate behavior. It makes them know what the behavior should be done and will not get the good reinforcement when they show aggressive behavior corresponding to Somket Utayota (2003) [3].

C. Environment

Environment of classroom is one of the most important factors for autistic students' behavior. When the case study is controlled by sitting close to teacher, autistic students get closely social reinforcement. The objective is to solve unwanted behavior by changing environment around them such as family, friends, and teachers because they have to study with other friends. Aggressive behavior is an obstacle for studying in the classroom. Location, time, and environment selections for changing behavior have to be similar to the environment that has been experienced corresponding to a previous study of Sivana Panrat (2006) [8]. The previous study mentioned that the environment for children has to be similar to daily life and promotes their learning as much as possible without significant difference in the group of students. Therefore, they have been studied from great model to decrease aggressive behavior significantly.

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Assessment of the Illustrated Language Activities of the Portage Guide to Early Education

Ofelia A. Damag

Abstract—The study was focused on the development and assessment of the illustrated language activities of the 1996 Edition of the Portage Guide to Early Education. It determined the extent of appropriateness, applicability, time efficiency and aesthetics of the illustrated language activities to be used as instructional material not only by teachers, but parents and caregivers as well. The eclectic research design was applied in this study using qualitative and quantitative methods. To determine the applicability and time efficiency of the study, a try out was done. Since the eclectic research design was used, it made use of a researcher-made survey questionnaire and focus group discussion. Analysis of the data was done through weighted mean and ANOVA. The respondents of the study were representatives of Special Education (SPED) teachers, caregivers and parents of a special-needs child, particularly with difficulties in learning basic language skills. The results of the study show that a large number of respondents are SPED teachers and caregivers and are mostly college graduates. Many of them have earned units towards Master's studies. Moreover, a majority of the respondents have not attended seminars or in-service training in early intervention for them to be more competent in the area of specialization. It is concluded that the illustrated language activities under review in this study are appropriate, applicable, time efficient and aesthetic for use as a tool in teaching. The recommendations are focused on the advocacy for SPED teachers, caregivers and parents of special-needs children to be more consistent in the implementation of the new instructional materials as an aid in an intervention program.

Keywords—Illustrated language activities, inclusion, portage guide to early education, special educational needs.

I. INTRODUCTION

LANGUAGE is called the symbolization of thought. It is a learned code or system that enables individuals to communicate ideas and express wants and needs [4]. The acquisition of language is partly innate and partly learned, as children interact with other people and the environment. Language skills are so important to children, as without it, they cannot let others know what they want and need, and what is important to them. There is more and more evidence suggesting that having a good command of language goes hand-in-hand with the ability to imagine and think of new ideas [3]. By using language, adults help children learn a sense of mutual trust and the importance of taking conversational turns. Children also learn that paying attention to the other person enables them to respond to what has been said [1]. The first step for parents and families of a young child with a

disability is to prepare for the assessment process in which their child's strengths, support, and education/intervention needs will be determined. One program that is very familiar is the Portage Guide to Early Education (PGEE), which originated in Wisconsin, USA in 1969. It is designed to address the individual stage of each child [5]. Teaching methods are based on the principles of applied behavior analysis. Purpose of teaching and its results are recorded precisely [2]. This study aims to assess the 99 descriptive items of the Language Domain of the 1996 Edition of the PGEE. The suggested activities of language activities were put into drawing and assessed by the respondents. The specific objectives of the study are: (a) To illustrate the suggested 99 language activities of the card file listing to be able to teach the respondents and add knowledge on how to make special children in learning the basic language skills; (b) To provide support and updated information on how to assess a child's disability particularly the language skills; (c) To assist service providers to be more effective in incorporating intervention strategies among children with language disabilities; (d) To provide services in rural communities by the respondents for easily translated instructions among children with language difficulties.

A. Review of Related Literature

The Portage Guide to Early Intervention consists of three parts: a checklist where to record the child's developmental progress, a set of activity card file for the listing of possible methods of teaching which correspond to the behavioral objectives, and the manual of instructions. The checklist presents skills from birth to six years in the areas of infant stimulation, socialization, self-help, language, motor and cognition. Each section is color-coded and lists skills based on normal development. The card file provides a sequential list of behaviors to be taught and suggests methods on how to teach the skill. From these, the early interventionist chooses the one that he thinks would be most effective in teaching the child. The manual includes specific directions for completing the checklist and use of the card file. Directions have been included for breaking the behavior into a series of teaching steps into the teaching process known as Task Analysis. The PGEE requires the completion of the checklist for each entrant to the program [2].

B. Theoretical/Conceptual Framework

The study covers the social learning theory of Bandura which includes the four conditions or features of effective learning, namely: attention, retention of details, motor reproduction, and motivation. These conditions are

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emphasized in the illustrated method of teaching language specifically in the receptive skills which would disclose how a person understands through reading and listening and in the expressive skills which would manifest how a person uses language through speaking and writing. Parents, caregivers and SPED teachers who are the respondents of the study would then assess if the use of the illustrated PGEE would lead to the improvement of the language ability of children with special needs. It would evaluate if such endeavor would show that the expected enhancement is evident. This would then be a proof in concluding that the said PGEE would be more effective when illustrated as shown in Fig. 1 [6].

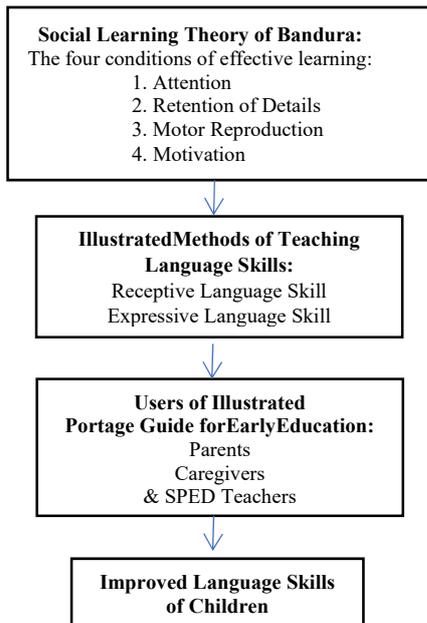


Fig. 1 Theoretical/Conceptual Framework

II. METHODS

A. Participants, Materials and Procedure of the Study

Respondents of the study consisted of selected non-professional parents, professional parents, caregivers, and SPED teachers.

The study used the illustrated language activities and researcher-made questionnaire as the research instrument. It also used focus group discussion and individual interviews to gather data through the use of survey questionnaire as the means of assessing factors such as the appropriateness of the illustrations, applicability, time efficiency and aesthetics. The study sought to answer the following questions: 1. What is the socio-demographic profile of the SPED teachers, parents of children with special needs and caregivers in terms of level of educational attainment, profession, and participation in SPED seminars and training? 2. What is the extent of the appropriateness, applicability, time efficiency and aesthetics of the illustrated language activities? 3. Is there a significant difference in the rating of the respondents when grouped according to level of educational attainment, occupation and participation in SPED seminars and training as to the extent of appropriateness, applicability, time efficiency, and aesthetics?

Responses to Question 1 were tabulated and analyzed using the frequency and percentage, while for Question 2, the weighted mean was calculated based on the five-point Likert-type scale. At the same time, with regard to Question 3, ANOVA was used to established the significant difference in the extent of appropriateness, applicability, time efficiency and aesthetics of the illustrated language activities in relation to the respondents educational attainment, profession, and participation in SPED training and seminars.

III. RESULTS

The following are the results of the study:

Socio-demographic profile of respondents. The educational attainment of the respondents appears that most are college graduate and college level. There are also least respondents that are elementary/high school graduate/level. Those in college graduate/level got the most number of respondents in terms of education and the least were elementary graduate/level, while majority of the respondents are caregivers and SPED teachers. Few are nonprofessional parents of the total population as shown in Table I.

Early intervention seminars/training sessions attended by respondents. As shown in Table I, most of the respondents have not attended seminars/training sessions, 14 have undergone only a single seminar/training, while very few attended two and three or more seminars/training sessions, respectively.

TABLE I
SOCIO-DEMOGRAPHIC PROFILE OF RESPONDENTS ACCORDING TO LEVEL OF EDUCATION AND PARTICIPATION IN SPED TRAINING AND SEMINARS

Education	Frequency	Percent
MA Graduate/MA Unit Earners	22	29
University Graduate/College Level	40	53
Elementary Graduate /High School Graduate	14	18
TOTAL	76	100
Profession		
Non-Professional Parent	14	18
Professional Parent	16	21
Caregiver	23	30
SPED Teachers	23	30
TOTAL	76	100
Seminars/Trainings		
No seminars/training sessions	52	68
One seminar/training session	14	18
Two seminars/training sessions	5	7
Three or more seminars/training sessions	5	7
TOTAL	76	100

IV. DISCUSSION

On the extent of applicability and time efficiency of the drawn pictures from the card file listing of the PGEE are rated very good; since it is the highest descriptive rating, it indicates that the item being rated was well suited to its purpose of portraying the message as depicted in the PGEE card. Since the illustration is graded from simple to a more complicated one, this means that they can be used or applied to teaching both a normal and special needs child. It means also that the

illustration can be easily adapted, imitated and understood. In regard to the extent of appropriateness and aesthetics of the illustration of the language activities, the respondents rated the items as good. This means that the item being rated by the respondents has suited in acceptable level on its purpose in portraying the message as depicted in the PGEE card, as shown in Table II. On the other hand, in the significant difference in the extent of appropriateness, applicability, time efficiency and aesthetic of the illustrated language activities in relation to the level of education of the respondents shows that the respondents in elementary level gave higher ratings on the illustrated activities. As comments gathered by the researcher, the respondents find the illustrated activities easier to understand and utilize than a written text, as shown in Table III.

The ANOVA on the differences of the respondents answer according to their level of education is greater than the 0.05 level of significance. It means that there is no significant difference in the extent of appropriateness, applicability, and time efficiency with regards to their level of education. While,

in terms of aesthetics of the illustration is less than the 0.05 level of significance, hence, there is significant difference in the respondents assessment in regard to the beauty of the drawings.

Based on the findings derived from this study, the following conclusions are deduced: 1. The respondents involved in the study were chosen in order to have a fair representation of the different users such as the non-professional parents, professionals, caregivers and SPED teachers. The assessment made by them can be considered valid since they are the expected end-users of these materials. Their comments and suggestions subsequently led to the improvement of the illustrations; 2. The respondents level of education, profession and frequency in attending seminars and workshops in early intervention did not significantly differentiate their assessment on the illustrated language activities; thus, regardless of their educational level or the number of training on early intervention they attended or not, their assessment regarding the extent of the appropriateness, applicability, time efficiency and aesthetics did not really vary.

TABLE II
RESPONDENTS' RATING ON THE EXTENT OF APPROPRIATENESS, APPLICABILITY, TIME EFFICIENCY AND AESTHETICS OF THE ILLUSTRATED LANGUAGE ACTIVITIES

Indicators	Weighted Mean	Descriptive Equivalent	Interpretation
1. Appropriateness	3.4759	Good	The item being rated is acceptably suit for its purpose.
2. Applicability	3.5003	Very Good	The item being rated is suited well on its purpose.
3. Time Efficiency	3.5263	Very Good	The item being rated is suited well on its purpose.
4. Aesthetics	3.4141	Good	The item being rated is acceptably suit for its purpose.
Overall Rating	3.4800	Good	The item being rated is acceptably suit for its purpose.

TABLE III
DIFFERENCES OF THE RESPONDENTS ASSESSMENT ACCORDING TO THE LEVEL OF EDUCATION, PROFESSION, AND SEMINARS/TRAINING SESSIONS ATTENDED

Overall Rating of the Respondents		Sum of Squares	Df	Mean Square	F	Sig.	
Level of Education	Between Groups	0.401	2	0.201	2.168	0.122	not significant
	Within Groups	6.753	73	0.093			
	Total	7.154	75				
Profession	Between Groups	1.330	3	0.443	5.478	0.002	significant
	Within Groups	5.825	72	0.081			
	Total	7.154	75				
Seminars/Trainings Attended	Between Groups	0.161	3	0.054	0.552	0.649	not significant
	Within Groups	6.994	72	0.097			

Based on the findings and conclusions of the study, the following recommendations are presented: 1. Special education teachers could have better techniques based on the applied principles of PGEE in providing appropriate interventions for exceptional children, since they are one of the highest number of the respondents. Moreover, the respondents can also be updated with different intervention programs in assessing children with disabilities in order to prevent from possible complications. Furthermore, respondents can have more chances to enhance their knowledge and likewise help their students learn with ease especially those with language difficulties; 2. Parents are

considered as experts regarding their children's behavior and level of skill development. They are among the decision makers, and the use of illustrated activities will be of big help in determining the developmental delays in the early stage of the child. The conceptualized system of this program in drawing pictures of language activities may help enable non-professionals who have difficulties in understanding written information.

APPENDIX

A. Proposed and Final Illustration

Language 45

Ages 2-3

Uses regular plural forms (book/books)

Activity Suggestions:



Fig. 2 The proposed and final illustration of written card file checklist number 45 of the language activities, the researcher draws the written text with three choices and asks the respondents if they understand clearly the given pictures; they responded that it is clear and show no revisions since they clearly understood the drawing pictures

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Mobile Learning and Student Engagement in English Language Teaching: The Case of First-Year Undergraduate Students at Ecole Normal Supérieur, Algeria

I. Tiahi

Keywords—Algerian context, mobile learning, social constructivism, student engagement.

Abstract—The aim of the current paper is to explore educational practices in contemporary Algeria. Researches explain such practices bear traditional approach and overlooks modern teaching methods such as: mobile learning. That is why the research output of examining student engagement in respect of mobile learning was obtained from the following objectives.

1. To evaluate current practice of English Language Teaching within Algerian Higher Education Institutions.
2. To explore how social constructivism theory and m-learning help students' engagement in the classroom.
3. To explore the feasibility and acceptability of m-learning amongst institutional leaders.

The methodology underpins a case study and action research. For the case study, researcher engaged with 6 teachers, 4 institutional leaders and 30 students subjected for semi-structured interviews and classroom observations to explore the current teaching methods for English as a foreign language. For the action research, the researcher applied an intervention course to investigate the possibility and implications for future implementation of mobile learning in Higher Education Institutions. The results were deployed using thematic analysis. The research outcome showed that disengagement of students in English language learning has many aspects.

As seen from the interviews from the teachers, researcher found that they do not have enough resources except for using ppt for some teacher. According to them, teaching method they are using is mostly communicative and competency-based approach. Teachers informed that students are disengaged because they have psychological barriers.

In classroom setting the students are conscious about social approval from the peer and thus if they are to face negative reinforcement which would damage their image, it is seen as preventive mechanism to be scared of committing mistakes. This was also very reflective in this finding. Lot of other arguments can be given for this claim however in Algerian setting it is usual practice where teacher do not provide positive reinforcement which is open up student for possible learning. Thus, in order to overcome such psychological barrier, proper measures can be taken.

On a conclusive remark, it is evident that teachers, students and institutional leaders provided positive feedback for using Mobile learning. It is not only motivating but also engaging in learning processes. Apps such as Kahoot, Padlet and Slido were well received and thus can be taken further to examine its higher impact in Algerian context. Thus, in future, it will be important to implement m-learning effectively in higher education to transform the current traditional practices into modern, innovative and active learning. Persuasion for this change for stakeholder may be challenging however its long-term benefits can be reflective from the current research paper.

Calibrating Behaviours in the Manners of Scientists: Whither Social Scientists?

Samuel S. Fasanmi

Abstract—The application of computer software to analyse data in Social Sciences is one of the best research developments in this generation. In Social Sciences, there are arrays of statistical software such as Epi-info, Stata, R, R studio, mPlus, SAS, OpenStat, SPSS, etc that researchers can conveniently use in analyzing data for research and academic purposes. However, the process of converting the attitudinal and behavioural responses to number is often cumbersome, and in some cases, gives room for loopholes which exposes calibration of variables to errors. Variables occur in different shapes and forms, such as: nominal, ordinal, interval, and ratio. However, it is to be noted that the knowledge of the usage of statistical packages in measuring variables and consequently analyzing them is not enough without sufficient knowledge of basic assumptions of relevant statistical methods. This study is uniquely packaged to meet the needs of students, teachers, and professionals, especially in Social Sciences who often use questionnaire and other rated instruments in measuring behaviours and mental processes. The study was hinged on the rudiments of Item Response theory. It was recommended that students, teachers and other researchers in Social Sciences should use appropriate tools in gauging the variables in their research forays in order to achieve accuracy in their predictions.

Keywords—Measurement , Responses, Statistical Packages, Variables

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A Rasch Examination of Model Fit and Differential Item Functioning between Paper-Pencil and Computerized Tests

Maisaa Alahmadi

Abstract—Students in two sections of a psychology research methods class at Taibah University in Saudi Arabia, taught by the same professor, were administered an identical items on the midterm exam. One section received a paper-pencil format of the exam and the other section took the exam via computer. Results from Rasch analyses indicated that three items may need to be revisited and that nine items demonstrated differential item functioning between the two formats of the exam. The significance and implications of the study are discussed.

Keywords—computerized tests, differential item functioning, psychometrics, Rasch analysis

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Unpublished Arched Sistra in Grand Egyptian Museum

Tamer Elnwagy, Mohamoud Ali, Refat Aglan

Abstract—Introduction: The sistra in ancient Egypt were a musical tool with symbolic roles. It evolved from the ritual of shaking the papyrus. We find it a dual-role tool, which is sometimes considered a worldly entertainment tool, sometimes as a religious and ideological tool that expels evil spirits from the place where they play. The ancient Egyptian believed that the sound caused by the play helped to resurrect, and restore the life of the deceased in the afterlife. He also believes that the sistra have the magical ability to heal and supply the body with health. In addition to other scenes in several tombs, these scenes, and accompanying texts, refer to the role of the sistra in the healing and treatment of diseases.

In ancient Egypt, sistra were divided into five types: the primitive sistrum, the thorn-shaped sistrum, the naos sistrum, the frame sistrum, and the arched sistrum which played an important role in life and religion in ancient Egypt.

Methodology: This paper deals with the study and analysis Unpublished arched sistra, in Grand Egyptian Museum, where the publication begins with a descriptive study that shows the basic data of the sistra, in terms of the material, the dimensions, the place of origin, the current place, the period, and describe the component parts of the sistra. Then an analytical study of all the inscriptions, in terms of transliteration, translation and analysis of the texts and scenes, and all its inscriptions.

Conclusion: The arched Sistra used in middle kingdom and not new kingdom, and decorated with many symbols to give them more sanctity and prestige.

The study found that the arched upper part of the arched Sistrum represents the sky and the middle part represents the land with its north and south sides.

Sistra Players were a high-ranking profession in the Egyptian society, raising the issue of women Egyptian.

The arched Sistrum is a testament to skill of the Egyptian artist. He succeeded in adapting the bronze and its formation. It used in its manufacture the method of casting and the lost wax method and the sculpture in the case of the wooden connection.

The arched Sistrum achieved the concept of system and integration by combining protection gods and combining North and South symbol.

The arched Sistrum is used as a magic tool linking the world of the living and the world of the dead, and connects the world of humans and the world of gods, so we find that it played many roles in the life of the ancient Egypt.

Keywords—Arched Sistrum, Hathor, Playing Sistra, Sistrum.

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A Comparative Archaeological Study of Stelae of King Thutmose IV from Giza

Mahmoud Ali, Rezk Diab, Ayman Aboelkassem

Abstract—Introduction: The era of Thutmose IV represents a transitional period between the art of the Thutmoseid art and the Amarna period, so we intend to declare that it serves as the cradle to Amarna art. The study will examine the stelae of king Thutmose IV that were discovered near Giza by an Egyptian mission. These stelae have been transferred to the Conservation Center of the Grand Egyptian Museum (GEM) to be conserved and made ready to be displayed at the new museum (the project of the century). We focus upon three stelae (GEM numbers 45863, 45864, 45865), chosen because they relate to different years of the king's reign. These stelae were all made of limestone. The first one has a round top and is decorated with a colored scene showing the king Thutmose IV offering to the goddess Hathor. The second is decorated with king Thutmose IV with the red crown, between the goddess Hathor and the royal wife, Nefertari. The third shows the king offering NW vessels and bread to the god Seker. Each stela is divided into registers containing a description and decorated with scenes of the king presenting offerings to gods.

Methodology: The proposed study will focus on the development which happened sequentially according to differences that occur in each stela. We will use comparative research to determine the workshops of these stelae, whether one or several and what are the distinguishing features of each one. We will examine what innovations the artisans added to the royal art. The description and the texts will be translated with linguistic comments. This research focuses on the text analyses and the technology. Paleographic information found on these objects includes the names and titles of the king.

Conclusion: This research focuses on the text analyses and the technology. The study aims to create a manual which may help in dating the art work of Thutmose IV. This research will be beneficial and useful for the heritage and ancient civilizations particularly when we talk about opening museums like the Grand Egyptian museum which will exhibit a collection of stelae. Indeed this kind of study will open a new destination in order to know how to identify these collections and how to exhibit them commensurate with the nature of the ancient Egyptian history and heritage.

Keywords—Archaeological study, Giza, New kingdom, stelae, Royal art.

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The Evaluation of the Performance of CaCO₃/Polymer Nano-Composites for the Preservation of Historic Limestone Monuments

Mohammed Badereldien, Rezk Diab, Mohamoud Ali, Ayman Aboelkassem

Abstract—The stone surfaces of historical architectural heritage in Egypt are under threat from of various environmental factors such as temperature fluctuation, humidity, pollution, and microbes. Due to these factors the facades of buildings are deteriorating deformation and disfiguration of external decoration and the formation of black accretion also often from the stone works. The aim of this study is to evaluate the effectiveness of CaCO₃ nano-particles as consolidation and protection material for calcareous stone monuments. Selected tests were carried out in order to estimate the superficial consolidating and protective effect of the treatment. When applied the nano-particles dispersed in the acrylic copolymer; poly ethylmethacrylate (EMA)/methylacrylate (MA) (70/30, respectively) (EMA)/methylacrylate (MA) (70/30, respectively). The synthesis process of CaCO₃ nanoparticles/polymer nano-composite was prepared using in situ emulsion polymerization system. The consolidation and protection were characterized by TEM, while the penetration depth, re-aggregating effects of the deposited phase, and the surface morphology before and after treatment were examined by SEM. Improvement of the stones' mechanical properties were evaluated by compressive strength tests. Changes in water-interaction properties were evaluated by water absorption capillarity measurements, and colorimetric measurements were used to evaluate the optical appearance. Together the results appear to demonstrate that CaCO₃ /polymer nano-composite is an efficient material for the consolidation of limestone architecture and monuments. As compared with samples treated with pure acrylic copolymer without Calcium carbonate nano-particles, for example, CaCO₃ nano-particles are completely compatible, strengthening limestone against thermal aging and improving its mechanical properties.

Keywords—Calcium Carbonate nanoparticles, consolidation, Nano-composites, Calcareous stone, TEM, Colorimetric measurements, compressive strength.

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Archaeological Study on Wooden Coffin Dating Back to Ptolemaic Period

Basem Magdy, Badr Saad

Abstract—A wooden Coffin dating back to Ptolemaic period has been transferred from El Ashmunein store room (Hermopolis Magna) to the Grand Egyptian Museum GEM32598 this Coffin represents human figure and its polychrome Coffin. On this Coffin there is decoration which continues Isis, Four sons of Horus and Anubis. There is teat will be interpreted in this paper. This anthropoid contains mummy. All the context of this Ptolemaic period the text analyses and the technology will be discussed in details in this paper.

Keywords— arts, civilization, decorations, historic

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Historiography of the Algerian Independence War of from 1989 to Present

Ahmed Metchat, Ahmed Derrouazin

Abstract—This work consists of and proposes to study these historiographical changes for the duty of memory based on a bibliography of historians, authors, writers concerned with the right to know who published in Algeria. The history of the Algerian war that began on November 1, 1954 as well as its multiple stakes. The nature of the pre-1989 Algerian political system for writing the history of the Algerian war and according to some historians and political scientists is subject or defined by what is called a unique memory where the Algerian historian was bound in his writings to make allegiance to the power giving a "nationalist" aspect, everything was controlled or censored. The constitution of 1989 breaks with the old system; political changes have occurred and liberalization in all fields have allowed Algerians (historians, authors, writers) many of whom have returned from exile to write and publish in Algeria even the history of the Algerian war who has had a lot of controversy.

Keywords—History, historian, authors, writers, colonialism, Algeria war.

I. INTRODUCTION.

The inventory of books through my research first in Algeria then abroad reveals that few foreigners are interested in writing the history of the Algerian war and that rare of them have examined the question and the works of the Harkis (Algerian auxiliaries who collaborated with the French army) and their children are excluded from this study. It should be taken into consideration that for the period from 1989 to the present day the history of the Algerian war is no longer a taboo subject, there are still some historians who still write under convinced influence as the late Abu El Kacem Saadallah as an example but without much importance.

With the advent of Islamist terrorism (early 90s), authors and historians were forced to leave the country for fear of reprisals and especially those of French expression to write and publish. Abroad essentially based on terrorism and its causes but which have a direct relationship with the consequences of the nature of the totalitarian power that prevailed from 1962 to 1989; these facts happened during this period have similarities with the historical events of the Algerian war and are often spoken of "repeating history" (Rachid Boudjedra, Ait Ahmed, Mahfoud Zaater).

This bibliographical study allows us to break with the unanimous narrative of the ex-party populist-type National Populist Front (Front de Liberation Nationale), and historians rely on archives of which they finally have access, which gives them free rein to their writings historical facts as they actually objectively and realistically about the French colonization of Algeria from 1830 to 1962 [4], some of which will even criticize you to criticize the FLN Diktat

from 1962 to 1989 (Mohammed Harbi) (nb: Mohammed Harbi is one of the historic members of the Algerian Revolution, he was part of the power of the clan Ben Bella from 1962 to 1965, imprisoned and then forced into exile after Boumedienne's state coup : he became a Professor of History and wrote many books on the Algerian war based on his own archives and others). The choice deals partly with this historiography, a self-imposed choice as to the works to be studied books and other sources (testimonies, journals, newspapers, oral and written sources) identified and analyzed were published from 1990, written by Algerian authors and historians in Algeria despite some difficulties for them and although the engine of their census was not easy I relied on the Internet and moved to conduct research in all Algerian libraries, universities, testimonials etc ... Also note that the term "war of Algeria" was only recognized by France in 1999, before one spoke about "Insurrection, of rebellion by the French colonialist authorities [3].

Many writers try by their writings to enlighten some unspoken concerning for example the "suspicious" death of many military leaders or political leaders, which has often been a source of conflict within the national movement. Maameri Khalfa speaks in his published work in Rahma editions in Algiers in 1992 of the death of Abane Ramdane (one of the political leaders of the Revolution) [6] too long obscured or even hidden and in fact was murdered by his own colleagues and fellow soldiers at the Moroccan border on December 27, 1957. At independence this death was "legitimized" by considering it as "dead on the field of honor" he specifies that the most fierce opponent was Ben Bella who, on April 26, 1958, in a letter to Krim Belkacem [4] (another influential political leader) states that he supports and his death . A point common to all these publications: modest testimonies, simple contributions to the elaboration of the writing of History, but they express the will to transmit through it to the generations what really happened, Bessaoud Mohand published in 1991 "Happy martyrs who did not see anything" where he speaks of Colonel Amirouche (a very influential and well-known military leader) and his death in similar circumstances [2], and which binds it to the different oppositions between the political leaders of the outside world and those of the interior. The gap continues between the two structures, because no coordination was put in place: namely the logistics for the internal combatants (weapons, drugs, ammunition and others ...) as stipulated in the regulations and directives of the Liberation Movement [8].

The majority of the editions were biographies. Originally often published outside Algeria (abroad) they were published and reissued in Algeria from 1989 (the year of liberalization) by publishing houses Algerian. Some very famous people of the Movement who have been exiled and forgotten for more than thirty years have been such as

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Ferhat Abbas President of the GPRA (Provisional Government of the Algerian Republic created in 1958) and, following his opposition with Ben Bella (first president of independent Algeria) to independence in 1962 [9] and Boumediene on the political system of the post-war period (the Sovietization in Ben Bella by Ben Bella), he was imprisoned then removed from the political life: he ends his days in Setif his hometown (city located in the East of Algeria) working as a pharmacist in his university education. Another work late made available to the Algerian public: Krim Belkacem "the lion of the jebels" (djebel arabic word which designates the mountain) of Amar Hamdani published in 1993 in Algeria twenty years later; the author traces the life of a GPRA negotiator, who died not during the war but in Germany, eliminated by a barbouze on the order of Boumediene for to oppose the policy of the latter, who replaced Ben Bella after a coup in 1965. A reissue of Bendaoud Mohand "Happy Martyrs who have not seen anything", if we trust the book, the truth is present on the circumstances of the death of Amirouche and Abane Ramdanet and others ... and also the various plots that have arose during the war for the reasons we know (settling of accounts, the race for leader-ship, embezzlement for the benefit of one wilaya to the detriment of the other (the wilaya in Arabic means a region or a department). Azzedine Guerfi and Aissa Khaled publish a book on "Mohammed Boudiaf the Man of Ruptures" (one of the historic leaders of the FLN assassinated in 1992 in Annaba (Algeria), a necessary biography of an unknown man of the younger generations. Attempts at syntheses tracing the main stages of the Revolution were evoked in a very detailed manner The most remarkable is that of Mahfoud Kaddache "And Algeria is liberated" Casbah (2003) and Messaoud Mohand "War of Algeria, chronology and commentaries ", a kind of war tales commented on and accompanied by photos and documents and excerpts from books. The theme most often dealt with is that of the National Movement through the stages of the Liberation War, but it is also question of its origins with the creation of the ENA (North African Star) first movement created in 1926, to which we can quote the famous works of Mahfoud Kaddache: "History of Algerian Nationalism" (1991) which goes from the birth of the Movement to 1954. Mohamed Illoul Tayeb and Attoua Ali have published a book "The group Emir Khaled of Belcourt" (Belcourt is neighborhood located in the center of Algiers), a link of the ADM (Algerian Muslim Scouts) on the lesscouts of PPA-MTLD trend (parties created between the two wars) [3]. This group was organized for political training young people from Belcourt (patriotic formation) of the "Battle of Algiers" from (1957) to early 1960; The fierce repression of May 8, 1945 by French militiamen and the French army seems to have been decisive in the awareness [1] of many Algerians, and in their engagement in nationalist movements. Some books deal with this day (May 8, 1945), especially that of Thabet Redouane, "De Gaul and the colonial empire "(1995), which had already published a book in the same subject in 1985. Boucif Mekhaled, in his book "Chronicles of a massacre" supported by the association "In the name of the memory" of Mehdi Mellaoui studies the same theme. The impartiality of the author is reflected in the analysis of the origins of the event and places it in a broader context.

The event, originally intended to be peaceful and not political, took on a character policy. Protesters waved Algerian flags and placards on which was written: "free Messali Hadj". The police tried to confiscate them, and then the demonstration degenerated very quickly. The author quotes Europeans such as Roger Esplas, reports a blind crackdown by the army and the militia. [5] Europeans were also attacked and killed, these acts were condemned by Ferhat Abbas and provoked the indignation of some nationalist militants. Witnesses denounce the massacre of Europeans friends and respected Algerians. The day of November 1, 1954 (beginning of the war of independence) is studied in the books dealing with Nationalism Algerian: it is one of the highlights, it is also evoked on syntheses of the war of Liberation. This is the theme of Mohammed Djeraba "The proclamation of November 1st: a call to arms, a message of peace" (2000) The Battle of Algiers, which took place in 1956, was the subject of several works written by the actors of the event; so Yacef Saadi, chief of the ZAA (Autonomous Zone of Algiers), published for the fifth time "the Battle of Algiers" in Algeria (Editions Casbah) and abroad (France, Editions Publi-Sud). The repression of October 17, 1961 was the subject of only one book by the Algerian author Barkat Sidi Mohammed: "October 17, 1961" (1999) [3]. That day dozens of Algerians began to manifest a discriminatory measure: "the introduction of a curfew". The French police whose chief was none other than Maurice Papon prefect of police of Paris who carried out hundreds of arrests and repressed demonstrations; many Algerians were killed ".

II.CONCLUSION

Since 1989, liberalization and multiparty scale in Algeria has had a favorable impact on historiography Algerian war on independence. And writing the history of this long-considered war (since independence) by historians as a necessity to clarify all its aspects to Algerian (and foreign) readers who are interested in this tragic period that has left hundreds of thousands dead and a lot of disappointment on both sides. Indeed the works offered to the Algerian public are more varied, there are many testimonies, as well as the themes they deal with in the war of liberation.

The period before 1989 has been illustrated by censored, controlled and even monitored historiography by the power in place, and many historical facts were forbidden to appear and published and historians Algerians were forced to follow this course of action willy-nilly about his writing (history). The liberalization promulgated in 1989 had allowed some exile historians to be amnestied (like Mohammed Harbi) formerly proscribed, imprisoned for offense of opinion, opposition to the regime. The events of October 1989 that shook the system appear as a founding date for writing of another story, and the end of the populist-type unanimous narrative chanted by the FLN (ruling party) ... for the right to know, the duty of memory and truth.

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Evolving Paradigm of Right to Development in International Human Rights Law and Its Transformation into the National Legal System: Challenges and Responses in Pakistan

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Abstract—No state can be progressive and prosperous in which a large number of people is deprived of their basic economic rights and freedoms. In the contemporary world of globalization, the right to development has gained a momentum force in the domain of International Development Law (IDL) and has integrated into the National Legal System (NLS) of the major developed states. The international experts on human rights argued that the right to development (RTD) is called a third-generation human right which tends to enhance the welfare and prosperity of individuals, and thus, it is a right to a process whose outcomes are human rights despite the controversy on the implications of RTD. In the Pakistan legal system, the RTD has not been expressly stated in the constitution of the Islamic Republic of Pakistan, 1973. However, there are some implied constitutional provisions which reflect the concept of RTD. The jurisprudence on RTD is still an evolving paradigm in the contextual perspective of Pakistan, and the superior court of diverse jurisdiction acts as a catalyst regarding the protection and enforcement of RTD in the interest of the public at large. However, the case law explores the positive inclination of the courts in Pakistan on RTD be incorporated as an express provision in the chapters of fundamental rights; in this scenario, the high court's of Pakistan under Article 199 and the supreme court of Pakistan under Article 184(3) have exercised jurisdiction on the enforcement of RTD. This paper inter-alia examines the national dimensions of RTD from the standpoint of state practice in Pakistan and it analyzes the experience of judiciary in the protection and enforcement of RTD. Moreover, the paper highlights the social and cultural challenges to Pakistan in the implementation of RTD and possible solution to improve the conditions of human rights in Pakistan. This paper will also highlight the steps taken by Pakistan regarding the awareness, incorporation, and propagation of RTD at the national level.

Keywords—Globalization, Pakistan, RTD, third-generation right.

I. INTRODUCTION

RIGHT to development (RTD) has a unique place among the other human rights. It is not a sole right but a set of rights that spans over a wide class of economic, political, social and cultural rights, including both individual and collective rights of people [1]. In international law, it is now a settled principle among all the contracting states that human rights are the integral part of the NLS of each state because “human rights are indivisible, interdependent, interrelated and of equal significance for human existence and dignity” at the

national and global level. Therefore, states and international institutions are responsible for the violations and enforcement of human rights. The convergence and concept of “human rights and human development” emerged during the 20th century. At the conceptual level it may be established that development and human rights are virtually the same theme and imperatively unimpeachable. Therefore, the idea and recognition about “human rights” without development of the human being is just theory and not in practice in a globalized world. The United Nations Development Program (UNDP) explains the concept of human development as being about creating an environment wherein people can improve their living standards, develop their full potential and lead productive lives; according to their interests and needs [1]. This paper explores the interrelation between human development and “human rights”. In this perspective, various approaches have been adopted in order to establish relationship between “human rights” and human development. These approaches are an “holistic approach, the human rights based approach, the social justice approach, the capabilities approach, the RTD approach the responsibilities approach and the human rights education”. This paper concludes with a set of challenges for the recognition and enforcement of RTD in the globalized world and with special reference to Pakistan which is of special relevance to human rights. Therefore, the RTD is a debatable issue and still remains a test case, despite the 30 years existence of the “United Nations Declaration on the Right to Development (UNDRTD)” still no unanimous consensus has been reached between the North and South on the realization of the “RTD”. The eminent expert on RTD has explored that:

“...We consider the scope for revitalizing the RTD through existing provisions of international law, rather than by creating additional normative frameworks... We pursue the question of how existing provisions of the international law could be mobilized more explicitly for the sake of revitalizing the RTD and more in particular for its actual realization in the future. Three concrete means of implementation provide, at least, for the positive change, international cooperation for development, accountability and monitoring mechanism and regional and inter-regional instruments and procedures [2]”. There is an emergent need to change the set-mind of the states and need to create a harmonized

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mechanism between the developed and developing countries on the recognition and enforcement of RTD. On the concept of RTD it was observed that “it is the right of individuals, groups and peoples to participate in contributing to and enjoyment of continuous economic, social, cultural and political development, in which all human rights and fundamental freedoms could be fully realized. It includes the right to effective participation in all aspects of development and at all stages of the decision-making process, the right to equal opportunity and access to resources, the right to fair distribution of the benefits of development, the right to respect for civil, political, economic, social and cultural rights and the right to an international environment in which all these rights could be fully realized. The human being is a central subject, rather than a mere object of the RTD”.

II. LITERATURE REVIEW

In Article 22 of the “African Charter on Human and Peoples Rights”, the RTD was first distinguished as complete individual and collective right. The year of its origin was 1981. This article states that: “All peoples shall have the right to their economic, social and cultural development with due regard to their freedom and identity and in the equal enjoyment of the common heritage of mankind.” The “RTD” was therefore declared by the UN in the “Declaration on the Right to Development,” it was approved by the UNGA resolution 41/128. RTD is a collective right of people as compared to an individual’s right, and was approved by a convention in 1993. RTD is now built-in in the directions of numerous United Nation’s associations and organizations. The preamble of the RTD declaration provides “development is a complete economic, social, cultural and political process, which aims at the constant improvement of the welfare of the entire population and of all individuals on the basis of their active, free and meaningful participation in development and in the fair distribution of benefits resulting therefrom”. The origin of RTD can also be derived from the UDHR, UN Charter’s provisions and also from important covenants of Human Rights. UDHR, 1948 consists of numerous essentials that developed as fundamental principles for the global understanding of community about the RTD. It gives significance to the rise of societal prosperity and to improve the living standards of human life. It also includes the individual’s right towards society and analyzes the global framework in which the civil liberties and rights are enumerated in international human rights treaties. Another resolution passed by the UNGA stated that “a balanced and integrated economic and social development would contribute towards the promotion and maintenance of peace and security, social progress and better standards of living, and the observance and respect for human rights and fundamental freedoms.” An international conference on human rights was organized by Iran, in which this right was accepted in these words: “that the enjoyment of economic and social rights is inherently linked with any meaningful and profound interconnection between the realization of human rights and

economic development”. It is acknowledged “the communal responsibility of the global community to guarantee the achievement of the least standard of living necessary for the satisfaction of human rights and obligatory liberties for all persons throughout the world.” Moreover, in 1969 another “Declaration on Social Progress and Development” stated its recognition of this cogent right in these words: “social progress and development shall aim at the continuous raising of the material and spiritual standards of living of all members of society, with human dignity and in compliance with human rights and fundamental freedoms”. The UNCHR also decided to pay more attention to acknowledgement of “RTD”; therefore, in this connection, the reflection of the RTD can be seen in the “United Nations Declaration on the Right to Development” and “Charter of Economic Rights and Duties of States (CERDS)”. In addition to above references, other important declarations were also acknowledged i.e., the democratic respect for “human rights and liberties” of individuals at the social and international level. The convention on RTD is a soft law. The soft law refers to those international documents which have no binding effect on nations. Therefore, it is said that the RTD will not be operative until and unless the declaration is shifted into the hard law alike other human rights instruments such as International Covenant on Civil and Political Rights (ICCPR), International Covenant on Economic, Social and Cultural Rights (ICESR) and the Convention on the Elimination of all Forms of Discrimination Against Women (CEDAW) etc., which are binding in nature and are accountable for the recognition and enforcement of “human rights”. In the case of non compliance of these human rights, countries have to face blaming and shaming. The definition and content of RTD are still in controversy. Therefore, there is a dire need to build a consensus on the definition and the contents of RTD among the international community, otherwise, its transformation into NLS will remain a debate. In this connection, the “African Charter on Human and Peoples' Rights” (also known as the Banjul Charter) may be considered for future strategy, wherein Article 22, RTD has been incorporated and the regional court has been constituted for the enforcement of the human right.

III. THE RELEVANCE OF HUMAN RIGHTS VIS-À-VIS HUMAN DEVELOPMENT

The RTD is an inalienable human right and is the most important right as compared to other “human rights”. Political, social, cultural and economic factors are strongly connected to human rights, and ultimately, all of these aspects lead towards human development. However, there is a need to attain the attention of international institutions upon these aspects. For the recognition of RTD, different approaches have been adopted which reflect the various dimensions of RTD and their relevance with other human rights such as health, education, social justice etc.

A. *The Holistic Approach*

This approach examines the human rights framework as whole system and does not emphasize on its individual

components. Human rights function in a systematic way because the rights of humans are so interconnected that progress on some rights is difficult without progress in the system as a whole. Therefore, the holistic approach does not favor the categorization of human rights. In this way, there are various instruments which support the holistic approach. UDHR Article 28 stipulates that every human being has a RTD, liberty and life at the social and international level. Article 6, paragraph 2 of the Declaration on the Right to Development (1986) emphasizes this approach as “All human rights and fundamental freedoms are indivisible and interdependent, equal attention and urgent consideration should be given to the implementation, promotion and protection of civil, political, economic, social and cultural rights”. The Vienna Declaration and program Action (June 1993) in paragraph 5 states that “All human rights are universal, indivisible and interdependent and interrelated” [1]. Therefore, it is the core responsibility of the states to enforce the political, economic, social and cultural rights.

B. The Human Rights-Based Approach

This approach primarily focused on the relationship of human development with “human rights”. The eminent scholar Julia Hausermann expressed her views on this approach in these words: “Puts people first and promotes human centered development, recognizes the inherent dignity of every human being without distinction, recognizes and promote equality between women and men, promote equal opportunity and choices for all, promotes national and international system based on economic equity, equity in the public resources and social justice and promotes mutual respect between people”. Therefore, this approach elucidates that processes and policies of development should be prepared in accordance with international human rights policies. One of the major elements of the development process is “public participation”; this concept is gaining momentum nowadays in leaps and bounds. Therefore, the individual’s “participation” is a central theme in the realization of RTD and it seems to be incorporated into national development strategies. It is pertinent to mention here that, the international instruments such as ICCPR and ICESCR emphasized the role of “participation” in the development of RTD. The special rapporteur on human rights Manoucher Ganji [3] observed that:

“The basic principle governing the question of human rights in development should be the participation of the people in deciding their own style of individual and corporate life in general and in particular their participation in decision making in connection with development programmes, in the implementation of these programmes and in the benefits derived from them” [4].

For the recognition of the RTD, it is quite imperative that the consensus based and result oriented efforts should be initiated at all levels, because the idea of “participation” is of greater importance in the context of human rights law. Therefore, in this context, the requirement for “participation” is also a consistent theme in international instruments,

resolutions, declarations and planes of actions [5]. In a nutshell, this approach has a close nexus with the empowerment of vulnerable groups, participation of individuals in decision making, non discrimination and accountability, inter-alia, transparency in the context of good governance.

C. The Capabilities Approach

The Capabilities Approach introduced by Amartya Sen relates to health, and deals with enhanced choices such as capabilities. The concept also explains poverty as being contrary to capabilities and highlights its three basic ingredients being premature morality, undernourishment and illiteracy. This approach leads to a person’s choice to adhere any sort of life style, functioning and operation.

D. The RTD Approach

The RTD approach considers development as an independent and self-determined right. The recognition and enforcement of RTD was primarily introduced by consensus resolution of the UN General Assembly (GA) (1996-1997). The new international economic order (NIEO) has in respect of this right acknowledged the duties of the state to realize RTD based on different concepts like sovereign equality, mutual-interest and co-operation. The promulgation of right of development was mistakenly assumed to be the victory of poorer nations; however, RTD has always been used for the betterment of these nations particularly the developing ones and precisely includes all rights available to a human being for his growth and development.

E. The Social Justice Approach

The Social Justice approach emphasizes on eliminating social inequalities and enforcing social justice in society. It mainly focuses on important features of human development by recognizing the UDHR which affirmed that every citizen has a right to “a social and international order in which the rights and freedoms set-forth in this Declaration can be fully realized”. The relationship between human rights and social justice is an acceptable core criterion of fundamental justice in a society.

F. The Responsibilities Approach

International economic law explores that states have the right and duty to formulate appropriate national development policies that aim at the constant improvement of the well-being of society on the basis of their qualification and capacity. Therefore, the responsibility approach imposes obligations on states with respect to the recognition and enforcement of RTD in a holistic manner. In this context, Immanuel Kant, an eminent scholar, suggests that while considering human rights, it is not necessary to negate any perfect or imperfect obligation. But Amritya Sen, on the other hand, considered that without perfect obligation, human rights would be of no avail. This argument however has been endorsed by many international human documents i.e. article 2 of the ICESCR. The International Human Rights Convention has categorized the obligations of rights into two parts. The first is the perfect obligation which is enforced through the

courts and the second is an imperfect obligation that is based on general commitments to carry out definite policies and to attain certain results. In the social contractarian theory of human rights, one is obliged to contribute to society so that his rights may be protected. The third type of right is subject to limitations placed by international human rights instruments. According to this, human rights should not violate the laws of the state. Article 29(2) of the Universal Declaration, which states that: "In the exercise of his rights and freedoms, everyone shall be subject only to such limitations as are determined by law solely for the purpose of securing due recognition and respect for the rights and freedoms of others and of meeting the just requirements of morality, public order, and the general welfare in a democratic society." The ICCPR has provided some restrictions on six human rights such as movement, religion, public trials, opinion, assembly and association. Thus, there should be some legitimate limitations on human rights so that there should be no political manipulation in the name of human rights.

G. The Human Rights Education Approach

The goal of the Human Rights Education approach (ERE) is to ensure quality education to everyone that respects and promotes his right to dignity and optimum development [22]. The eminent scholar Clarence Dias argued about this approach and elucidated five key factors by which HRE participates to human development, which are: (i) "by helping monitor development activities", (ii) "by mobilizing support for victims' struggles for rehabilitation, redress, and justice", (iii) "by promoting understanding of the rationale for development", (iv) "by securing more effective participation in the development process", and (v) "by securing accountability for those responsible for misuse of public resources". HRE stresses on non-formal human rights education as a development methodologies and the preferred role of educators as facilitators. The human rights facilitators who continually strive to make learners aware of their rights and, in particular, their right to claim them. This can be achieved using participatory methods to create a basis for experience and learning. The HRE approach ranges from small group community task forces to the formation of human rights communities. The idea of human rights communities promoted by way of People's Decade for Human Rights Education (PDHRE) is based on the idea that individuals of a society deserve protection and enforcement of RTD in all disciplines of life.

IV. STRUCTURAL AND CONCEPTUAL CHALLENGES IN THE IMPLEMENTATION OF RTD:

There are number of structural and conceptual challenges in the methods of enforcement of RTD. One of the major challenges results from the lack of policy coherence on the part of states, and there is an emergent need to make the RTD an essential part of the Human rights law as fundamental right in the constitutional law of a state. It is worthwhile to note that there should be a comprehensive mechanism in the legal framework at the regional and international levels for the

enforcement of RTD. States remain divided on its transformation from the international system to domestic legal system. In the contemporary world of globalization, the reflection of RTD can be traced only in international conventions and there is still controversy and debate on enforcement of this right, and this picture reflects the parochial attitude of the states, which seems that they believe only in 'law in books and not in action'. In this regard, domestic policies of a state must accommodate human rights to eliminate social injustice at the national and international levels. Every state is facing the practical challenges for the realization of RTD. The primary challenges to realize RTD are (i) politicization: states are still divided in interpreting this right that whether it should be part of state obligations or the responsibility of international community, and there is a difference of opinions among states regarding its criteria and indicators for measuring progress towards implementing RTD, (ii) lack of engagement: there is a lack of engagement on the part of United Nations agencies and civil society in the promotion of RTD. (iii) Adverse global trends: there are several challenges in the realization of this right include corruption, the energy and climate crises, economic and financial crises etc. [21]. In order to implement RTD, the African Charter of Human and Peoples' Rights may be adopted as a model law wherein a comprehensive mechanism is provided to monitor this right in the contracting states and they are held accountable before the African Commission on Human and Peoples' Rights. In the reported case titled as *The Centre for Minority Rights Development (Kenya) and Minority Rights Group International vs. Kenya* [6]. In May 2009, the African Commission on Human and Peoples' Rights observed that the Government of Kenya guilty of violating the rights of the Endorois, an indigenous community, including their RTD, by evicting them from their lands to make way for a wildlife reserve. In another case, Sudan was held responsible on account of the violation of RTD with respect to attacks and forced displacement of the Darfurian people [7]. Another challenge is the resistance to address core international economic and trade issues. In this perspective, the World Trade Organization (WTO), IMF, World Bank, ACP, MERCOSUR, are relevant to the implementation of RTD. These financial organizations are not primarily focusing on RTD; their core purpose is to promote trade and investment that leads towards economic growth. However, human rights generally and RTD specifically require a different logic, and sometimes this growth may cause an adverse effect on the rights of some people and generate inequality and discrimination. Therefore, there is an emergent need to reconcile human rights with trade and international financial institutions in order to implement or promote the RTD. The above argued challenges may be referred as structural challenges, which reflect the future of RTD, however, the conceptual challenges depends upon the mindset of the policy makers. They argued that RTD, as provided in the declaration, is a vague term and its practical application is a very complicated phenomenon. The eminent scholar Peter Uvin expressed his critical views on the conceptual foundation of

RTD in these words:

“The Declaration on the Right to Development was, from its inception onward, politically very weak. It was politically engineered as bad law: vague, internally contradictory, duplicative of other already clearly codified rights and devoid of identifiable parties bearing clear obligations... it was so watered down that it became meaningless” and “has been devoid of any real impact” [8].

In the global scenario, there is still controversy regarding the exact definition and contents of RTD. Hence, in its present status, it seems difficult to transform this right into the constitutional domain and to make it a part of a NLS. Moreover, there is still no concrete methodology and criteria to enforce this right among the states.

V. THE REFLECTION OF RTD IN INTERNATIONAL ECONOMIC LAW (IECL)

The pre-world war period was an era of colonialism and imperialism. The most important aim of imperialism and colonialism was economic gain [9]. Therefore, in that period, the European Nations initiated trade measures for the sake of strategic raw materials like oil and markets in the developing world for the consumption of their finished products.

Consequently, prior to WW-II, the world was governed by colonial powers. At the end of WW-I, the League of Nations came into existence and introduced various policies in order to regulate world trade. However, no member of the league was prepared to stake its own national interests for the sake of the greater international interest; therefore, they violated the league covenant for the sake of their own national interests.

Developed nations were interested in the promotion of international trade. Therefore, the establishment of the League of Nations at the end of WW-I, included a number of financial and economic committees in the economic sphere consisting of experts from various countries. These committees introduced concrete reforms in the domain of international trade. However, no member country was ready to stake its own national interests for the sake of greater international interest. Some member countries violated the rules of League of Nations for the sake of their own narrow national interests, and started unfair trade practices. Hence, the League of Nations became weak and failed to overcome the economic challenges, which were aroused as consequences of World War I. Consequently, there was a worsening economic disorder and economic inequality between developed and developing nations. In that scenario, developing states felt that do not get a fair deal from the existing international economic order and demanded fair and even preferential treatment in the field of trade, investment, technology, finance and money, and participation in international decision making. In response to these demands, the UN General Assembly in 1974, in its special session, approved a declaration on the creation of the New International Economic Order (NIEO), which was based on sovereign equality, inter-dependence, common interest, equality and cooperation among all states irrespective of their economic and social system, In order to make it possible to

eliminate the widening gap between developed and developing countries and to ensure steadily accelerating economic and social development in peace and justice for present and future generations [9]. Subsequently, in 1974, the United Nations General Assembly approved the “Charter of Economic Rights and Duties of States” for the economic growth and development of developing countries and for the wider prosperity of the people, inter-alia “The encouragement of co-operation, on the basis of mutual advantage and equitable benefits for all peace-loving States which are willing to carry out the provisions of the present Charter, in the economic, trade, scientific and technical fields, regardless of political, economic or social systems” [10]. In 1986, the Declaration on RTD was introduced at the UN platform, which provided that “the right to development is the inalienable right of every human being without any discrimination”. In this declaration, the concept of development was incorporated with these words that:

“Development is a comprehensive economic, social, cultural and political process, which aims at the constant improvement of the well-being of the entire population and of all individuals on the basis of their active, free and meaningful participation in development and in the fair distribution of benefits resulting therefrom” [23].

In 1995, the World Trade Organization (WTO) was established. The fundamental agenda of this organization is the economic prosperity and development of states and their individuals. In this organization, special and differential treatment (S&DT) provisions were incorporated for the economic development of developing and least developed countries for their economic growth, participation and development in international trade. The preamble of this organization reflects that “economic endeavor should be conducted with a view to raising standards of living, ensuring full employment and a large and steadily growing volume of real income and effective demand, and expanding the production of and trade in goods and services, while allowing for the optimal use of the world’s resources in accordance with the objective of sustainable development, seeking both to protect and preserve the environment and to enhance the means for doing so in a manner consistent with their respective needs and concerns at different levels of economic development” [11]. It is worthwhile to note that the Bretton-wood institutions IMF and World Bank group envisage the provisions with respect to the economic development of states and individuals. The central theme of the IMF is “working to foster global monetary cooperation, secure financial stability, facilitate international trade, promote high employment and sustainable economic growth, and reduce poverty around the world” [12]. Whereas, the World Bank group “promotes long-term economic development and poverty reduction by providing technical and financial support to help countries reform certain sectors or implement specific projects—such as building schools and health centers, providing water and electricity, fighting disease, and protecting the environment” [13].

VI. CONSTITUTIONAL ANALYSIS AND IMPLICATIONS OF RTD IN PAKISTAN

While Pakistan has no express provision in its Constitution on the RTD, the Chapter of fundamental rights is an operative part of the Constitution which is enforced by the superior Courts of Pakistan under Article 184 and Article 199. From an examination of the case law, it may be argued that the courts in Pakistan are proactive in the enforcement of rights. Case law analysis and the express provisions Article 4, Article 9, Article 18 and Article 25 of the Constitution of Pakistan, 1973, reflect that Pakistan has accepted the reality of the RTD. It is pertinent to mention that the Pakistan National Human Development Report highlights that the country has taken serious measures to improve the “living standards” of its people and their education by incorporating the provisions in their national policy and action plans. However, the pace of change is slow because Pakistan has spent \$126 billion US in last 17 years on account of the war against terrorism. Moreover, due to emergence of this struggle, “Pakistan could not collect \$3459.67 million tax due to terrorism in last two years, in addition, \$383.93 million has been spent on infrastructure and \$129.89 million paid to aggrieved families of terrorism in the above mentioned period” [24]. Therefore, in view of these facts, Pakistan has had to face the financial constraints and did not improve the areas of human development on account of the diversion of funds to fight the war against terrorism and for the rehabilitation of internally displaced people (IDPs). However, the present government is trying its best to revamp the economy and formulate new education, economic, investment and trade policies. It is also pertinent to mention here that the present government has decided to revisit the country’s anti-money laundering and corruption laws in order to improve the governance structure for the betterment of the socio-economic development of the people of Pakistan. Fig. 1 shows the financial losses to Pakistan as the result of terrorism.



Fig. 1 Financial losses beard by Pakistan on account of terrorism

Pakistan is a democratic country with a strong constitutional mechanism for the enforcement of the fundamental rights of citizens. Pakistan has played a critical role in the implementation of RTD in all proceedings of the GA, and has contended that RTD be accepted as a human right. In the 1996 session of the Human Rights Commission (OHRC), Pakistan demanded a special rapporteur on RTD with a vision to re-examine the policies of states, and proposed the mechanism in

which RTD could be promoted collectively. In 2003, Pakistan organized a regional workshop to create awareness and an action plan for the promotion of human rights in the Asia Pacific region, and it was agreed among all member states that “all human rights including RTD are indivisible, interdependent and interrelated” [25]. The literature review explores that Pakistan has actively participated at the national and regional levels to create awareness on RTD and proposed possible solutions to promote the RTD. The South Asian Association for Regional Cooperation (SAARC) is a regional intergovernmental organization and geopolitical union of nations in South Asia, and its social Charter supports RTD [14]; yet, no practical initiatives have been initiated on the part of member states. However, they have agreed on the rights-based approach in the performance of good governance. In 2016, the eminent Rapporteur from Pakistan submitted a comprehensive report on RTD, which contained the criterion for its enforcement. Most of its key characteristics are in accordance with fundamental rights, objective resolution and principles of policy. In this contextual perspective, “Article 9 of Constitution of Pakistan, 1973 provides that no person shall be deprived of life or liberty save in accordance with law” [26]. The Supreme Court of Pakistan elaborated the word ‘life’ at length and included in its definition the ‘RTD’ in a number of cases for instance, in the case of “*Shehla Zia vs. WAPDA*” [15]. In this case, the Supreme Court held that “The word life in the Constitution has not been used in a limited sense. A wide meaning should be given to enable a man not only to sustain life but to enjoy it. [...] The constitution guarantees dignity of man [article 14] and also the right to life under Article 9 and if both are read together, [the question] will arise whether a person can be said to have [the] dignity of man if his right to life is below bare necessity [i.e. without] proper food, clothing, shelter, health care, education, green atmosphere and unpolluted environment” [15]. In the recent case of *Maulana Aman Ullah Haqani vs. Government of Pakistan* [16], the Supreme Court held that “right to life includes a clean and healthy environment and the right to human dignity, equality, social, economic and political justice”. Article 11 of the Constitution of Pakistan, 1973, provides that “slavery in Pakistan is non-existent and that no law shall permit or facilitate its introduction in the country in any form. It also prohibits forced labor in all forms and traffic in human beings”. In 2006, in human rights case number 5091, the Supreme Court of Pakistan declared the detention of brick kiln workers illegal and ordered for their release. This attitude of the Court reflects the positive recognition of RTD. Article 17 of Constitution relates to the freedom of association and participation and guarantees the “right to form association and unions subject to reasonable restrictions imposed by law in the public interest”. In the case of *Muhammad Nawaz Sharif vs. President of Pakistan* [17], the Supreme Court observed that “freedom of association not only includes the right to form an association but also includes the right to participate in elections”. Article 18 of the Constitution relates to the freedom of economic activities. It provides that every person is free to make a choice of his own employment or to take up

any trade or business. “Subject to the conditions, qualifications and limitations as may be prescribed by law”. Article 25 of the Constitution relates to the equality of citizens. It provides that “All citizens are equal before law and are entitled to equal protection of the law. There shall be no discrimination on the basis of sex” This article also provides special protection of women and children for their socio-economic development. In the case of *Al-Jehad Trust* [18], it was held by the Court that the fundamental rights of the people of the northern areas of Pakistan must be protected. In another case, *Mohammad Shafique Ur Rehman vs. Federation of Pakistan* [19], the Court directed the concerned authority to gather the data of persons with disabilities and transgender, and to categorize transgender in a special column of census form in the upcoming population census.

Article 37 of the Constitution relates to the “promotion of social justice and eradication of social evils”. This article provides that protection of social justice, eradication of social evils in accordance with the tenets of Islam is the foremost duty of the state. In the case of *Nasreen vs. Fayyaz Khan* [20], the Supreme Court of Pakistan directed the government that urgent measures should be initiated for the elimination of poverty and development of illiterate persons according to the teachings of Islam. Article 38 of the Constitution relates to the promotion of the socio-economic well-being of the people. It provides that the state is bound to provide social justice, education, health, shelter and food. Moreover, efforts shall be made to raise the living standards of people and ensure the equitable balance between the employers and employees for their mutual economic development.

Article 184(3) of the Constitution provides that in the case where a question of public importance with special reference to the enforcement of fundamental rights arises, the Supreme Court of Pakistan (SC) interferes in the form of suo moto action. In human rights case No. 4668 of 2006, the Supreme Court held that the establishment of a restaurant in any park is contrary to Article 18 of the constitution. Moreover, Article 199(i)(c) of the Constitution of Islamic Republic of Pakistan, 1973 relates to the jurisdiction of each High Court of a province for the enforcement of fundamental rights. Each High Court may exercise this power when no adequate and alternative remedy is available to an aggrieved party. In the case of *Mian Shabir Asmail vs. Chief Minister of Punjab*, the Court allowed the representation in the legal process of poor and disadvantage citizens. In another case, that of *Muhammad Sher vs. Abdul Karim*, it was held that “Article 199 empowered the High Court to act in aid of law to protect the rights of citizens within the framework of the Constitution”. In the *Orange Line Metro Train Case*, the Supreme Court reversed the decision of the High Court and allowed this transport plan, keeping in view the greater interests of the community for socio-economic development.

A. Pakistan’s Human Development Index value

The Human Development Index (HDI) is a summary measure for examining the long-term progress in three basic dimensions of human development, which are: a) a long and

healthy life, b) access to education, and c) standard of living. The UNDP 2018 statistical update on human development shows that the HDI value of Pakistan for 2017 is 0.562. This shows the trends of progress in the human development index of Pakistan in a comparison to previous regimes. The following dashboard analyzes the key indicators in life expectancy, schooling and GNI, which reflects this progress. However, it is worth to mention that this progress is lower in comparison to other countries in South Asia.

TABLE I
PAKISTAN’S HUMAN DEVELOPMENT INDICATORS [28]

	Life expectancy at birth	Expected Years of Schooling	Mean years of Schooling	GNI per Capita (2011 PPP\$)	HDI Value
1990	60.1	4.6	2.3	3.195	0.404
1995	61.4	5.0	2.8	3.387	0.428
2000	62.7	5.4	3.3	3.451	0.450
2005	63.8	6.5	4.5	4.101	0.500
2010	65.1	7.5	4.7	4.447	0.526
2015	66.3	8.2	5.1	4.978	0.551
2016	66.5	8.6	5.2	5.155	0.560
2017	66.6	8.6	5.2	5.311	0.562

VII. THE FUTURE OF RTD

The literature review explores that at the United Nations forum, several working groups were established to create the awareness and enforcement of RTD among the international community. Different working groups and independent experts and a proactive task force were established to determine the criteria and methodology on the basis of three components of RTD, “comprehensive human centered development”, “enabling environment” and “social justice”. In the proceedings of the various working groups and task force, it was argued that RTD should be included in the national policies and development plans of every state for the betterment of the poor and other vulnerable disadvantaged groups in society. Furthermore, the United Nations General Assembly initiated other steps in the form of research projects in order to identify the exact definition and contents of RTD. In the continuation of these initiatives, the Office of the United Nations High Commissioner for Human Rights (OHCHR) published a remarkable document on the analysis of RTD. In this connection, the former High Commissioner on human right expressed her views on this document as:

“Since the adoption of that landmark document, a debate has been raging in the halls of the United Nations and beyond. On one side, proponents of the right to development assert its relevance (or even primacy) and, on the other, sceptics (and rejectionists) relegate this right to secondary importance, or even deny its very existence. Unfortunately, while generating plenty of academic interest and stimulating political theatre, that debate has done little to free the right to development from the conceptual mud and political quicksand in which it has been mired all these years” [27].

In 2016, a Pakistani Rapporteur submitted a report, in which it suggested four measures for the enforcement of RTD.

Firstly, there is a need for state cooperation. Secondly, there is a need for strong political will for the implementation of RTD at global level. Thirdly, at the national level a comprehensive and inclusive approach is required, and fourthly, concrete measures should be initiated for the betterment of human life.

VIII. CONCLUSION AND WAY-FORWARD

To round off the brief discussion, it may be observed that the United Nations Declaration on the RTD is a soft law and that most states have a positive attitude regarding the recognition and enforcement of this right. However, there is a need for political will and consensus among the states to resolve the controversy on the definition and contents of RTD. Moreover, it has been observed that RTD is not in the main stream of the policies and actions of international organizations on human rights. RTD is still a controversial right among the states regarding its definition and contents. Hence, a lack of consensus in the international community is a potential barrier regarding the enforcement of this right at the international and national levels. Moreover, no state has accepted this right in express form in their NLS, with the exception of the African Charter of Peoples' and Human Rights. However, the United Nations and its associated bodies have acknowledged RTD and argued that it has great potential and is an accepted norm for sustainable development. In the case of Pakistan, RTD is not directly provided in the country's Constitution; however, there are certain Constitutional provisions which reflect RTD that courts in the country use to interpret this right. The courts of Pakistan have interpreted RTD on a case-by-case basis in the form of Public Interest Litigation (PIL). Pakistan has participated in all the proceedings of the UN and supported the UN resolutions on RTD, and highlighted the importance of the international dimension of RTD. Overall, Pakistan has shown keen interest in "human development" like other countries; however, the level of progress is not satisfactory at this time. More significantly, Pakistan is falling behind its neighbors and comparable countries in South Asia, as a result of the \$126 billion US spent in last 17 years in the country's war against terrorism and the rehabilitation of IDPs.

To improve human rights conditions in the globalized world, the following recommendations are put forward:

- a. There should be a comprehensive consensus over the definition and content of RTD among the international community.
- b. The "African Charter of Human and Peoples' Rights" may be adopted as a model law in agreed countries for a specific period of time as an ad-hoc arrangement.
- c. RTD must be placed in the mainstream of international institutions and organizations.
- d. There is a dire need to shift the paradigm of soft law to hard law.
- e. Special legislation should be made in every NLS to recognize and enforce this right.
- f. There is an emergent demand that research activity must be conducted in order to examine the gross-root level challenges in the enforcement of RTD on a country-to-

country basis

- g. RTD awareness programs and seminars must be organized at the regional and international level.

ACKNOWLEDGMENT

The author offers very special praise to Dr Shazia N. Qureshi (PhD in Human Rights Law) Principal Punjab University law College, and the eminent Scholars Stephen Marks, Rajeev Malhotra, Sengupta A, Negi A, Basu, and Mr. Khurshid Iqbal whom books assisted me a lot in the completion of this research paper. Last but not least, A thanks to Miss Farah Deeba, and Mr. Waheed Ahmad Chughata advocates High Court, Pakistan, who assisted me throughout this work.

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Embodied Neoliberalism and the Mind as Tool to Manage the Body: A Descriptive Study Applied to Young Australian Amateur Athletes

Alicia Ettlin

Abstract—Amid the rise of neoliberalism to the leading economic policy model in Western societies in the 1980s, people have started to internalise a neoliberal way of thinking, whereby the human body has become an entity that can and needs to be precisely managed through free yet rational decision-making processes. The neoliberal citizen has consequently become an entrepreneur of the self who is free, independent, rational, productive and responsible for themselves, their health and wellbeing as well as their appearance. The focus on individuals as entrepreneurs who manage their bodies through the rationally thinking mind has, however, become increasingly criticised for viewing the social actor as ‘disembodied’, as a detached, social actor whose powerful mind governs over the passive body. On the other hand, the discourse around embodiment seeks to connect rational decision-making processes to the dominant neoliberal discourse which creates an embodied understanding that the body, just as other areas of people’s lives, can and should be shaped, monitored and managed through cognitive and rational thinking. This perspective offers an understanding of the body regarding its connections with the social environment that reaches beyond the debates around mind-body binary thinking. Hence, following this argument, body management should not be thought of as either solely guided by embodied discourses nor as merely falling into a mind-body dualism, but rather, simultaneously and inseparably as both at once. The descriptive, qualitative analysis of semi-structured in-depth interviews conducted with young Australian amateur athletes between the age of 18 and 24 has shown that most participants are interested in measuring and managing their body to create self-knowledge and self-improvement. The participants thereby connected self-improvement to weight loss, muscle gain or simply staying fit and healthy. Self-knowledge refers to body measurements including weight, BMI or body fat percentage. Self-management and self-knowledge that are reliant on one another to take rational and well-thought-out decisions, are both characteristic values of the neoliberal doctrine. A neoliberal way of thinking and looking after the body has also by many been connected to rewarding themselves for their discipline, hard work or achievement of specific body management goals (e.g. eating chocolate for reaching the daily step count goal). A few participants, however, have shown resistance against these neoliberal values, and in particular, against the precise monitoring and management of the body with the help of self-tracking devices. Ultimately, however, it seems that most participants have internalised the

dominant discourses around self-responsibility, and by association, a sense of duty to discipline their body in normative ways. Even those who have indicated their resistance against body work and body management practices that follow neoliberal thinking and measurement systems, are aware and have internalised the concept of the rational operating mind that needs or should decide how to look after the body in terms of health but also appearance ideals. The discussion around the collected data thereby shows that embodiment and the mind/body dualism constitute two connected, rather than two separate or opposing concepts.

Keywords—dualism, embodiment, mind, neoliberalism

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Consumption Culture of Rural Youth: A Study of the Conspicuous Consumption Pattern of a Youth Sample in an Egyptian Village

Marwa H. Salah

Abstract---Modern consumption culture represents a widespread phenomenon that affects young people, as it affects all age groups in both urban & rural societies. It has been helped by globalization, specifically cultural globalization, also internal & external migration, & the immense development in information technology as well, these factors have led to the appearance of the conspicuous consumption pattern among young people. This research firstly interested in identifying the nature of this pattern of consumption among young people in the countryside, which represents a society with a special nature, was characterized by the pattern of traditional consumption. Secondly to find out whether the rural character has an impact on the conspicuous consumption of youth. Finally to identify the reasons for the rural youth's tendency to such type of consumption and if it contributes in satisfying certain social needs.

The research used the anthropological method. Observation & open-ended interviews were used as tools to collect data & an interview guide was applied on a selective youth sample (40: 20 male & 20 female) aged between 17to 34 in an Egyptian village located in Dakahlia governorate.

The research showed that rural youth has impacted with the modern consumption culture & not isolated from it despite the lack of financial abilities. The conspicuous consumption is a dominant pattern of consumption among the Egyptian rural youth & it has been practicing by rural youth regardless of their educational & financial levels. Also the wish to show the social & economic status, bragging & show off is the main reason for the rural youth to adopt the conspicuous consumption, moreover to face the inferior view from their counterparts urban youth.

Keywords—Consumption culture, youth, conspicuous consumption, rural society.

Maker Education as Means for Early Entrepreneurial Education: Evaluation Results from a European Pilot Action

Elisabeth Unterfrauner, Christian Voigt

Abstract—Since the foundation of the first Fab Lab by the Massachusetts Institute of Technology about 17 years ago, the Maker movement has spread globally with the foundation of maker spaces and Fab Labs worldwide. In these workshops citizens have access to digital fabrication technologies such as 3D printers and laser cutters to develop and test their own ideas and prototypes, which makes it an attractive place for start-up companies. Know-How is shared not only in the physical space but also online in diverse communities. According to the Horizon report, the Maker movement however will also have an impact on educational settings in the following years. The European project ‘DOIT - Entrepreneurial skills for young social innovators in an open digital world’ has incorporated key elements of making to develop an early entrepreneurial education program for children between the age of six and 16. The Maker pedagogy builds on constructive learning approaches, learning by doing principles, learning in collaborative and interdisciplinary teams and learning through trial and error where mistakes are acknowledged as learning opportunities. The DOIT program consists of seven consecutive elements. It starts with a motivation phase where students get motivated by envisioning the scope of their possibilities. The second step is about Co-design: Students are asked to collect and select potential ideas for innovations. In the Co-creation phase students gather in teams and develop first prototypes of their ideas. In the iteration phase, the prototype is continuously improved and in the next step, in the reflection phase, feedback on the prototypes is exchanged between the teams. In the last two steps, scaling and reaching out, the robustness of the prototype is tested with a bigger group of users outside of the educational setting and finally students will share their projects with a wider public. The DOIT program involves 1,000 children in two pilot phases at 11 pilot sites in ten different European countries. The comprehensive evaluation design is based on a mixed method approach with a theoretical backbone on Lackeus’ model of entrepreneurship education, which distinguishes between entrepreneurial attitudes, entrepreneurial skills and entrepreneurial knowledge. A pre-post-test with quantitative measures as well as qualitative data from interviews with facilitators, students and workshop protocols will reveal the effectiveness of the program. The evaluation results will be presented at the conference.

Keywords—Early entrepreneurial education, Fab Lab, maker education, Maker movement.

Effect of Intellectual Capital and Social Capital on Competitive Advantage: Exploring the Role of Organizational Culture and Learning

Muhammad Azam Roomi, Naveed Iqbal Chaudhry, Shaistah Tanveer

Abstract—Purpose: The main goal of study is to prove significant effect of intellectual capital and social capital on competitive advantage along with mediating effect of organization learning and moderating effect of organization culture in manufacturing sector. Approach/Methodology: Quantitative approach along with cross-sectional research design and philosophy of positivism is chosen to conduct the study. Judgmental sampling technique is used to collect responses by 300 respondents through personally administered survey based questionnaires. Findings: Results derive from analysis show that all the relationships are positive and significant except insignificant moderation of organization culture for the relationship of intellectual capital and competitive advantage. Mediating effect of organization learning is significant for all the relationships, i.e., relationship of intellectual capital and competitive advantage, relationship of social capital and competitive advantage. Limitations/Implications: Present study has limitations of common method biasness, small sample size, avoidance of multiple mediators and moderators and avoidance of using control variables. Originality: Framework of intellectual capital, social capital, organization learning, organization culture and competitive advantage is developed. Testing of these relationships in manufacturing sector is a novelty. Relationship of intellectual capital with competitive advantage and social capital relationship with competitive advantage is not discussed in one model in manufacturing sector before and this paper covers the gap.

Keywords—intellectual capital, social capital, organizational culture, organizational learning, competitive advantage

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Content Validity of the Online Young Entrepreneur Self-Assessment: Development Based on a Qualitative Analysis of Expert Interviews

Rebecca Fill Giordano

Abstract—The understanding of the complexity of entrepreneurship and the specific know-how about relevant factors are the prerequisites for success as entrepreneur. Moreover, a team should be heterogeneous, setting different focuses to reach a common goal. To help young entrepreneurs to get ready for their job and to grow together as smart team, the new online Young Entrepreneurs Self-assessment (YES) was developed in five steps in cooperation with experts based on state-of-the-art theoretical frameworks. YES aims to provide young entrepreneurs with the opportunity to compare themselves with established successful entrepreneurs. The participants receive personalized feedback according to their self-assessment with individual suggestions how to improve their competences, operational styles and strategies. To develop YES the following five steps were necessary: First, key competences for entrepreneurs were identified based on the theory of predictors for management competences. For item generation an Entrepreneur Competence Model (ECM) was defined consisting of these six main competences: decision making, social, strategic, mental, role, and development competence. Second, experts in the field of innovation and foundation from different European countries were interviewed applying the Critical Incidents Technique. Over 20 expert-interviews with business incubator employees or successful and experienced entrepreneurs led to diverse job specifications for entrepreneurs in different phases of foundation. The original qualitative answers were paraphrased based on the qualitative content analysis according to Mayring leading to a catalogue of critical situations, which were integrated into YES. Third, the main requirements of an 'ideal' entrepreneur were developed based on the N=630 scenarios and descriptions provided by the experts and information regarding entrepreneur profiles from accessible documents and websites. Using the qualitative analysis this detailed and sometimes redundant information was compressed and summarized to 17 requirements (e.g., risk-management, solution-orientation, motivation). Fourth, the requirements were integrated into the ECM. For each requirement, eight features were created to account for its fine granularity level. This procedure was inspired by the model of Sarges who highlights the importance of different features of competence while analyzing people's behavior. Fifth, in this step for each of the features one item was created resulting in a total number of 136 items. On behavioral level YES analyzes operational styles and strategies to understand how the entrepreneur could be more successful. The results lead to an individual feedback and a

list of possible strategies to follow. This assessment is not limited to a subjective or individual perspective only but allows for a 360-degree feedback. The person to be analyzed estimates his/her strengths and weakness regarding the relevant components of YES and other independent person(s), e.g., supervisor, friends, co-workers, can do the same. First analyzes of psychometric value results will be presented at the conference. In sum, an innovative analysis was developed that is based on a solid theoretical foundation and the experience of already established members of entrepreneur society to provide some guidance for young entrepreneurs during the starting phase of a new business endeavor. This project was supported by the Techno Innovation Center and by the Department of Innovation, Research, Development and Cooperatives, Bolzano, Italy.

Keywords—innovative start-up teams, online self-assessment, potential-analysis, qualitative analysis, 360-degree feedback

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Cartel's Little Helpers: A Comparative Study of the Case Law Regarding the Facilitators of Collusion in Latin America Competition Law and Policy

Andres Calderon

Abstract—In order to avoid detection and punishment, cartels have recruited the help of third parties to organize, execute and disguise the anticompetitive practices cartel members have agreed upon. These third parties may take the form of consultancy firms, guilds or professional advisors that do not perform an economic activity in the market where the collusion takes place. This paper takes a look into how national competition authorities and national legislators have dealt with the emergence of the cartels' facilitators in Latin America. Following the practice of other jurisdictions such as United States (Toys R' Us, Apple), European Union (AC Treuhand), United Kingdom (Replica Kits, Hasbro) and Spain (Urban, Snap-On), some countries (e.g. Argentina, Chile) in Latin America have started to conduct investigations and find antitrust liability in cartels' facilitators for helping others to violate their national competition laws. Some countries (e.g. Peru and Colombia) have also amended their legislation to amplify the subjective scope of application in order to include cartels' facilitators. The Latin American case is one of special relevance because public officials are often prone to promote or indulge agreements between competitors in sectors of political interest. A broad definition of cartels' facilitator, consequently, could lead to the prosecution of punishment of public officials that may hinder the competitive process.

Keywords—anticompetitive practices, cartel, collusion, competition, facilitator, hub and spoke

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A Comparative Human Rights Analysis of the Securitization of Migration in the Fight against Terrorism in Europe: An Evaluation of Belgium

Louise Reyntjens

Abstract—The last quarter of the twentieth century was characterized by the emergence of a new kind of terrorism: religiously-inspired terrorism. Islam finds itself at the heart of this new wave, considering the number of international attacks committed by Islamic-inspired perpetrators. With religiously inspired terrorism as an operating framework, governments increasingly rely on immigration law to counter such terrorism. Immigration law seems particularly useful because its core task consists of keeping ‘unwanted’ people out. Islamic terrorists more often than not have an immigrant background and will be subject to immigration law. As a result, immigration law becomes more and more ‘securitized’. The European migration crisis has reinforced this trend. The research explores the human rights consequences of immigration law’s securitization in Europe. For this, the author selected four European countries for a comparative study: Belgium, France, the United Kingdom and Sweden. All these countries face similar social and security issues but respond very differently to them. The United Kingdom positions itself on the repressive side of the spectrum. Sweden on the other hand also introduced restrictions to its immigration policy but remains on the tolerant side of the spectrum. Belgium and France are situated in between. This contribution evaluates the situation in Belgium. Through a series of legislative changes, the Belgian parliament (i) greatly expanded the possibilities of expelling foreign nationals for (vaguely defined) reasons of ‘national security’; (ii) abolished almost all procedural protection associated with this decision (iii) broadened, as an extra security measure, the possibility of depriving individuals condemned of terrorism of their Belgian nationality. Measures such as these are obviously problematic from a human rights perspective; they jeopardize the principle of legality, the presumption of innocence, the right to protection of private and family life and the prohibition on torture. Moreover, this contribution also raises questions about the efficacy of immigration law’s suitability as a counterterrorism instrument. Is it a legitimate step, considering the type of terrorism we face today? Or, is it merely a strategic move, considering the broader maneuvering space immigration law offers and the lack of political resistance governments receive when infringing the rights of foreigners? Even more so, figures demonstrate that today’s terrorist threat does not necessarily stem from outside our borders. Does immigration law then still absorb - if it has ever done so (completely) - the threat? The study’s goal is to critically assess, from a human

rights perspective, the counterterrorism strategies European governments have adopted. As most governments adopt a variation of the same core concepts, the study’s findings will hold true even beyond the four countries addressed.

Keywords—Belgium, counterterrorism strategies, human rights, immigration law

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Inhibition of Responsiveness: Understanding the Outcome of the Colombian Peace Referendum

Jaime Alfaro Iglesias, Oswaldo Plata Pineda

Abstract—The Colombian peace agreement, which aimed to end the armed conflict between the Colombian government and the Revolutionary Armed Forces of Colombia (FARC), was subject to ratification by a referendum held on October 2, 2016. Voters rejected the peace agreement by 50.2%. The goal of this paper is to argue that no-voters were disposed to *inhibit responsiveness* by the campaigners for the no-vote. We begin by elaborating on our main two assumptions: (1) responsiveness is a necessary condition for political responsibility; (2) the cultivation of responsiveness depends on the way people narrate episodes of human suffering. We continue by contending that no-voters were disposed to inhibit responsiveness by *thoughtlessness*, which is the failure of conscience sustained by an ideological narrative. We support this contention by presenting evidence to show that the narrative of the campaigners for the no-vote depicted the final agreement as bogus and the FARC as criminals seeking a pardon. We end by concluding that the outcome of the referendum is a case of inhibition of responsiveness because the Colombian electorate was influenced by an ideological narrative that distorted the essential contents of the peace agreement and underestimated the advantages of the end of the armed conflict with the FARC.

Keywords—Colombian peace agreement, Lack of meditation, political responsibility, responsiveness.

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Two Concepts of Peace in Hobbes

Oswaldo Plata

Abstract—According to Lloyd, the standard interpretation of Hobbes's political theory asserts that war of all against all is generated by desire of power, right to everything and three causes of dissension. For the standard interpretation, the authority of the sovereign eradicates war and establishes social peace (negative peace). Against this, in the present study, it is defended -based on Lloyd's interpretation- that the transcendent conflicts arise in the political state and eventually get into clash, provoking a new social disorder. Hobbesian's solution for social disorder includes not only realistic strategies but also pedagogical strategies in order to control the influence of the transcendent interests, i.e., interests that do not fit into self-preservation desire.

Keywords—Hobbes, Lloyd, peace, social disorder, transcendent interests

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Technological Improvements and the Challenges They Pose to Market Competition in the Philippines

Isabel L. Guidote

Abstract—Continued advancements and innovation in the technological arena may yield both beneficial and detrimental effects to market competition in the Philippines. This paper discusses recent developments in the digital sphere which have resulted in improved access to the Philippine market for both producers and consumers. Acknowledging that these developments are likely to disrupt or alter prevailing market conditions, this paper likewise tackles competition theories of harm that may arise as a result of such technological innovations, with reference to cases decided by foreign competition authorities and the European Commission. As the Philippine moves closer to the digital frontier, it is imperative that producers, consumers, and regulators alike be well-equipped to address the risks and challenges posed by these rapid advancements in technology.

Keywords—antitrust, competition law, market competition, technology

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Understanding How Democratic Governance Influence Resource Allocation and Utilisation in Economies in Transition: The Case of Cameroon

Terence Maisah Seka

Abstract—This paper examines democratic governance within the private and public sectors in economies in transition (Cameroon) by exploring how they influence development in terms of resource allocation to priorities that are locally conceptualized. The benefit of this is an improvement in indigenous and the quality of life for the local population. Using an ethnographic approach, this paper suggests that institutional corruption and state bureaucracy has limited the impact of democratic governance in influencing development. This has seen funds for developments being embezzled; local projects are not being done to satisfaction among others. The paper contributes by proposing measures to eliminate corruption to improve democratic governance, which will improve resource allocation and utilization.

Keywords—democratic governance, resource allocation, utilisation, Cameroon

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No Accounting for Bad Contractors: Ineffective Regulation in the Contracted Security Apparatus

Ori Swed, Adam Materne

Abstract—The proliferation of contracts outsourcing military functions to private companies has raised serious oversight concerns vis-à-vis regulation and accountability. As an emerging industry, regulation of these outsourced functions is considered weak. While critiques predict an unchecked industry, supporters defended the lack of an adequate accountability mechanism by tote the self-regulation of the industry. Following this discussion, we examined whether the frequency of contractor misconduct and legal repercussions within the overall government contracting industry differed between those in the burgeoning security-contracting community and those in the traditional contracting community. We utilized a preexisting dataset of American contractors' misconduct to compare and contrast military contracting to non-military contracting and draw conclusions about the state of the industry. Our results indicate that contracting military functions is associated with higher levels of violations and fewer legal repercussions. These findings support calls for improved oversight of this industry in order to prevent military and security contractors from engaging in misconduct with impunity.

Keywords—Private military security companies, Fraud, Accountability , Contracts

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Fighting War in Blue Helmets: Bangladeshi Peacekeepers in Robust Peacekeeping

Masrur Mahmud Khan

Abstract—Bangladesh has been a troop contributor to UN peace operations for three decades and it is one of the top troop contributors. From 1988 to 2018, Bangladeshi peacekeepers have engaged itself into various sectors of peace operations and robust peacekeeping is one of them. The aim of the paper was to illustrate the contribution of Bangladeshi peacekeepers in robust peacekeeping. The article defined robust peacekeeping as ‘the use of force by a United Nations peacekeeping operation at the tactical level, with the authorization of the Security Council, to defend its mandate against spoilers whose activities pose a threat to civilians or risk undermining the peace process’. The paper, following qualitative approach, analysed contribution of Bangladeshi peacekeepers from three cases: Congo, Mali and Central African Republic. The paper discussed the contribution of Bangladeshi peacekeepers in robust peace operations under four themes: protection of the civilians, supporting local authority, neutralizing threat for peace and voluntary actions. Along with contribution the research also focused on the challenges faced by Bangladeshi peacekeepers in robust peace operations. Ambiguity in civilian protection, UN force as a target, logistics and training and misconduct by peacekeepers are main area of challenges found by the research. Finally, the research illustrated some recommendation so that Bangladeshi peacekeepers can overcome these challenges in robust peacekeeping.

Keywords—Bangladesh armed forces, peacekeeping, robust peacekeeping, United Nations

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Role of Vigilante in Crime Control in Bodija Market

Obadiah Nwabueze

Abstract—Bodija market is classified as Central Business District (CBD) of Ibadan North Local Government Area of Oyo State (Nigeria) because of socio economic activities, so Crime is a peculiar social issue that causes insecurity. The law enforcement agencies tasked with crime prevention and control such as the Nigerian Police have insufficient manpower, and a resultant effect is the emergence of Vigilante groups as citizen's response to crime control and prevention (self-help). The research design adopted for this study is a case study design exploring Vigilante activities in Bodija Market. The study utilizes both quantitative and qualitative approach, sources of data includes primary and secondary sources. A sample of 127 respondents randomly picked from the 4 sections of Bodija Market through questionnaire, comprising of 50 male and 77 females which alienates issues of gender bias in addition to the 4 in-depth interview, making a total of 131 respondents. Statistical package for Social Sciences (SPSS) was used. The descriptive statistics of simple frequency, percentage, charts and graphs were computed for the analysis. Finding in the study shows that the market vigilante is able to deter and disrupt criminal activities through strategic spiritual intelligence (SSI), use of charm and juju, physical presence in strategic locations vulnerable to crime occurrence. Findings in the study also show that vigilantes collaborate with the police by assisting them in surveillance, tracking down criminals, identifying black spots, acting as informants to the police, arrest and handover criminal to police. Their challenges include poor equipment, motivation, unhealthy rivalry between the vigilante and the police. The study recommends that the government should support vigilantes with logistics and training, including patrol vehicle and radio communication. The study also recommends the integration of the informal mechanism (juju and charm) of crime detection and prevention into the formal policing strategy, an office should be created in the force commands for use of SSI.

Keywords—central business district, CBD, charm, Juju, strategic spiritual intelligence, SSI

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People's Rights in the Mechanism of Dissolution Political Parties in Indonesia

Gema Perdana

Abstract—One of the pillars of democracy whose existence cannot be abolished is the political party. As a school for prospective national leaders and a channel of people's aspirations in national development, political parties are important. However, in practice, there are currently members of political parties occupying public positions that abuse the power granted unto them to achieve personal and group interests. Amongst the abuses of power perpetrated by political-party affiliated public officers are: structurally and systematically provoking the community to distrust the government through the spread of hoax and even committing fraud in the conduct of elections. Political parties in Indonesia receive funding from the State that comes from public taxes. In this way, the people are greatly disadvantaged if their existence and endeavor is not in accordance to the aspirations of the people. This study uses a normative juridical approach to history, cases, and statutes. At present, according to the law, only the government has the legal standing to dissolve political parties, but this is felt to be unrealistic as can be proven since the post-Reformation era and hitherto, there has been no record of government control over political parties. This is because the majority of government officials are members of political parties, making it difficult to plead to dissolve their own political party or government coalition parties. The main notion of this paper is that the people, as a party whose interest is at great risk on top of having paid taxes to fund the political parties, should be given a control function in the mechanism of dissolution of political parties in cases where political parties do not carry out their functions. So that it is necessary to regulate rights for the people or class action as applicants for the dissolution of political parties in the laws of political parties.

Keywords—people, mechanism, dissolution, political parties

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Human Rights in the Context of the Venezuelan Refugee Crisis

Kerry-Ann Paula Harrison

Abstract—The Republic of Trinidad and Tobago is a tiny twin island Caribbean country situated off the coast of the South American Continent. It is in fact a mere six nautical miles away from Venezuela. In the year 2018, the Venezuelan economy was reported as having essentially collapsed. Millions of Venezuelan nationals are currently on starvation's door and desperation has led to widespread migration to neighbouring territories. The island of Trinidad has certainly experienced an influx of Venezuelans, who come in droves, on a daily basis, both legally, but more specifically, illegally, in search of food, medicine and a better life. For those who land in legal ports of entries, and are admitted limited entry for a maximum of 90 days, they are prohibited from engaging in employment. Consequently, many are forced to work illegally to earn money to survive. For the unluckier ones who do not enter in a legal port of entry, on a remote beach for instance, it is even more difficult to assimilate into society, as they live in constant fear of being caught and imprisoned and or worst, deported. The unluckiest ones however, are the victims of human trafficking, whereby they are tricked into coming to Trinidad to work as “baby sitters” or in bars and upon entry are enslaved and forced to work in brothels.

Due to the fact that these migrants or refugees live in the shadows of society, they suffer immensely from non -protection from criminal and civil abuse. Their very human rights are stripped away and the fear of imprisonment and or deportation is enough to prohibit these persons from reporting such abuses. This paper seeks to critically analyze the extent of human rights violations of Venezuelan Refugees in Trinidad and Tobago and in particular to comparatively analyze it with Trinidad and Tobago's international legal obligations as it pertains to the protection of refugees and human rights.

Keywords—Human rights, migrants, refugees, Venezuela.

An Empirical Study of the Use of the Multicriteria Methodology of Decision Support: Constructivist for Automatic Confection of Judicial Decisions by Artificial Intelligence

Alexandre José Mendes, Claudia Maria Barbosa

Abstract—Computers deciding in lieu of judges was something considered distant, a possibility limited to the future development of a Strong Artificial Intelligence. However, legal algorithms that use data mining in the big data of the Judiciary, can go beyond simple support for judicial decisions.

It is not new that there are available technology and data processing capacity, to develop algorithms capable of making decisions in the magistrate's place. Especially when they do not require creativity, but only the obedience to statistical standards available in big data.

Legal technology companies find several methodological difficulties to create algorithms that can translate into a logical - mathematical language, the infinite subjectivities and possibilities of the interpretive activity of jurists, for the autonomous preparation of judicial decisions by computers. Even in the face of repetitive decisions.

Among the several decision support methodologies, the multicriteria decision-aid methodology - constructivist (MCDA-C) stands out, as it covers the subjectivities and personal preferences of those who decide. It allows the calibration of the system by the magistrates themselves, incorporates changes of judicial position and includes variables such as context, values and social changes in their method.

The research hypothesis of this article is that the MCDA-C methodology has the potential to serve technology-legal companies, in the development of legal algorithms that can transform interpretative subjectivities of law, in logical-mathematical patterns programmable by Computer Science.

This paper aims to present the results of the empirical tests with the MCDA-C to answer the hypothesis of the research. The tests were carried out based on the decisions taken from the Big Data of the same magistrate and specifically on the same type of decision. The tests began in April 2018 and lasted five months.

Through machine learning, by trial and error, the computer began to attempt to sentence in the magistrate's place based on his previous decisions. With the help of this, the system was calibrated to improve its sentences. In recent rehearsals, the magistrate did not know whether the decisions presented to him had been made by himself or the computer.

This result of the tests allows to conclude that, although the magistrate can not be substituted in creative decisions with the current technological level that has, with respect to the decision making based on repetitive patterns, the subjectivities of the act of judging can be reached by the Weak Artificial Intelligence.

Keywords—Artificial intelligence, judicial decision, multicriteria decision-aid methodology - constructivist, interpretative subjectivities of law.

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Understanding the Comorbidity of Multiple Chronic Diseases Using a Network Approach

Md Ekramul Hossain, Arif Khan, Shahadat Uddin

Abstract—Chronic diseases and their associated conditions have become the leading cause of death in most countries. Due to this, governments all over the world are concerned about the chronic diseases. They have become very expensive (in term of treatment cost) and brought severe health risk when patients suffer from more than one chronic disease at the same time (also named as comorbidity of chronic disease). For the prevention and better management of comorbidity, several prediction approaches utilising administrative data have been developed. Most studies to date have focused on understanding the progression of single chronic disease. A little attention has been given to understand the progression of multiple chronic diseases for a chronic disease patient. In this study, a research framework is proposed using social network analysis and graph theory on administrative healthcare data to understand the comorbidity of two chronic diseases (i.e., diabetes leading to the development of cardiovascular disease). The results show that diseases related to blood (e.g., high blood pressure or high cholesterol) and kidney disease are the risk factor for the progression of cardiovascular disease for the diabetic patients. The proposed framework could be useful for stakeholders including governments and health insurers to take appropriate preventive measures for the patients at high risk of developing more than one chronic disease.

Keywords—Chronic disease, comorbidity, electronic health records, health informatics, social network analysis.

I. INTRODUCTION

CHRONIC diseases are long lasting conditions and they are generally not cured completely [1]. In Australia, the leading cause of illness, disability and death is the prevalence of chronic diseases, accounting for 90% of all deaths in 2011 [2]. In 2015, The Australian Institute of Health and Welfare (AIHW) released statistics that about half of all Australians have a chronic disease, and around 20% have at least two chronic diseases [3]. When any two or more diseases occur in one person at the same time, it is referred to as ‘comorbidity’ [4]. It refers to the presence or coexistence of multiple diseases in a relation to a primary disease in a patient [5]. Sometimes the chronic diseases occur at the same time simply by chance. However, the comorbidity occurs due to the share risk factors between the diseases. Aging is one of the most important factors that has a strong association with comorbidity. Aged people are more vulnerable to developing multiple diseases.

In Australia, about 40% people aged 45 and over have two or more chronic diseases [3]. In the Australian context,

comorbidity of chronic diseases exerts a significant social, economic and health burden. In addition, comorbidities are associated with higher healthcare cost, and thus demand a great deal of research attention. If we can identify those patients having the risk of developing more than one chronic disease based on their past medical history, preventive measure can be taken to increase the quality of care and reduce treatment cost.

Significant research has been done in the related field of understanding disease comorbidities. One of the earliest models for this is rule-based scoring models [6, 7]. Many of these scoring models are based on the clinical and empirical understanding of symptoms and disease comorbidities [8, 9]. This model assigns scores to physiologically observable conditions, information of geographic location and presence of comorbidity to assess the severity of a patient. Charlson Comorbidity Index [8] was proposed to predict the 10-year mortality using a rule-based scoring model. Another widely used rule-based scoring method is Acute Physiology and Chronic Health Evaluation-II (APACHE-II) [9] (versions I-IV are available). It scores against twelve variables with a range of 0-71 to assess the condition of intensive care unit (ICU) patients in the first 24 hours of admission. In 2014, Islam et al. [10] estimated the prevalence of common chronic diseases and examined comorbidity of chronic diseases using Chi-square test and logistic regression, clustering, principle component analysis and latent class analysis. This study used the self-reported diseases data collected from the members of the National Senior Australia organisation through mail. In the literature, the use of self-reported diseases is criticised by some authors [11]. Recently, many data mining and machine learning methods have been used effectively in different healthcare research. A data mining technique like the collaborative filtering method was used to understand the disease progression and predict disease risks using administrative data [12]. The deep learning algorithms have been used to understand and predict multiple comorbid disease [13]. Although, these methods can capture the comorbid nature of diseases and predict their risks, they often ignore the complex relations like time-gap and pattern of disease occurrence and do not suitably scale-up to utilise modern healthcare information system. Bayesian network [14], a combination of graph theory and probability theory, has been used to understand the comorbidity evolution in patients with multiple chronic diseases [15]. In 2009, Himes et al. [16] proposed a risk prediction model that predicts the risk of progression to chronic obstructive pulmonary disease in asthma patients using electronic medical records. This study used Bayesian network to construct the proposed model. Social Network Analysis (SNA) [17] is another related approach introduced in healthcare informatics. Based on the graph theory, this

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approach treats the healthcare administrative data as complex relations between different entities like physicians, diseases and hospitals. The main goal of this network-based approach is to understand relations between healthcare entities [18], improving collaboration efficiency among physicians [19]. Recently, Arif et al. proposed a research framework to understand and represent the progression of Type 2 Diabetes using graph theory and social network analysis. This study used the administrative data drawn from the Australian healthcare context. The understanding of multiple chronic diseases progression is not shown in this study [20].

It has always been a great challenge to improve the quality of care in a cost-effective way. To overcome this, it is important to identify high-risk comorbidity of chronic disease of a chronic disease patient and take proactive measures to minimize risk and healthcare cost from both patients' and stakeholders' perspectives. Identifying high-risk comorbidities can be done by analysing the health trajectory of chronic disease patients from the administrative healthcare data that includes the medical condition and treatment information during each hospital admission of a patient. The aggregation of several medical admissions formed the patients' medical history. In this study, the term 'admission' refers to a time duration representing an episode of health care in a hospital. Due to the complex and interrelated nature of admission date, this study used social network analysis to detect patterns, hidden clusters and relations in large administrative data. This has motivated our research to develop a framework that utilises the semantics of healthcare codes and applies social network analysis and graph theoretic approach to administrative healthcare data for understanding comorbidity of chronic disease.

The rest of this paper is organised as follows. At first, we introduce the methodology used in this study, including baseline disease network and procedure of the proposed framework. Then, section 3 represents the results and discusses those results. Finally, the conclusion of this study is presented in section 4.

II. METHODOLOGY

The following section describes the computational procedure of the proposed framework. In addition, the analysis of administrative healthcare data and procedure of creating the baseline disease network are provided.

A. Chronic Disease Selection

In this study, we choose diabetes as first chronic disease. Cardiovascular disease is selected for the other chronic disease risk. The goal of this study is therefore to understand the progression of comorbid risk of diabetes and cardiovascular disease. More specifically, this study explores the progression of cardiovascular diseases for all patients who are already diagnosed with diabetes. The selection of diabetes-cardiovascular pair has been guided by their comorbid nature and prevalence statistics in the Australian context. In 2011-2012, over two-thirds of Australian people (68%) with diabetes had cardiovascular disease and/or chronic kidney disease [21]. It is well known that diabetes is one of the main risk factor for cardiovascular

disease. The reasons for this are partially understood. One strong explanation is that diabetes increases atherosclerosis (i.e., a disease in which plaque builds up inside the arteries) which can lead to the cardiovascular disease [22]. Also, diabetic patients trend to have high blood pressure and cholesterol, both are factors to increase the risk of cardiovascular diseases [23]. In addition, there is a strong association between diabetes and cardiovascular disease, and diabetic patients are at higher risk of developing cardiovascular disease [24]. Furthermore, the diabetes and cardiovascular disease are well-coded as comorbidity in the hospital admission data, making it suitable to apply in our research context.

B. Data Selection

In this study, Medical Benefits Scheme (MBS) data [25] was used as an administrative healthcare dataset to evaluate the proposed framework for understanding the progression of comorbid risk of chronic diseases. This dataset contains 10% sample data of patients who received Medicare [26] (Australia's universal health care scheme) services listed under MBS schedule [27] between year 2008 and 2014. The MBS data is generated by financial reimbursement claims from general practitioners (GP), specialists and hospitals. The dataset contains coded information about patients (patient ID and location) and services (date of service, type of service, service item code, benefit paid etc.). The dataset was originally available on online [28] for research purpose. The details of the dataset are described on online [25]. This study used the data of those who were first diagnosed with diabetes and then were diagnosed with cardiovascular disease. The final dataset used in this study contains admission data of around 5000 patients over 7 years (2008-2014).

In order to fulfil the goal of this study (i.e., exploring risk of cardiovascular diseases for diabetic patients), this study analyses patients' admission history including date of service and MBS item codes for each admission episode. Each item code represents a medical service for a patient with specific disease. Then, it is needed to understand the semantics of the item codes in the admission data and utilise these data to generate a network that can represent the health trajectory of patients with more than one chronic disease.

C. Baseline Disease Network

This study used the baseline disease network concept [29] to find out overall health trajectory of a large number of patients. The baseline disease network is a sequence of comorbidities of chronic disease patients derived from their entire medical admission history. In order to create this network, the first step is the filter of the patient list, which is essential to find the patients with more than one chronic disease. The item code is used to filter the patients with disease information as it provides the information about medical benefit (rebate for a medical service for patients having Government or private health insurance) of a patient with specific disease. For example, item codes 2517-2526 denote the service for patients with established Diabetes mellitus, and item codes 11700-11727 denote the diagnostic procedures and investigation for the patients with cardiovascular disease.

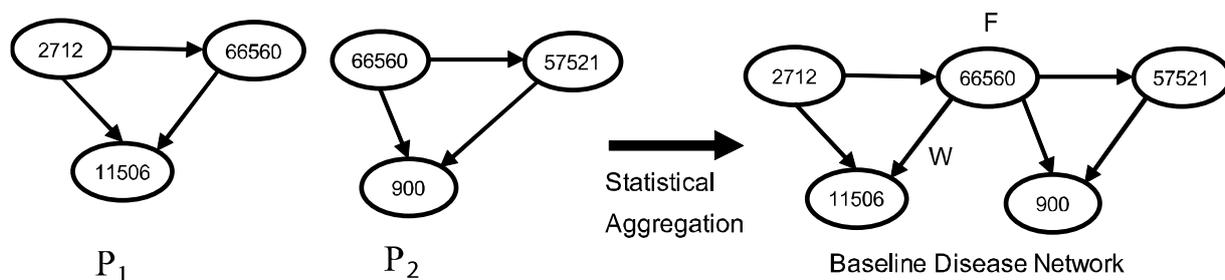


Fig. 1 Flow of creating the baseline disease network. The node value indicates the item code. F and W represent frequency of node and weight of edge, respectively and they are associated with each node and edge. P_1 and P_2 indicate the patients.

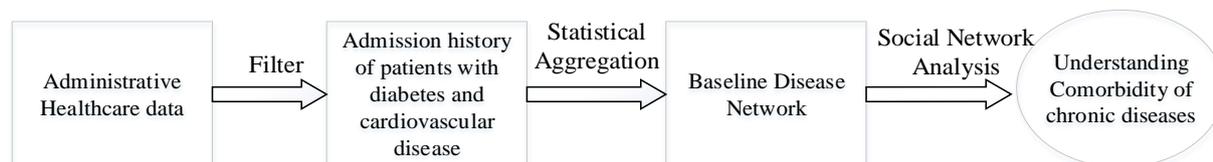


Fig. 2 Block diagram of the proposed framework to understand the comorbidity of chronic disease of chronic disease patients. The input of the framework is the administrative healthcare data and output is the analysis of the baseline disease network to understand the comorbidity during progression between chronic diseases.

In the database, we searched for patients who have both codes for diabetes and cardiovascular disease. This search was implemented in a way so that it resulted only those patients who were diagnosed with diabetes in an earlier hospital admission and with cardiovascular disease at any subsequent hospital admissions. The admission history between these two admissions (first for diabetes and second for cardiovascular) are to be inspected to understand the nature of comorbidity for those chronic diseases.

The resultant admission history of each selected chronic disease patient is merged using statistical aggression method [29] which generates a graph of chronic disease patients' health trajectories shown in Fig. 1. This figure is based on abstract data. The graph is essentially a network where each node denotes the specific diagnosis or item code and a directed edge between two nodes represents that these two codes trend to occur sequentially. In the network, the additional information of node called frequency denoted by F indicates the number of times the disease codes have occurred for all the chronic disease patients considering all admissions. In addition, each edge has an attribute called weight denoted by W that indicates the numbers of times two diseases have occurred simultaneously or in consecutive admissions. We used our software to scan the item codes of each admissions and place an edge between two codes if they are present in the consecutive admissions of a patient. If an edge already existed in the network, the weight of edge is updated by one. Similarly, the frequency of node is updated whenever the code is encountered. Thus, the baseline disease network is created as shown in Fig. 1.

D.Procedure

The input of the proposed framework is the administrative healthcare data collected from the Medical Benefits Scheme (MBS) dataset. These data are generated within the Australian healthcare system. At first, the admissions for diabetic (first diagnosed at a certain time) and cardiovascular diseases (diagnosed after being

diagnosed with diabetes) are identified by filtering on item codes. Next, all other item codes between the two admissions for a patient (when he or she was first diagnosed with diabetes and cardiovascular diseases, respectively) are considered as comorbidity to understand disease progression. These individual progressions are then aggregated to generate the baseline disease network for patients who were diagnosed with diabetes first and then with cardiovascular disease. Finally, SNA and graph theory are applied on this baseline disease network to understand the progression of multiple chronic diseases for chronic disease patients. In addition, a clustering algorithm [30], part of SNA, is applied on baseline disease network to find the groups of frequently occurring diseases as comorbidities. The complete workflow of the proposed framework is illustrated in Fig. 2.

III. RESULTS AND DISCUSSIONS

Fig. 3 shows the aggregated baseline disease network for the patients who were diagnosed with diabetes and subsequently with cardiovascular disease at a later stage. The baseline disease network is visualised using social network analysis software, Gephi [31]. It includes around 37 item codes as nodes and 48,757 edges between them indicating transition between codes in consecutive admissions. The baseline disease network can reflect the administrative healthcare data as a knowledge structure. In addition, it visualised the item codes in subsequent or same admission to understand the health trajectory of patients suffering from multiple chronic diseases. However, this study did not consider the link between two nodes in the baseline disease network since their tie strength are very weak. Next, we eliminate the internal transitions, which become self-loops in the baseline disease network. There is no impact to understand the progression of comorbidities for the transition between same nodes (self-loops).

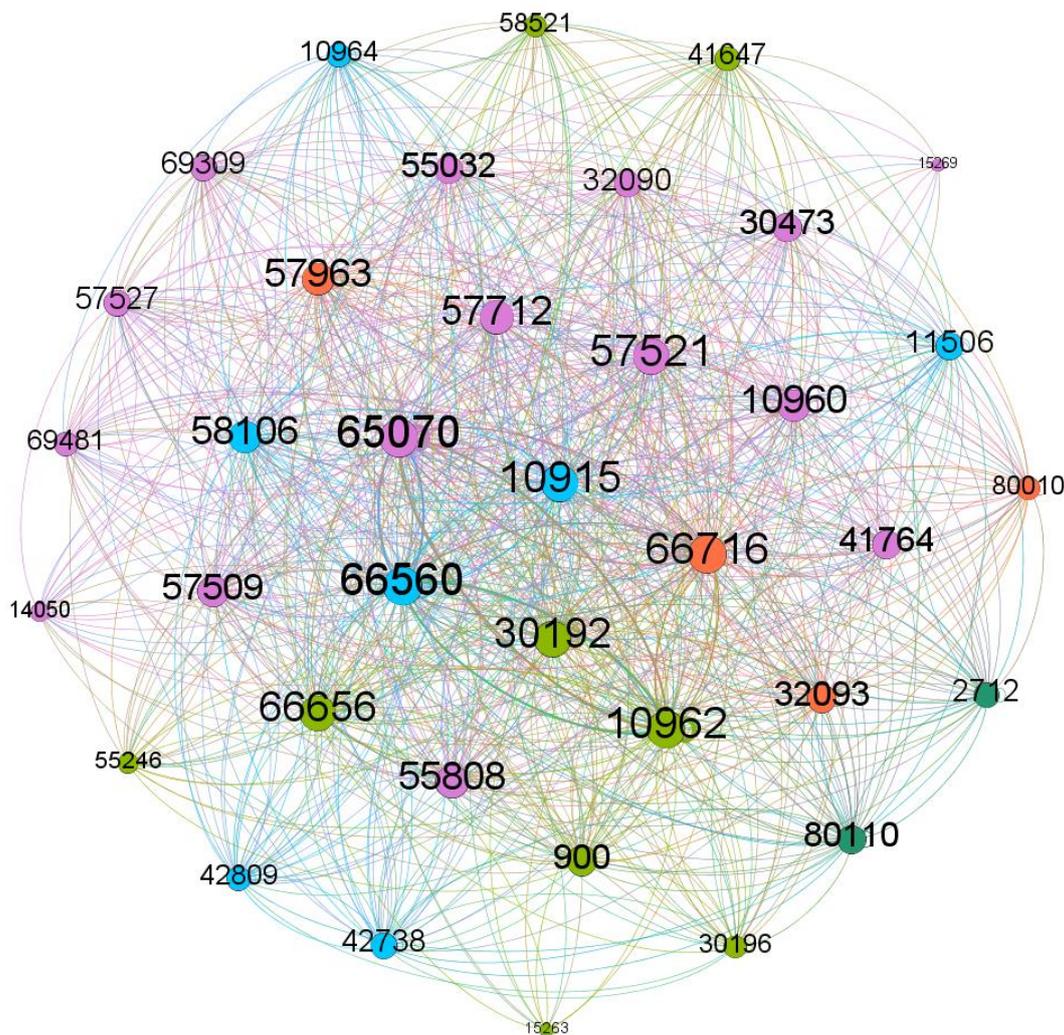


Fig. 3 Baseline disease network of diabetes patients progressing towards cardiovascular disease. Different clusters are indicated by different colours of nodes and edges. The node value represents the pathology service for a medical service with a particular disease. Size of the node is proportional to its degree

In addition, some item codes represent only consultancy services by practitioners and do not contribute to the analysis. Thus, these codes are excluded in this study. A sample list of these codes is shown in Table I.

TABLE I
SAMPLE LIST OF EXCLUDED ITEM NUMBER

Item code	Description
36	Professional attendance by a general practitioner (GP) at consulting rooms
10990	Medical service- Management of bulk-billed services
66512	Pathology services
104	Professional attendance at a consulting rooms or hospital by a specialist
732	Attendance by a medical practitioner to review GP management plan and team care arrangement

In the literature, the research showed that chronic diseases do not occur separately [32] rather their co-occurrence have a synergistic effect [33]. This study showed that the risk factors found in the literature are dominant in the baseline disease network. For example, the disease related to blood like high blood pressure or high cholesterol (item code-65070) has observed as larger node in the baseline disease network meaning their influence in the cardiovascular disease for the diabetic patients. The same trend found in the

research done by Australian Institute of Health and Welfare [22].

TABLE II
CLUSTERING THE ITEM CODES WITH MAJOR DIAGNOSIS

Cluster	Percentage of item codes	Major Diagnosis
0	10.81	Thyroid disease, Colon cancer,
1	18.92	Spine lumbosacral, Kidney disease, Respiratory problem, Eye related disease, Acute closed-angle glaucoma
2	40.54	Cutaneous disease, Neck problem, Gullet problem, HIP joint, Chronic hepatitis, Skin disease
3	24.32	Bowen's disease, Feet problem, Prostatic disease,
4	5.41	Mental disorder

In the next step, a clustering algorithm [30] is applied on the baseline disease network to find the clusters of frequently occurring item codes as comorbidities. The algorithm detected five clusters of item codes shown in Fig. 3 denoted by five distinct colours. A list of major diagnoses for each cluster is given in Table II. The clustering tendency between diagnoses codes in the baseline disease network might be useful to understand the more frequently occurring disease groups utilising administrative healthcare data.

TABLE III

TOP TEN MOST PREVALENT DISEASE FOR PATIENTS WITH DIABETES AND CARDIOVASCULAR DISEASE. PREVALENCE REFERS THE NUMBER OF ADMISSIONS BETWEEN THE DIAGNOSIS OF DIABETES AND CARDIOVASCULAR DISEASE THAT HAVE ITEM CODES RELATED TO THOSE COMORBIDITIES

Comorbidity Conditions	Prevalence
Disease related to blood	11656
Disorder of foot, ankle and lower extremity	9523
Kidney disease	8260
Thyroid disease	4372
Eye related diseases	1598
Mental	696
HIP joint	531
Shoulder or upper arm	455
Spine lumbosacral	393
Teeth	381

Table III shows the most prevalent diseases from the baseline disease network. In this study, the diseases corresponding to the item codes are diagnosed after the diagnosis of diabetes at a certain time but before the diagnosis of cardiovascular disease. The data in the table represents that the patients with diabetes have high prevalence of comorbidities to progress towards the cardiovascular disease. The statistics in the Table III indicates that the patients with diabetes have a certain risk factors like kidney disease, high blood pressure problem that increase the chance of developing cardiovascular disease. This observation is also consistent with the studies in the literature [22, 23, 34].

TABLE IV

TOP 10 MOST PREVALENT TRANSITIONS BETWEEN COMORBIDITIES IN THE BASELINE DISEASE NETWORK

Initial Condition	Next Condition
Diseases related to blood	Disorder of foot, ankle and knee
Kidney disease	Disorder of foot, ankle and knee
Diseases related to blood	Kidney disease
Disorder of foot, ankle and knee	Kidney disease
Diseases related to blood	Thyroid disease
Thyroid disease	Disorder of foot, ankle and knee
Kidney disease	Thyroid disease
Eye related diseases	Kidney disease
Eye related diseases	Diseases related to blood
Kidney disease	Prostatic disease

The most prevalent disease pairs of developing cardiovascular disease for diabetic patients are given in Table IV. The prevalent transitions show a lot of comorbidities that are associated to progress towards the cardiovascular disease for a diabetes patient. In table II, the one top transition from diseases related to blood (i.e. high cholesterol) to kidney disease indicates two different body system problems. It reflects that these two diseases are the risk factor for the progression of cardiovascular disease for the diabetic patients. Same trend is found in the literature. For the diabetic patients, high blood pressure or high cholesterol is the risk factor for the progression of cardiovascular disease (i.e., heart attack or a stroke) [34]. There is a strong comorbid relationship between chronic kidney disease and cardiovascular illness for a diabetic patient [21, 35].

Finally, the social network-based measures (i.e., graph density, average path length and average clustering coefficient) are calculated on the baseline disease network. The results are shown in Table V. A relatively higher number of nodes is needed to find the appropriate clusters in

the baseline disease network. Also, the higher number of edges indicates the denser baseline disease network i.e., the patients with diabetes and cardiovascular disease have more transitions between comorbidities in subsequent admissions. The graph density is the measure of edge saturation i.e. how many edges are present compared to all possible number of edges. A higher graph density has been found for the baseline disease network. In this baseline disease network, the density 69.7% indicates that almost 7 out of 10 possible transitions are present. It further reflects that the patients with diabetes and cardiovascular diseases have higher admission burden and complex progression structure over subsequent admissions [36].

TABLE V

NETWORK ANALYSIS OF BASELINE DISEASE NETWORK

Criteria	Value
Number of nodes	37
Number of edges	928
Graph density	0.697
Average clustering co-efficient	0.8
Average path length	1.33
Average degree	25.08

IV. CONCLUSIONS AND POTENTIAL FUTURE WORKS

This study introduced a framework to understand the comorbidity during progression between chronic diseases. For this, the proposed framework used the concepts of social network analysis and graph theory. The framework can potentially help to visualise the health trajectory of multiple chronic disease patients and understand the progression from one chronic disease to another for a chronic disease patient. In this study, the analysis of baseline disease network and its attributes can help healthcare providers to understand high-risk diseases and progression pattern between recurrence of diabetes and cardiovascular disease. In addition, it can help in efficient management of healthcare resources. In future, the knowledge about the progression of comorbid chronic disease for a chronic disease patient could be utilised to develop predictive models for future chronic disease. In our future work, we plan to include the cost analysis of diagnoses from MBS data to understand the more expensive diagnoses that lead to multiple chronic diseases. Also, the proposed framework will be extended to include the medication history of patients using pharmaceutical dataset. In addition, we plan to test our current framework and future work with another rich administrative healthcare data as the dataset used in this study included only 10% sample data of patients.

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Clique and Clan Analysis of Patient-Sharing Physician Collaborations

Shahadat Uddin, Md Ekramul Hossain, Arif Khan

Abstract—The collaboration among physicians during episodes of care for a hospitalised patient has a significant contribution towards effective health outcome. This research aims at improving this health outcome by analysing the attributes of patient-sharing physician collaboration network (PCN) on hospital data. To accomplish this goal, we present a research framework that explores the impact of several types of attributes (such as clique and clan) of PCN on hospitalisation cost and hospital length of stay. We use electronic health insurance claim dataset to construct and explore PCNs. Each PCN is categorised as ‘low’ and ‘high’ in terms of hospitalisation cost and length of stay. The results from the proposed model show that the clique and clan of PCNs affect the hospitalisation cost and length of stay. The clique and clan of PCNs show the difference between ‘low’ and ‘high’ PCNs in terms of hospitalisation cost and length of stay. The findings and insights from this research can potentially help the healthcare stakeholders to better formulate the policy in order to improve quality of care while reducing cost.

Keywords—Clique, clan, electronic health records, physician collaboration.

I. INTRODUCTION

COLLABORATION is a combined process of multiple attributes including sharing of planning, decision-making, problem-solving, fixing goals and working together cooperatively. It enables individuals or organisations to work together in an effective and efficient way which would otherwise not be possible by an individual [1]. Collaborative relationship among people is highly valued in organisations because the synergies realised by diverse expertise produce benefits more than those achieved through individual effort [2].

In the literature, the importance of collaboration to improve the performance has been identified by researchers in various research areas, such as scientific network among authors [3], obesity research collaboration [4], virtual research and development organisations [5], evaluation of creative performance [6], and performance analysis of physical task and foreign market [7]. In the context of healthcare service providers (e.g., hospitals), collaboration among physicians has been found very important for increasing patient consciousness, producing better health outcomes (e.g., less length of stay in hospital, lower hospitalisation cost, lower mortality rate and higher satisfaction) and improving quality of care [8], [9].

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In healthcare settings, collaboration allows multiple inputs from various sources (e.g., physicians and nurse) that could produce more accurate decisions leading to better patient outcomes [9]. Uddin et al. [10] proposed a framework that uses details of professional interactions (e.g., physician to physician link) to learn about effective healthcare collaboration and coordination using social network. They analysed patient-centric care coordination and PCNs as a social network. The use of measures and methods of social network analysis has gained wide acceptability in other research areas (e.g., crisis communication network [11]). To our knowledge, there is no study that uses sub-group analysis (i.e. clique and clan) of PCNs to seek higher quality of care and better outcomes. This study aims to fulfil this gap of the literature and provides a better understanding about the effective and efficient physician collaboration structure.

This study focuses on physician collaborations in hospital context where they provide healthcare services to patients during their admission periods. When a patient is admitted, the physicians within the same or different hospitals collaborate to provide required healthcare services. Depending on the patient’s condition and availability of their colleagues, physicians might seek suggestions from other physicians working in different hospitals. Consequently, this type of medical practice develops a professional collaboration network among physicians. This study names this network as patient-sharing PCN.

As evident in the literature, there is an increased trend on using clinical measures of quality (e.g., morbidity and mortality rates) to study coordination and collaboration in healthcare contexts [12], [13]. However, it is often difficult to quantify the patients’ perception of quality as it could give different subjective results from patients receiving similar or same services. Some hospital admissions are not life-threatening; for example, a hospital admission for a broken hand. For such admissions, the clinical measure of mortality is not suitable to evaluate the quality of care. At first, Bavelas [14] and then other researchers [15], [16] show that the attributes of any collaboration network (e.g., PCNs) have impact on different objective outcomes (e.g., readmission rate in the context of hospital admissions). In this research, we study the patient-sharing PCNs evolving within hospitals using sub-group analysis in order to explore the effect of different network attributes of such networks on hospitalisation cost and hospital length of stay.

II. RESEARCH METHOD

A. Sub-Group Analysis

1. Clique and N-Clique

In graph theory, a cluster concept is given by the *clique* of a graph G . A *clique* C is a maximal complete subgraph of a graph G . It represents clusters of similar kind of elements. For example, in social networks, a *clique* is a group of people who are more closely and intensely tied (such as through friendship and acquaintance) with each other [17]. At the most general level, a *clique* is a subset of a network in which actors are more closely and intensely tied (or linked) to one another than they are to other members of the network. A *clique* can also be thought as a collection of actors, all of whom *choose* each other and there is no other actor in the network who also *chooses* and is *chosen* by all members of the clique [18], [19].

The *clique* definition for the strict condition of maximal fully connected subgraph can be too strong for many purposes. It insists that any two members of the clique must have a direct relationship with each other. To relax this criterion, *n-clique* concept is introduced by Luce [20]. An *n-clique* of a graph G is a maximal subset of vertices where distance d_G between any two vertices u and v is defined by:

$$d_G(u, v) \leq n$$

In Fig. 1, actors B, D, E, F and G form a 2-clique as they are connected among themselves at a maximum distance of 2. A 2-clique is a subgroup in which all the group members are not required to be adjacent, but all of them would be reachable through at most one intermediary [19].

Since a network with higher number of actors is likely to form larger number of cliques compared to its counterparts, we divide the number of cliques by the number of actors to generate a normalised clique value for each PCN considered in this study.

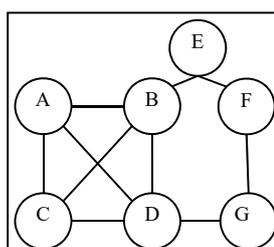


Fig. 1 Illustration of clique (ABCD), 2-clique (ABCDEG and BDEFG) and clan (BDEFG)

2. Clan

The trend of *n-clique* method is to find a long group rather than the tight and discrete one of the maximal methods, while the tightness in the group is essential to applications in social networks. In addition, members of *n-clique* can be connected by intermediate actors who are not members of the clique. These are often problems for most sociological applications. To solve them, Alba [21] first introduced the concept of a ‘*sociometric clique*’, which was renamed to *n-clan* by Mokken

[17]. An *n-clan* is an *n-clique* with diameter D which is less than or equal to n .

In Fig. 1, one of the two 2-clique is $ABCDEG$. In this 2-clique, the actor E is connected to the actor G with a minimum distance of 2 through the node F which is not a member of this 2-clique. Although there are two 2-Cliques (i.e., $ABCDEG$ and $BDEFG$), only one (i.e. $BDEFG$) satisfies the restriction of the *n-clan* approach.

B. Research Data

The health insurance claim data from a non-profit Australian health insurance organisation (i.e., The Hospital Contribution Fund) has been used to achieve the research goals of this study. The data include the members’ claim data from January 2005 to February 2009. It consists of three different types of claims: ancillary claim, medical claim, and hospital claim. Ancillary claims are auxiliary claims for medical services like dental, optical, physiotherapy, dietician, and pharmaceutical. The claims from specialist physicians other than the ancillary type are medical claims. All other claims for the services that patients received during their hospitalisation period are considered as hospital claims.

The dataset consists of about 14.87 million ancillary, 8.98 million medical and 3.1 million hospital claims received from 2507 hospitals for 0.44 million members. Admitted patients can have a wide range of diseases and patients with a specific disease needs to be seen by particular specialist physicians. Thus, different types of PCNs (such as, PCN for heart-attack patient or PCN for diabetes patient) exist inside the hospitals for hospitalised patients. This study considers PCNs only for total hip replacement patients from 53 hospitals. None of the patients of our dataset died during the hospitalised period.

We used Medicare Benefits Schedule (MBS) codes [22] to extract physician visiting information and admission details of the target patients (i.e., hip replacement patients) admitted in any of the 53 hospitals considered in this study. The MBS coding scheme was developed by the Australian Department of Health and Aging [22]. Every year, this coding method is reviewed and updated, if required, in order incorporate any new medical procedures discovered in medical science. In Australia, this coding scheme is followed by most healthcare service providers.

C. Research Analysis Framework

The goal of this study is to analyse the impact of PCN attributes on hospitalisation cost and hospital length of stay. The overall procedure of research analysis followed in this study is illustrated in Fig. 2. The attributes of PCN, e.g., clique and clan are considered as independent variables, whereas hospital length of stay and hospitalisation cost are considered as dependent variables. This study first constructs and categorises PCNs from the research dataset used in this study. It then calculates the network measures of PCNs using the UCINET software tool [23]. Finally, the statistical *t-test* had been used to assess relations of network measures with hospitalisation cost and hospital length of stay.

This study analysed 53 patient-sharing PCNs. These

networks had been developed in 53 different hospitals through physicians' visits to patients during their hospitalisation period. Each PCN is a sample of this study and the sample size of this study is 53. Several hip replacement patients ranging from 6 to 100 were admitted to each of these 53 PCNs. To calculate the hospital length of stay for a PCN, this study considered the average of length of stay values for all hip replacement patients who were admitted to the corresponding hospital of that PCN. A similar approach was followed to quantify hospitalisation cost for each PCN.

D. Construction and Categorisation of PCN

PCNs are generated through the collaboration of physicians in hospital settings over time. This study assumes that collaboration among two physicians emerges when they both visit a common patient during his/her hospitalisation period. An illustration of a PCN construction approach considered in this study is shown in Fig. 3. As illustration in this figure, patient *Pa.1* is seen by three different physicians - *Ph.1*, *Ph.2* and *Ph.3*. Physician *Ph.2* and *Ph.3* also visit patient *Pa.2*. The resultant patient-physician network is depicted in the patient-physician network as shown in Fig. 3 (b). Finally, the corresponding PCN for the patient-physician network is illustrated in Fig. 3 (c). In this PCN, the edges between *Ph.1* and *Ph.2*, and between *Ph.1* and *Ph.3* have a weight of 1 indicating that each pair of physicians visit only one common patient, whereas the edge weight for the link between *Ph.2* and *Ph.3* is 2 which indicates that they have two common patients.

Using the percentile rank statistics, this study categorised each PCN as 'low' and 'high' in terms of hospitalisation cost

and hospital length of stay. For each of these two criteria, PCNs having a lower than or equal value of 40th percentile is considered as 'low' PCN. On the other hand, PCNs having a higher than or equal value of 60th percentile is considered as 'high' PCN.

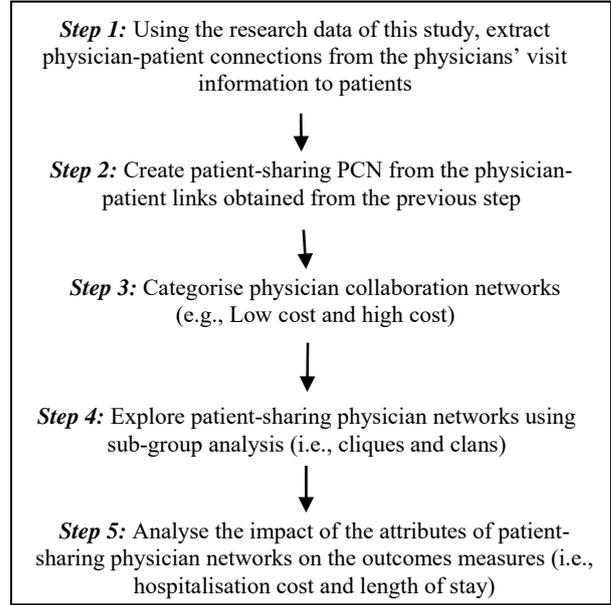


Fig. 2 Research analysis procedure followed in this study

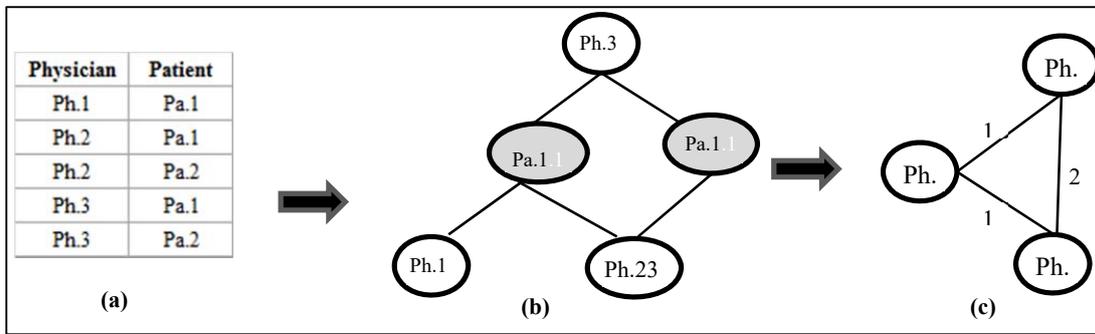


Fig. 3 Construction of a PCN based on an abstract data set: (a) information of physicians' visits to patients; (b) the corresponding patient-physician connections; and (c) the resultant PCN

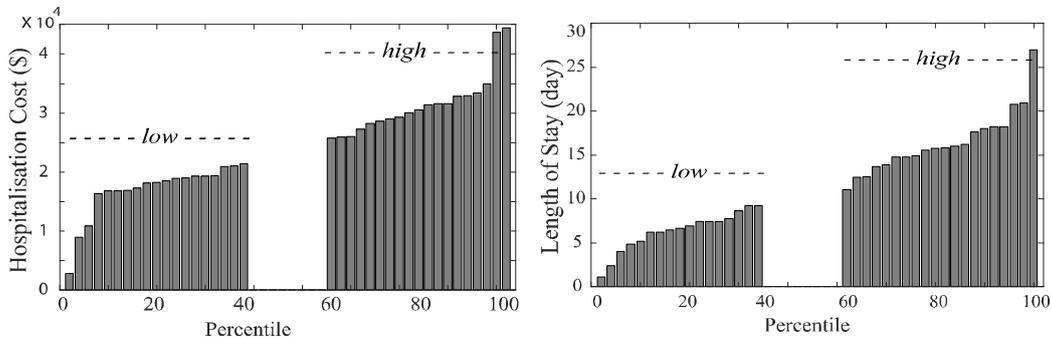


Fig. 4 Distributions of two extreme conditions: 'low' (≤40 percentile) and 'high' (≥60 percentile)

E. Statistical Analysis

This study used *t-test* for statistical data analysis. The *t-test* compares the average between two unrelated groups on the same independent and dependent variable and tells us if the groups are different from each other or not. The *t-statistics* (i.e., *t-value*) is calculated by dividing the mean difference by its standard error. In general, the acceptable *t-value* is greater than +2 or less than -2. The higher *t-value* indicates the more difference between groups, whereas a lower *t-value* indicates the more similarity between groups [24]. Every *t-value* has a *p-value* that indicates the significant difference between the means of two groups. In the literature, the *t-test* method is mostly used to compare the *t-* and *p-value* of different measures [25], [26].

III. RESULTS AND DISCUSSIONS

The distributions and their associated range values for ‘low’ (≤ 40 percentile) and ‘high’ (≥ 60 percentile) values for the three criteria (i.e., hospitalisation cost and hospital length of stay) are shown in Fig. 4. According to Fig. 4 (a), the range for the category of ‘low’ hospitalisation cost is \$2,753 - \$21,718 and for the ‘high’ category is \$25,636-\$44,428. As presented in Fig. 4 (b), the range for the ‘low’ length of stay is 1-9 days and for the ‘high’ length of stay is 12-27 days.

At this point, we describe the *t-test* results regarding the PCN-related measures (clique and clan) on the hospitalisation cost and hospital length of stay. The findings of this study are illustrated in Table I. In this study, the social network analysis (SNA) measures (i.e., 1-clique, 2-clique, 1-clan and 2-clan) are used as independent variables in *t-test*, whereas hospitalisation cost and hospital length of stay are used to categorise (as ‘low’ and ‘high’) network measures.

In Table I, the level of significance of *t-test* was found to be less than 0.05 ($p < 0.05$) between low-hospitalisation cost and high-hospitalisation cost and between low-length of stay and high-length of stay for the clique and clan measures. This level of significance means that there is a significant difference between them. Thus, the network structure of patient-sharing physician collaborations affects the hospitalisation cost and hospital length of stay.

In respect of hospitalisation cost and hospital length of stay, the ‘low’ PCNs have more cliques and clans compared to their counterparts, as per the mean values of Table I. This indicates that in such ‘low’ PCNs physicians are connected into small groups through sharing common patients. Working into small groups over the time allows physicians to have more discussions about their shared patients. This could lead to the positive hospitalisation cost and length of stay outcomes as found in this study. Fig. 5 illustrates pictorial differences between a ‘low’ and ‘high’ PCN from the research data. The ‘low’ PCN (left one) has less number of nodes that are almost evenly connected. This leads to the presence of higher number of cliques and clans in this PCN. The ‘high’ PCN (right one)

has higher number of nodes that are mainly grouped into three clusters. Although there could be higher number of cliques and clans within each cluster, the overall number of clique and clan for the entire PCN will be less because of this clustering tendency.

As evident from the sub-group analysis, higher values 2-clique and 2-clan are significantly related to lower hospitalisation cost and shorter length of stay. The sub-groups of 2-clique and 2-clan are also a small group, but they usually are formed with more than three actors. Therefore, it can be argued that larger sub-group structures, rather than smaller ones, are related to lower hospitalisation cost and shorter length of stay.

IV. CONCLUSIONS

This study proposed a way to explore the effect of different sub-group attributes of PCN on hospitalisation cost and hospital length. The structure of PCNs in respect to sub-group has been found to be related with hospitalisation cost and length. The finding of this study can be used in promoting the physician collaborations structure within the hospitals or health-care service providers.

Like any other research studies, this research has some limitations. First, this study did not consider any other information of patient pre-existing and socio-demographic conditions that could affect the present condition. For example, it is likely that a 75-years old type 1 diabetic patient will incur higher hospitalisation cost for a hip replacement surgery compared to a younger and non-diabetic patient. Second, there could be significant relations between hospitalisation cost and length of stay. This study did not consider such relations in exploring the impact of PCN structures on these three different measures. Finally, this study considered only one type of patients (i.e., hip replacement patients). Consideration of other type of patients (e.g., cancer patient and knee replacement patients) is required to confirm the generalisation of the findings of this study. Regardless of these limitations, our novel analysis showed how the group structure of patient-sharing physician collaborations affects two different healthcare measures of hospitalisation cost and hospital length of stay.

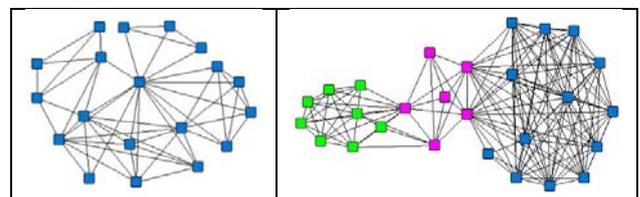


Fig. 5 An example ‘Low’ (left panel) and ‘High’ (right panel) PCN in terms of all three measures (i.e., hospitalisation cost and hospital length of stay). The nodes represent different doctor IDs and edges indicate transition between doctors

TABLE I
T-TEST STATISTICS FOR THE ANALYSIS OF EFFECTS OF THE MEASURES OF PCNS ON HOSPITALISATION COST AND HOSPITAL LENGTH OF STAY

		Hospitalisation cost ($N_L=19$ and $N_H=19$)			Length of stay ($N_L=17$ and $N_H=20$)		
		Mean	<i>t</i>	Sig.	Mean	<i>t</i>	Sig.
1-Clique	Low	2.87	-0.98	0.334	2.64	-1.01	0.318
	High	6.51			6.24		
2-Clique	Low	0.17	3.58	0.001	0.15	2.21	0.037
	High	0.08			0.09		
1-Clan	Low	2.87	-0.98	0.334	2.64	-1.01	0.318
	High	6.51			6.24		
2-Clan	Low	0.17	3.60	0.001	0.15	2.19	0.038
	High	0.08			0.08		

*. All significance valued are based on 2-tailed. N_L and N_H indicate the number of 'low' and 'high' class hospitals based on the corresponding attributes (i.e., hospitalisation cost and hospital length of stay).

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Aetiologies of Urinary Tract Infection from Patients Seen at Medical Research Council Unit, the Gambia in 2013

Nyima Sumareh, Saffiatou Darboe, Bakary Sanneh

Abstract—Background: Urinary Tract Infections (UTIs) are the most frequent community-acquired infections encountered in clinics and hospitals. It is a global burden with an estimated 250 million cases globally and it constitutes as one of the major cause of morbidity and mortality. Objectives: To determine a spectrum of the different pathogens that causes UTI and to gain an insight into the prevalence of UTI according to sex and age. Materials and Methods: A retrospective analysis of bacterial pathogens isolated from urine samples from the Microbiology Laboratory at the Medical Research Council in the period of January 2013- December 2013. Results: Of the total 1, 771 samples received 160 (9%) were culture positive. Overall the most frequently encountered pathogen was *Escherichia coli* (50%), followed by *Candida* species (22.5%) and *Klebsiella* species (10.6%). 60% of the isolates were from women and 35% were from men. The prevalence of UTI was higher in female aged 15-45 while in males it was higher in < 15years. Conclusion: The study has shown that *E.coli* was the predominant pathogen causing UTI. Also, it was observed that female within the age group of 15-45 years are the most at risk group of contracting UTI. Thus both age and gender are significant in determining the aetiology of UTI. Recommendation: This study should be followed by a study on antimicrobial susceptibility pattern on uropathogen which can further aid in the determination of empirical treatment in our setting.

Keywords—isolates, pathogens, prevalence, urinary tract infection

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CD36 Genetic Polymorphism Is Associated with Oral Fat Taste Perception and Obesity in Indian Population

Karthi Muthuswamy, Deepan Kumar SP, Selvakumar Subramaniam

Abstract—Recent evidences demonstrate that gustatory lipid sensor, CD36 plays a role in obesity development. Focus of our current research is to attain insight into the relationship between CD36 gene polymorphisms and oral lipid taste perception. Three groups of peoples i.e control, overweight and obese peoples were recruited for the present study. Anthropometric as well as biochemical parameters were measured by a standard method. Fat preference analysis for dietary lipids was performed by three-alternate forced choice test using linoleic acid (LA) at different concentrations. Further, blood samples were collected for CD36 SNP genotyping at rs1761667 (G>A) using Real-Time PCR (n = 60). We observed a positive correlation between LA detection threshold and adiposity parameters ($p < 0.05$). Obese subjects had almost 3-fold-higher detection threshold (lower sensitivity) than the overweight ($p < 0.05$) and control ($p < 0.001$) participants. The overweight and obesity participants with AG/GG genotypes had no significant differences in BMI, WHR and WHtR than the participants with the AA genotype. Nonetheless, the difference in WC was only marginally nonsignificant ($p < 0.084$). We also noticed that subjects with AG/GG genotypes were less sensitive to LA (higher threshold) than participants with the AA genotype. The present investigation brings further evidence that oral perception of dietary lipids is influenced by CD36 polymorphisms. This is the first study that shows a significant relationship between this SNP and oral fat detection threshold in Indian subjects.

Keywords—CD36 polymorphism, fat taste, obesity, linoleic acid, rs1761667

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Computational Modelling of pH-Responsive Nanovalves in Controlled-Release System

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Abstract—A category of nanovalves system containing the α -cyclodextrin (α -CD) ring on a stalk tethered to the pores of mesoporous silica nanoparticles (MSN) is theoretically and computationally modelled. This functions to control opening and blocking of the MSN pores for efficient targeted drug release system. Modeling of the nanovalves is based on the interaction between α -CD and the stalk (p-anisidine) in relation to pH variation. Conformational analysis was carried out prior to the formation of the inclusion complex, to find the global minimum of both neutral and protonated stalk. B3LYP/6-311G**(d, p) basis set was employed to attain all theoretically possible conformers of the stalk. Six conformers were taken into considerations, and the dihedral angle (θ) around the reference atom (N17) of the p-anisidine stalk was scanned from 0° to 360° at 5° intervals. The most stable conformer was obtained at a dihedral angle of 85.3° and was fully optimized at B3LYP/6-311G**(d, p) level of theory. The most stable conformer obtained from conformational analysis was used as the starting structure to create the inclusion complexes. 9 complexes were formed by moving the neutral guest into the α -CD cavity along the Z-axis in 1 Å stepwise while keeping the distance between dummy atom and OMe oxygen atom on the stalk restricted. The dummy atom and the carbon atoms on α -CD structure were equally restricted for orientation A (see Scheme 1). The generated structures at each step were optimized with B3LYP/6-311G**(d, p) methods to determine their energy minima. Protonation of the nitrogen atom on the stalk occurs at acidic pH, leading to unsatisfactory host-guest interaction in the nanogate; hence there is dethreading. High required interaction energy and conformational change are theoretically established to drive the release of α -CD at a certain pH. The release was found to occur between pH 5-7 which agreed with reported experimental results. In this study, we applied the theoretical model for the prediction of the experimentally observed pH-responsive nanovalves which enables blocking, and opening of mesoporous silica nanoparticles pores for targeted drug release system. Our results show that two major factors are responsible for the cargo release at acidic pH. The higher interaction energy needed for the complex/nanogate formation to exist after protonation as well as conformational change upon protonation are driving the release due to slight pH change from 5 to 7.

Keywords—nanovalves, nanogate, mesoporous silica nanoparticles, cargo

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Human Kinetics Education and the Computer Operations, Effects and Merits

Kehinde Adeyeye Adelabu

Abstract—Computer applications have completely revolutionized people's way of life which does not exclude the field of sport education. There are computer technologies which help to enhance teaching in every field of education. Invention of computers has done great to the field of education. This study was therefore carried out to examine the effects and merits of computer operations in Human Kinetics Education and Sports. The study was able to identify the component of computer, uses of computer in human kinetics education (sports), computer applications in some branches of human kinetics education. A qualitative research method was employed by the author in gathering experts' views and used to analyze the effects and merits of computer applications in the field of human kinetics education. No experiment was performed in the cause of carrying out the study. The source of information for the study was text-books, journal, articles, past project reports, internet i.e. Google search engine. Computer has significantly helped to improve education (human kinetic); it has complemented the basic physical fitness testing and gave a more scientific basis to the testing. The use of the software and packages has made cost projections, database applications, inventory control, management of events, word processing, electronic mailing and record keeping easier than the pasts.

Keywords—Application, computer operation, education, human kinetics.

I. INTRODUCTION

HUMAN Kinetics has been studied for many decades. It is an aspect of education that is primarily concerned with the body and development of attitude and abilities that will give one the desire to be physically active throughout one's life. It can also be defined as series of exercises or activities sequentially arranged for the development of an individual in all dimensions of life; physical, intellectual, social, emotional, or spiritual.

Human Kinetics Education was formerly known as Physical Education but was recently changed by the governing board of the National Association for Physical and Health Education Recreation - Sports and Dance (NAPHER-SD). Human kinetics (physical education) is quite diverse and can be expressed in so many ways because it means different things to many people. For example, Adam may like to play tag because he derived fun from it, James may participate in volleyball to be with his friends and Jane may like running a cross-country to increase her endurance. However, recently activities in human kinetics education are being computerized and digitalized because of innovation in sports and its administration. It is therefore, necessary to study the importance of computer in human kinetics.

The computer age is bringing about changes in education

as computer is an instrument enhancing the learning process of students, and greatly assisting the administrators of sports in carrying out the myriad of functions of decision making, planning, organizing, coordinating, diverting, guiding, controlling and evaluating. Computer is used by sport administrators to improve the quality and quantity of their works, simplify their work efforts and improve efficiency, motivate the work force, and foster creativity and better planning of sport activities.

Computer is defined as an electronic machine that accepts data in a prescribed format, processes the accepted data and produces the processed data in form of information in a human comprehensive form [10]. Computer is very accurate and fast in operation, holds information for very long period of time, durable and does not make mistake.

Sport administrators need to learn about computer and feel genuinely interested, then know if it is effective and efficient in their operations. Learning about the computer is quite similar to learning a foreign language. Therefore, it is appropriate and essential to start with a glossary of computer terminology. The computer is made up of the following basic components.

- A. **Input units** which feed data into the computer. E.g. keyboard, mouse, scanner, card reader, optical mark reader, voice synthesizer, magnetic tape reader etc.
- B. **Central processor** which controls the processing function and essentially is a big filling cabinet completely indexed and capable of storing large amount of data. The central processing unit consist of two major parts:
 - i. Control unit: it is referred to as the heart of the computer.
 - ii. Arithmetic and logic unit (called the brain of the computer): It is the area of the computer where arithmetic and logic operation are performed on data
- C. **Memory unit:** The unit in the computer for information storage. It holds the programs necessary to solve problems and any data to be processed by the program. The memory unit has two parts:
 - (i) Primary storage (main memory) which stores information temporarily and
 - (ii) Secondary storage (backing storage device), which stores information permanently.
- D. **Output units:** Serves the function of creating records, reports and creating new media that can be used to satisfy further automated processing needs. Examples of output units are monitors (VDU), printer, plotter, teletypewriter etc.

The era of educational technology arrival was accompanied by major changes both in education and technology. Reference [1] suggested that technology was set to continue to change rapidly in the following years.

Technological innovations and applications are becoming distinct in many facets of the education careers. School technology became a big business in an attempt to provide the necessary technology to link schools and colleges to the information highway [2], [3].

According to [4], computers and instructional educational technology have a positive impact on the quality of teaching and research. The availability of electronic information has been confirmed helpful by students in their studies. Education in the present generation needs tools that will be capable of overcoming space, time and performance demands. These tools can be developed by the use of multimedia communication systems for educational and training purposes [5].

II. USES OF COMPUTER IN HUMAN KINETICS EDUCATION

Computers can be useful in Human Kinetics profession in these three different areas:

(i) **Computer-Assisted Instruction:** Education computer programmes commonly known as computer-assisted instruction (CAI) are now available for many subject areas in Human Kinetics Education. CAI has helped to improve many areas of this profession. CAI provides students with an option to classroom settings which frees the instructors from going through the rigorous wrote processes that are better handled by the computer. Computers have helped students to observe and listen to the mechanics of movements in slow motion and learn effectively. Using the internet have helped one to be able to update the recent technological improvement in sports training, changes in rules, to download the rules from the internet authorities, to do research and so on.

Computers have potential applications in physical education curriculum; current usage is minimal when compared to other professions. Computers are greatly useful in making wide tasks and projects, preparing budget, preparing financial statements, doing calculations and scheduling in physical education programmes. Computer usage does not only enhance good quality of documentation, but also saves time and operational expenses for sport organizations.

(ii) **Assessment:** Assessment in Human Kinetics education using computers has great promise but it is mostly used in fitness assessment. The old method of recording students' performance where teacher's grade book are used during testing and practical classes has been replaced by the use of an Apple Message Pad which helps to automatically upload data to a desktop computer and as well eliminates the stress of transferring information from one source to another [6]. [7] The major areas where computers are mostly used in human kinetics education are reporting and fitness assessment. There are computer programs such FITNESSGRAM [8] co-sponsored by the Cooper Institute for Aerobics Research and Prudential Insurance which allows teachers in recording data, providing feedback to students and guidance with a report card and as well to keep records from time to time. The ability to keep and use cross-sectional data provides great possibilities for using fitness information in formative evaluation and to emphasize the continuing

improvement of fitness rather providing a summative evaluation which may not have many benefits educationally. There are other fitness software like Bonnie's Fitware that allows similar uses in fitness testing [9].

(iii) **Utilities:** Use of computer utilities, like word processing programs [MS Word], presentation program software [MS PowerPoint] and data base managers [MS Excel and MS Access], are the most commonly used software among teachers and which helps them be more productive. The use of these word processors makes their work much easier than in the past. Information stored on a computer can be easily shared among the two parties (teachers and students). Data base managers (Microsoft Access and Excel) and other specific applications for recording and storing data also have extensive use. Different data base management applications are used in storing, retrieving grades and other information, and to calculate new information, like final grades on a unit. The use of a data base manager has made calculating grades an easier task--especially for larger classes as many have found at all levels of education.

Computer Applications in Human Kinetics Education Branches

- **Application of computer in Human Kinetics Education research:** Computer applications have helped in the follow aspects of Human Kinetics Education Research such as: Searching for literatures, administering tests, analyzing data, analyzing results and general assist.
- **Application of computer in motor learning and control in Human Kinetics Education:** Computer applications have helped students in motor learning and control in human kinetics education courses. This includes: Reaction and movement time, Time-on-target scores, movement distance and location, neuromuscular & neuro-physiological variable, software application.
- **Application of computer in the field of Exercise Physiology Research:** Use of computers in the field of exercise physiology research has been found helpful in monitoring minute by minute changes in lactic acid levels in muscular tissue, determining the blood pressure, heart rate, pulse rate, used to calculate the body fat percentage based on skin fold and record simultaneously multiple measures from subjects.

Computer application has also been helpful in enhancing a good body composition in a form of body composition software programme which has been designed for use in health enhancement programmers offered through medical clinics. It allows entry of demographic information and also provides selection of body composition methods.

Application of computers has also been useful in sports psychology for: self-assessment, self-talks, concentration task, bio-feedback and relaxation technique and psychological instruments

III. RESEARCH DESIGN

Qualitative research method was employed by the author in gathering experts' views

Sources of Data

Source information for the study is data collected from text-books, journals, articles, past project reports, internet i.e. Google search engine

Procedure

Researcher engaged in a thorough search of information on the usefulness, effectiveness, relevance and importance of computer operations in Human Kinetics Education. He therefore, consults several relevant journals such as Journals of Human Kinetics and Health Education, British Journal of Human Kinetics Education, International Journal of Sport (see details on reference list) and text-books for needed information with regards to computer operations in Human Kinetics and Health Education.

IV. DISCUSSION

Computer Operation in Human Kinetics

CAI

Education computer programs, commonly known as CAI, are now available for many subject areas in Human Kinetics Education and in Sport. CAI helps to improve the following areas of Human Kinetics Education.

- **Tutorials:** The purpose of tutorials is to introduce new materials and guide the student through the learning of the information. This includes some kinds of presentations followed by questions on the material and corrective feedback based on the student's responses. This tutorial is aided and made easily by using the CAI. An example of Human Kinetics tutorial that can be delivered using this method is a volleyball program that explains the correct mechanics for executing skills such as passing, serving, volleying, blocking, smirching, and spiking etc. The student then demonstrates his understanding of the material by answering questions on the techniques, positioning, and so on.
- **Computer Games:** Video games involving skills, knowledge, and luck specific to a particular game, instructional games require a student or athlete to draw on and apply the knowledge previously learned in the gymnasium or classroom to be successful, the student or athlete is expected to use what he/she learned to outthink, outwit, or maneuver either the computer or other students using the same program. Games involving the use of football, basketball, or baseball strategy are available for use in physical education classes.
- **Simulation:** Simulations also draw on the uniqueness of the computer by providing the students with an opportunity to practice a real life situation in an environment that is safe, efficient, controllable, and in some instances, less expensive. Through the use of a simulation, a student can explore the mental aspects of a skill or concept. After a sound mental understanding is achieved, the student can then utilize this information for more effective skill execution.
- **Test Evaluation:** Another program that may not necessarily be instructional itself but can be useful in an instructional setting is the use of computers for test and quiz. These programs are applicable in a wide variety of

human kinetics education content area. It provides the instructor with the ability to generate several different forms of an evaluation, develop a bank of questions from which to draw for specific situations or most importantly, obtain a statistical analysis of both the test results and the test itself. This program can help in the development of more reliable and valid evaluation instruments.

- **Drill:** Computerized drills fashioned after the use of flash cards are primarily designed to enhance the aspect of instructional processes involving practice. Because of the unique characteristics of computer, CAI of drill can be programmed to vary the level of difficulty based on the success of a student, to randomly review questions that are incorrectly answered, to provide qualitative feedback specific to a student's answer, and even to make judgment on correct answers that contain spelling or grammatical errors. Drills are available for many topics in human kinetics education. Drills can be used to program student's skills on rules, scoring methods, techniques, and player's position.
- **Computer in the Gymnasium:** Beth Kirkpatrick and Jay Struve of Tilford Middle School in Vinton, Iowa, have developed a fascinating and very unique CAI using the Quantum XL watch and tele-metering system and the commodore computer which helps to monitor the impulse rate of the students or athletes throughout the entire physical education class, and then the printout being given to the students picturing their level of activity.

This technology is also being used in concert with bicycle ergo meters to do sub-maximal test of cardiovascular efficiency. This compliments the basic physical fitness testing and gives a more scientific basis to the testing. The records can be used for basic research, as excellent feedback to students and parents, and to gather support for the physical education program. Utilizing this technology, the teachers have also found several students with heart abnormalities that were not discovered by their physicians. The physical education teachers were able to make the physicians aware of the problems who, in turn gave appropriate treatment to the children. This certainly solidified a marvelous working rapport between the physical educators and the professionals.

CAI is currently very popular in the schools but not widely used in physical education or sports. Materials could certainly be used to complement the activity time given to physical education, but teachers are reluctant to give activity time because it is so precious administrators could be instrumental in fostering greater interdisciplinary activity so that classroom teachers are utilizing physical education-related knowledge and CAIs in their classrooms.

Uses of Computer Software in Human Kinetics

The most widely used computer software and packages by those in Human Kinetics Education or Sport Ministry would be Microsoft Word, Microsoft PowerPoint, Microsoft Excel, Microsoft Access, Peachtree, Data base management, SPSS etc. Each of these computer software and packages has different uses and applications in almost every branches of Human Kinetics like

coaching, athletic training, sport information and marketing, sports administration, biomechanics, exercise physiology, sport communication, sociology of sport etc. These computer software and packages can be useful in all the branches of Human Kinetics for cost projections, database applications, inventory control, budget accounting, and management of events, word processing, electronic mailing and routine record keeping. The computer software can also be useful in supporting both instruction and research as well.

Word processing will allow human kinetics educators to do all of their writing and corresponding. It is possible to make address lists for various correspondences, design contracts, have a program that will sort for information needed from specific course or person, and much more.

The data base management will handle developing schedule, recruiting files, and statistics of all kinds.

The spread sheet will also handle statistic and assist greatly in the budget preparation, payroll, and additional financial tasks.

Graphic can be used for displaying information to be used in speeches or presentations. Interesting designs can be developed for use on promotional materials, programs, bulletins, posters, and many other communication materials needed. Graphics can be fun way to use the computer effectively.

Tele-computing is simply having one computer speak to another computer. To use tele-computing, a telephone and a modem is needed. Bulletin boards, electronic mail, and information services are some of the services provided by tele-computing.

Bulletin boards: This can be used for mail exchange, software exchange, technical support and hardware exchange.

Electronic mail: In this case, the computer sends a typewritten message to another computer. Interoffice communication, meeting agendas, drafts of papers, and supports information communication can all be done with electronic mails.

Information service: This is source for useful information. Pertinent information to the physical educator or sport director may be airline schedules, health information, and so on.

Selecting a Computer for Use in Human Kinetics

A computer selected for use in Human Kinetics Education or Sports should be the ones used in offices, business, and education. The basic capability of the selected computer should include a 124k memory, two disk drives or hard disk drive and graphics capabilities. These should be accompanied by a dot matrix printer. The desirable characteristics of the computer systems must include:

- The ability to store and retrieve data
- Ease of updating
- Reliability
- Accuracy
- Ability to interact on a one-to-one basis
- Enjoyable interaction
- Challenges to users
- Instant indexing and cueing
- Numerous technological capabilities
- Speed
- Size

In selecting a computer for use by physical administrator, computer systems that are unusually expensive, incompatible with other systems, and those that have a set limitation and are not able be upgraded should be avoided.

Therefore, these questions will serve as helpful guide during the selection process of a computer for use in human kinetics education and even in other educational fields:

1. Will your computer operation be more efficient?
2. Will the system provide more information?

3. Will the system provide better information?
4. Will the system save time?
5. Will the system improve the program quality?
6. What will it cost?

Conclusion

- Computer through its assisted instruction significantly helps to improve Human Kinetic Education.
- Computer has significantly complemented the basis to the testing.
- Computer software and packages is significantly useful in all the branches of human kinetics for cost projections, database applications, inventory control, budget accounting, and management of events, word processing, electronic mailing and routine record keeping.

RECOMMENDATION

- In view of the above, it was therefore recommend that human kinetics teachers and sport administrators should fully utilize the advantage of technology of computer and bring all its opportunities to the practice and administration of sports and physical and health education.
- Recommend that the government should train all personnel in the ministry of sports and institutions where sports education is being thought, on the operation of basic computer software such as Microsoft Word, Microsoft PowerPoint, Microsoft Excel, Microsoft Access, Peachtree, Data base management, SPSS etc.

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Comparative Study of Cellulose Tris(3-Chloro-5-Methylphenylcarbamate) Coated or Covalently Immobilized on Silica for Separation of Enantiomers in High-Performance Liquid Chromatography

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Abstract—Analytical and preparative separation of enantiomers is considered as the most difficult problem in separation science for many years due to identical properties of enantiomers in achiral environment. Only in 1980s chiral columns for high-performance liquid chromatographic (HPLC), separation of enantiomers became commercially available. Among all chiral stationary phases (CSP) available today for HPLC separation of enantiomers polysaccharide based chiral selectors (CS) are most widely used CS and most commercially available chiral HPLC columns contain polysaccharide based CS. Polysaccharide-based CSPs are commonly prepared by physical coating of polysaccharide derivative onto the surface of silica. On the one hand, this is a quick method that does not require pre-activation of silica. As for covalently immobilized CSs, the main mechanism of immobilization is interconnection of polysaccharide chains. The advantage of this method is that immobilized chiral stationary phases are stable, compatible with different type of mobile phase components and capable/suitable for reversal of enantiomer elution order. The major research goal of the project is comparison of cellulose tris(3-chloro-5-methylphenylcarbamate) coated or covalently immobilized on silica for separation of enantiomers in acetonitrile, methanol, and mixture of n-hexane and isopropanol (v/v) as mobile phases. In the frames of the present project, we also studied enantiomer elution order and described the thermodynamics of chiral separation.

Keywords—chromatography, separation of enantiomers, chiral stationary phase, enantiomer elution order, thermodynamics

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Assessment of Cytotoxic and Genotoxic Effect of Tartrazine in Both Male and Female Albino Rats

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Abstract—Objective: This study was carried out to evaluate the cytotoxic and genotoxic effect of tartrazine in both male and female albino rats. Methodology: Forty adult male (20) and female (20) Sprague Dawley albino rats (120 - 150g) were obtained and distributed into four experimental groups; Group I; 10 untreated males, Group II; 10 untreated females, Group III; 10 treated males, and Group IV; 10 treated females. Body weight was recorded weekly, reduced glutathione (RGH), lipid peroxidation (SOD), and superoxide dismutase activity (MDA) in liver tissue were carried out, histopathological studies of brain, liver, and kidneys were performed, COMET assay was performed, all values were statistically analyzed. Results: Decrease in the activity of RGH and SOD in the treated groups were reported, but there was a more significant decrease in the female treated group. MDA was increased in treated groups with tartrazine, moreover, it was more significant in the female treated group. Multiple histological lesions were developed in brain, liver, and kidneys. COMET showed positive results. Conclusion: Our study concluded that Tartrazine has a cytotoxic and genotoxic effect on albino rats and it was more significant in females than males.

Keywords—tartrazine, cytotoxicity, genotoxicity, histopathology, albino rats

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Welfare and Sustainability in Beef Cattle Production on Tropical Pasture

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Abstract—The aim of this study was to improve the production of beef cattle on tropical pasture without harming this environment. On tropical pastures, cattle's live weight gain is lower than feedlot, and forage production is seasonable, changing from season to season. Thus, concerned with sustainable livestock production, the Premix Company has developed strategies to improve the production of beef cattle on tropical pasture to ensure sustainability of welfare and production. There are two important principles in this productivity system: 1) increase individual gains with use of better supplementation and 2) increase the productivity units with better forage quality like corn silage or others forms of forage conservations, actually used only in winter, and adding natural additives in the diet. This production system was applied from June 2017 to May 2018 in the Research Center of Premix Company, Patrocínio Paulista, São Paulo State, Brazil. The area used had 9 hectares of pasture of *Brachiaria brizantha*. 36 steers Nellore were evaluated for one year. The initial weight was 253 kg. The parameters used were daily average gain and gain per area. This indicated the corrections to be made and helped design future fertilizations. In this case, we fertilized the pasture with 30 kg of nitrogen per animal divided into two parts. The diet was pasture and protein-energy supplements (0.4% of live weight). The supplement used was added with natural additive Fator P® – Premix Company). Fator P® is an additive composed by amino acids (lysine, methionine and tyrosine, 16400, 2980 and 3000 mg.kg⁻¹ respectively), minerals, probiotics (*Saccharomyces cerevisiae*, 7 x 10E8 CFU.kg⁻¹) and essential fatty acids (linoleic and oleic acids, 108.9 and 99g.kg⁻¹ respectively). Due to seasonal changes, in the winter we supplemented the diet by increasing the offer of forage, supplementing with maize silage. It was offered 1% of live weight in silage corn and 0.4% of the live weight in protein-energetic supplements with additive Fator P®. At the end of the period, the productivity was calculated by summing the individual gains for the area used. The average daily gain of the animals were 693 grams per day and was produced 1.005 kg /hectare/year. This production is about 8 times higher than the average of Brazilian meat national production. To succeed in this project, it is necessary to increase the gains per area, so it is necessary to increase the capacity per area. Pasture management is very important to the project's success because the dietary decisions were taken from the quantity and quality of the forage. We therefore recommend the use of animals in the growth phase because the response to supplementation is greater in that phase and we can allocate more animals per area. This system's carbon

footprint reduces emissions by 61.2 percent compared to the Brazilian average. This beef cattle production system can be efficient and environmentally friendly to the natural. Another point is that bovines will benefit from their natural environment without competing or having an impact on human food production.

Keywords—Cattle production, environment, pasture, sustainability.

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Human–Wildlife Conflicts in Selected Areas of Azad Jammu and Kashmir, Pakistan

Nausheen Irshad

Abstract—Human-wildlife conflict (HWC) exists in both developed and developing countries though it is more serious in developing nations. Knowledge of species ecology and species sensitivity to anthropogenic pressures is an important prerequisite for conservation/management. Therefore, three districts (Poonch, Bagh, and Muzaffarabad) of Azad Jammu and Kashmir were selected to highlight the wildlife hunting practices from January 2015 to November 2018. The study area was thoroughly explored to recover dead animals. Moreover, the local community was investigated (questionnaire survey) to catch on motives of killing. The results showed HWC mainly arises due to feeding habits of wild animals as some are frugivorous (small Indian civet and small Kashmir flying squirrel) who damaged human cultivated fruit trees. Besides, Indian crested porcupine and wild boar act as serious crop pests. The feeding upon domestic animals (common leopard) and poultry (Asiatic Jackal and Red fox) were also reported as factors of conflict. Hence numerous wild animals and birds (N=120) were found killed by natives in revenge. Despite protected status in Pakistan, the killed mammals belonged to categories of critically endangered (*Panthera pardus*) and near threatened (*Viverricula indica*) species. The important birds include critically endangered (*Falco peregrines*) and endangered (*Lophura leucomelanos*) species. It was found that mammals were primarily killed due to HWC (60%) followed by recreation (20%) and trade (15%) Whereas, the foremost hunting reasons for birds are recreation (50%), food (25%) and trade (25%). The drastic hunting/killing of the species needs our immediate attention. This unwarranted killing must be stopped forthwith otherwise these animals become extinct.

Keywords—Azad Jammu and Kashmir, anthropogenic pressures, endangered species, human-wildlife conflicts

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Direct and Indirect Impacts of Predator Conflict in Kanha National Park, India

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Abstract—Habitat for predators is on the decline worldwide, which often brings humans and predators into conflict over remaining shared space and common resources. While the direct impacts of human predator conflict on humans (i.e., attacks on livestock or humans resulting in injury or death) are well documented, the indirect impacts of conflict on humans (i.e., downstream effects such as fear, stress, opportunity costs, PTSD) have not been addressed. We interviewed 437 people living in 54 villages on the periphery of Kanha National Park, India, to assess the amount and severity of direct and indirect impacts of predator conflict. While 58% of livestock owners believed that predator attacks on livestock guards occurred frequently and 62% of those who collect forest products believed that predator attacks on those collecting occurred frequently, less than 20% of all participants knew of someone who had experienced an attack. Data related to indirect impacts suggest that such impacts are common; 76% of participants indicated they were afraid a predator will physically injure them. Livestock owners reported that livestock guarding took time away from their primary job (61%) and getting enough sleep (73%), and believed that it increased their vulnerability to illnesses (80%). These results suggest that the perceptions of risk of predator attack are likely inflated, yet the costs of human predator impacts may be substantially higher than previously estimated, particularly related to human well-being, making the implementation of appropriate and effective conservation and conflict mitigation strategies and policies increasingly urgent.

Keywords—direct impacts, indirect impacts, human-predator conflict, India

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Hybrid Neuro Fuzzy Approach Mainly on Semiautotrophic Hydroponics Technology in Cassava Breeding

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Abstract—HIGHLIGHT ON SEMI AUTOTROPHIC HYDROPONICS In the quest to expand the scope of Technology and to complement the existing ones, Semi Autotrophic Hydroponics came to limelight. Semi Autotrophic Hydroponics technology is a low cost method for high ratio Propagation of true-to-type Virus free cassava plants The Semi Autotrophic Hydroponics technology is a sound technique for efficient rapid multiplication of cassava stems and it has been proven overtimes that the Technology can produce 200,000 to 250,000 plants per stand and it is very suitable for commercial seed entrepreneur. OPERATION INVOLVE IN SEMI AUTOTROPHIC HYDROPONICS There are two important operations in Semi Autotrophic Hydroponics to be carried out before generating a virus free cassava plants and this include; • Laboratory operation. • Field operation. LABORATORY OPERATION Substrate are gotten and put into laboratory trays, and modern plant is been re-cut into plantlets and after, Triceps are used to fix them on the substrate and surface sterilizing agent is then used to sterilize the surface before is been put into the growth room. Plantlet is then allowed to stay inside the growth room for 2-3 weeks, and within this period they are 2-3 times watered in a week before it's been transferred to the field. FIELD OPERATION After the right sight of soil is chosen, which must be well moisturized, then field layout and making of ridges is taken place which is to be marked 20cm long with isolation gap of 3cm long so as to differentiate the virus Genotype, Also spacing and intra-row spacing is 1m by 5m respectively. After these, Holes are dig on the ridges which is about 3cm deep, and then the plantlets are being planted and this has to be done at the early hours of the day when there is less of sunlight and then it's been watered appropriately. One week after the transplant, survival count is taken place and after survival count replacement is been done and then cassava plantlets are been allowed to grow with appropriate monitoring and effective irrigation.

Keywords—semi autotrophic hydroponics, cassava breeding, characterization, ratooning

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Managing the Baltic Sea Region Resilience: Prevention, Treatment Actions and Circular Economy

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Abstract—The worldwide future sustainable economies are oriented towards the sea: the maritime economy is becoming one of the strongest driving forces in many regions as population growth is the highest in coastal areas. For hundreds of years sea resources were depleted unsustainably by fishing, mining, transportation, tourism, and waste. European Sustainable Development Strategy is identifying and developing actions to enable the EU to achieve a continuous, long-term improvement of the quality of life through the creation of sustainable communities. The aim of this paper is to provide insight in Baltic Sea Region case studies on implemented actions on tourism industry waste and beach wrack management in coastal areas, hazardous contaminants and plastic flow treatment from waste, wastewaters and stormwaters. These projects mentioned in study promote successful prevention of contaminant flows to the sea environments and provide perspectives for creation of valuable new products from residuals for future circular economy are the step forward to green innovation winning streak.

Keywords—Resilience, hazardous waste, phytoremediation, water management, circular economy.

I. INTRODUCTION

THE Baltic Sea environment is exposed to pollution already from late 19th century; pollutants emitted or discharged by households, traffic, industries and agriculture. Many of these substances, like oil products, heavy metals and other contaminants, known to be very dangerous are forbidden and create concerns in coastal areas, soil, sediments, waste and surrounding groundwater sources. Hazardous substances are transported to the sea via water courses and the air making the Baltic one of the most polluted seas in the whole world and affecting the life of about 85 million people living in the Baltic Sea catchment area [1].

Nutrients are posing large problems for eutrophication and this is highly the concern for EU [1]. The risk of eutrophication and oxygen deficiency during the

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summertime in EU costal waters is the problem starting from Baltic Sea Region, across the Black Sea and its smaller appendices as well as Caspian region [2], [3], the problematic eutrophicans are coming in from watersheds from densely populated areas, agricultural lands as well as wastewater treatment places. Baltic Sea sediments are phosphorus internal leaching 100 000 t a year however from agricultural lands just 30 000 [1]. Furthermore, the world's production of chemicals has increased from 7 million tons in the 1950ths to 400 million tons in 2000. These chemicals can lead to a great environmental problem in the future. The problems connected with dangerous hazardous substances are worldwide [4]. Our Baltic Sea Region is one of most contaminated in the world [5], [6]. Water residence in Baltic Sea is 30 years per cycle, intensive economy and 85 million people do the problem topical. All cocktail of hazardous and toxical trace elements are sinking in sediments in time and space [7], [8]. The sediments are mixing up when the ships and streams mix the waters and toxicants go around in the food chain.

The EU Waste Framework Directive (2006/12/EC), the EU Water Framework Directive (2000/60/EC) and the EU Groundwater Directive (2002/118/EC) are important legislative tools for environmental protection. Other NGO resources exist in Europe to support work on remediation, e.g., The European Commission's Joint Research Centre (JRC) Land Management and Natural Hazards Unit. The EU adopted the Environmental Technology Action Plan in 2004 to encourage the development and broader use of environmental technologies, including environmental remediation technologies. The Network for Industrially Contaminated Lands in Europe (NICOLE), The European Coordination Action for Demonstration of Efficient Soil and Groundwater Remediation (EURODEMO) decade ago promoted sustainable, cost-effective soil and groundwater remediation technologies, elaborated protocols for efficient and sustainable actions.

The aim of this paper is to provide recommendations through describing environmental management case studies at coastal areas, management and treatment of hazardous contaminants.

II. CASE STUDIES

A. Sediment Pollution at Bays

Kalmar and surroundings has a bit more than 160 000 inhabitants, business, culture and environmentally sustainable innovations and well-considered focus on marine ecology and landfill/harbor contamination. "Kalmar Strait Commission" coordinates costal municipalities along

the east coast of Sweden. The cooperation has resulted in a wide set of marine projects such as: “Aqua best” (Interreg) for mussel farming and other. The focus has been on recycling of phosphorous by introducing large scale commercial mussel farming within the Baltic Sea (“Blue growth” - A seed money project financed by the secretariat for the Baltic Sea Strategy). Based on Malmbay dredging project experience Kalmar wishes to develop methods based on the removal phase and recycling of - to clean sediments and improve water quality. The SURE-project (LIFE) as continuation of started work demonstrates a disruptive, cost effective bottom sediments treatment [1]. Today, in EU more than 200 million cubic meters of sediments are annually dredged in EU borders: 1) to dredge with a minimum of disturbance and release of toxic and nutrient rich sediments; and 2) to manage and recycle the sediments cost-effectively for beneficial use. LIFE SURE project will: 1) Treat and recycle up to 70% of dredged sediments. Focus is put on both toxic substances and nutrients. 2) To demonstrate a mobile dredging technology which will be 20% cheaper compared to state of the art. Today the cleanest dredging methodologies are expensive and technically advanced. 3) Optimizing technical solutions. 4) Presenting and popularizing results to other stakeholders. The triple helix character is in line with a number of EU policies and interregional agreements. During the SURE-project 40 000 m³ of sediments will be removed from Malmfjärden in Kalmar city [1]. The project is related also to fulfill obligations to EU legislative documents.

B. Coastline Dumping

Landfills represent one of the main sources of heavy metals to the Baltic Sea environment. Industry, commerce and residential areas create waste and still even the best recycling does not solve problems with landfilled masses. The special attitude may be paid to historical closed landfills (dumps). Landfills can provide new inexpensive resources of metals and construction soil that can be used further in different industries like cement, foam glass, flooring and other construction industries and be part of the circular economy [9]. Different chemical, physical and biological remediation techniques have been used for the remediation and the rehabilitation of contaminated soils with heavy metals but all these methods are in general expensive, labour intensive and result in extensive changes to the chemical, physical and the biological properties of the treated soil [10]. The physical and the chemical methods are in general applicable for small areas and not for large areas like the situation of the glassworks landfills in Småland. Phytoremediation is a relatively cheap technology; uptake of metals by plants happens through roots and shoots thus diminish the pollution in soil [11]. The Triple helix collaboration is always important to get succesful stakeholders involvement, move step by step and implementing phytoremediation as succesful gentle technology elaborate public environmental awareness [12]. In Estonia, during the landfill mining project of the Kudjape landfill in Saaremaa (sponsored by the Swedish Institute), the phytoremediation technique was used as a rehabilitation step after the excavation of the landfill in a form of a recreation park. The same idea can be used to remediate and

recover the glassworks sites in Småland after excavation by combining the knowledge gathered from the Estonian project and the talents of the glass artists in Sweden to build a phytoremediation tourist glass park in a selected old landfill site in Småland like the Boda glasswork in Emmaboda.



Fig. 1 Orrefors Park in October 2017. Photo: Jovita Pilecka

Phytoremedial actions as a tool may help the region to meet the goals of sustainable development and restored ecological status established by the HELCOM to be reached by 2021. The main goal of the policies EUSBSR2013 PA Hazards and the BSAP2007 A is to reduce the use and the impact of hazardous substances in the Baltic Sea region and these mentioned projects were exactly driven to reach the targets.

C. Water Treatment Sludge at Catchment Areas

Other novel studies were performed in Southern Sweden about water supply sludge stochastic storage site. Ringsjöverket in Stehag, Eslövs municipality, managed by Sydsvatten AB, has been in operation since 1963. At present, the waterworks supply approximately 900,000 inhabitants with drinking water from Bolmenjön and the annual distribution for 2015 is 45 mm³. Since the mid-60s, water production has shown a steady positive trend, and from 2010 to 2015, water distribution increased by 29%. Before the 80-kilometer Bolment tunnel was commissioned in 1987 to lead Bolmensjövattnen to Ringsjöverket, a measure taken to cover the prevailing water consumption needs in the Skåne region, Ringsjön was used as a raw water source. The preparation for interconnection of the tunnel to Ringsjöverket was initiated in the 1970s by upgrading the work with four parallel flocking systems with subsequent lamellar sedimentation and fast sand filtration as a reinforced treatment step for Bolsjö's humus-rich water [13]. Rönneholms Mosse is located on exploited peat moss, at which activity for peat is driven. Generally, there are water bodies lined with aluminum deposited in the deepest and central parts of the ponds while in the outer areas, iron sludge has been laid on top of the aluminum sludge. The ponds are overgrown with local vegetation such as marsh, cavalry and various grass species.

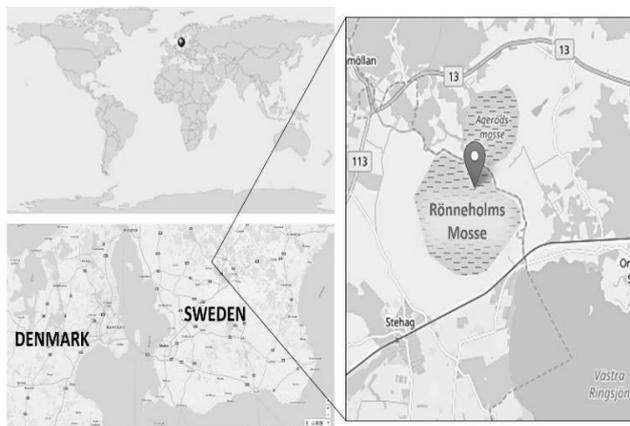


Fig. 2 Location of Rönneholms Mosse in Southern Sweden where the sludge samples were derived (authors' workout using GeoHack Globala Karttjänster and Google Maps)

The quantity and character of the deposited waterlogging in Rönneholm's area has fluctuated over the years, due to parameters such as the composition and degree of pollution of the raw water (Ringsjön and Bolmen), the amount of chemicals and the use of precipitates (iron chloride or aluminium sulphate) and the function and condition of the water treatment technology for sludge thickening and dewatering. The long term analysis was scheduled to discuss opportunities of using the sludge potential for possible aluminium, iron or even possibly rare earth elements extraction from the sludge to industry needs [13]. However, results showed that these can be estimated as very hypothetical reserves of metals as concentrations even if high still lack processing options in sustainable way [14], [15].

D. Nutrient Retention from Agricultural Areas

As agricultural diffuse pollution is one of the significant nutrient sources in the Baltic Sea as defined in EU Nitrates directive [16], a holistic approach on nutrient retention from agricultural lands was studied. The study site is located in Zemgale region with intensive agricultural activities. Two separate constructed wetlands were implemented to control surface and drainage runoff from agricultural area and to improve water quality retaining nitrogen and phosphorous compounds as well as suspended solids. Water samples were collected at the inlet and outlet of the each constructed wetland, since June, 2014 using a grab sampling approach once or twice per month depending on water discharge. A horizontal subsurface flow constructed wetland (Fig. 3) was built with a purpose of treating nutrient-rich storm water from a farmyard area. A treatment method with open sedimentation pond as a pretreatment stage was chosen to possibly enrich water with oxygen and thus activate aerobic bacteria through nitrification process that would decrease ammonium-nitrogen concentration. Then water was periodically pumped to the filter part of horizontal subsurface constructed wetland. The surface area of the wetland filter was 1.2% of the catchment area. The subsurface flow constructed wetland showed a steady decrease of ammonium-nitrogen and total nitrogen throughout the year by 68% and 53%, respectively, when concentrations at the inlet and outlet were compared.



Fig. 3 Subsurface constructed wetland in the farm Mezaciruli, Latvia. Photo: Linda Grinberga

The potential to retain nitrate-nitrogen more efficiently during the vegetation period was detected as a result of plant uptake. Wetland showed a total phosphorous reduction by 89% in a study period without an efficiency impact of seasonality. The in-stream surface flow constructed wetland was built on the open drainage ditch to collect surface and drainage runoff from an agricultural catchment. Surface area and catchment area ratio was 0.5% for the wetland. The surface flow constructed wetland showed the reduction of the concentrations of total nitrogen on average by 19%. The slight increase of ammonium-nitrogen was detected during the low or no discharge conditions, but throughout the study period ammonium-nitrogen concentrations were reduced by 36%. Total phosphorous concentrations were reduced by 50% after the wetland treatment in a study period.

E. Phytoremediation of Brownfield

Latvia-Lithuania project's aim is to revitalize within the project three brownfields:

First territory is former linen factory in **Ludza**, Latvia with total area 8.97 ha, where air quality in the former linen factory area should be described as good, as there are no volatile petroleum products in the area and no economic activity. While heavy metals are naturally in the soil, anthropogenic activities increase their concentration, and heavy metals become harmful to both plants and animals [17]. In the former area of the linen factory, the soil is potentially contaminated with a variety of chemical elements left in linen tannery ponds. Bioremediation, which includes phytoremediation, is an environmentally friendly method as soil remediation using plants is natural processes [17]. Phytoremediation is also an economically viable method, since soil is not moved anywhere and purification takes place on site in the contaminated area. Heavy metals do not disappear during bioremediation; these become in chemically different form - less toxic, slightly vaporized, more soluble in water. Therefore in this way heavy metals can be removed through precipitation from the environment [17]. Phytoremediation is best used technology when large areas in low concentration are contaminated with heavy metals and have to be cleaned [17]. In the site, the level of groundwater fluctuates seasonally with the first peak in spring following the melting of the snow and with a minimum during the summer. The site is surrounded by a network of ditches and a pond where it is likely that contamination from the ponds of the former linen mills can leach.

Second area of former Ignalina district, Lithuania with total area of 385 m², where abandoned heating plant with heavy fuel pollution is both inside the building and at surroundings: Soil poses an increased risk to air pollution by volatile organic compounds, particularly during the summer period, when the rise in air temperatures results in volatile organic compounds released from the mass of heavy fuel. The soil is contaminated with heavy fuel oil moreover mechanical properties of the soil have been changed as pores are filled with the mass of heavy fuel, thereby increasing the plasticity of the soil. Infiltration in such soil is difficult, resulting in long-standing pools of water in which water is contaminated with soluble petroleum products. The aeration of the soil is reduced and there are no oxygen-free zones where anaerobic processes are taking place and any biochemical processes are stopped. Lead (Pb), chromium (Cr), arsenic (As), zinc (Zn), cadmium (Cd), copper (Cu), mercury (Hg) and nickel (Ni) are common in contaminated soils [18]. In the samples taken, As was found in all samples (Kuiskis 2,1 mkg/g, Ludza 2.4 mg/g and Ignalina 1.5 mg/g). In the site, the level of groundwater fluctuates seasonally with the first peak in spring following the melting of the snow and with a minimum during the summer low water period. The area is on the mound and a major surface runoff is possible during the rain, which can carry pollution to the nearest surface water source.

Territory of former oil products station in Kupiškis district, Lithuania with total area of 313 m², there is no air pollution in the former oil storage facility. However, it should be taken into account that any in-depth excavation or alignment work may present a risk of contaminating the air with volatile organic compounds. They may be released during excavation, particularly during the summer period, when an increase in air temperature results in volatile organic compounds being released from petroleum products which may be present in the soil. Soils may become contaminated by heavy metals and metalloids due to emissions from fast-growing industrial zones, mine waste, major metal waste disposal, lead petrol, paints and fertilizer use, animal manure, sewage sludge, pesticides, coal incineration, petroleum chemical products and atmospheric deposition [19]. Soils are the main site of accumulation of heavy metals released into the environment with the abovementioned anthropogenic activities and, unlike organic pollutants which oxidize microbiologically to carbon (IV) oxide, most metals are not subject to microbial or chemical degradation [20]. In the vicinity of the site, the level of groundwater fluctuates seasonally with the first peak in spring following the melting of the snow and with a minimum during the summer low water period.

In closure of the project the outcome will be full revitalization of Ludza, Ignalina and Kupiškis brownfields. Monitoring and publishing of success stories will provide new platform for further brownfield treatment in EU and beyond.

III. DISCUSSION

It is axiomatically known that performance and management of projects is highly dependent of choosing the partners and locations for the pilot projects. Partners were selected based on their expertise and team capacities; thus it

is easy to take full responsibility for the dissemination of the project results once the project has ended as well. It is important that pilot studies and actions are promoted further as an example or even best available technologies in solutions of definitive problems. E.g., institute/ cluster as they will be co-founding members of this initiative and want to promote their regions and the solutions being implemented there. One of the reasons for the creation of the institute/cluster is also to be able to transfer the knowledge about the installed solutions between the South Baltic Regions and at the same time induce new initiatives and cooperation. According to beneficiaries, not only the project results will be sustained, but they will also lead to additional installations in the region through the triple-helix approach in the institute/ cluster. We see this initiative as a great opportunity to use the prior experiences from the South Baltic Programme, LIFE or Swedish Institute supported projects to achieve a high degree of environmental impact and at the same time involve SME's, Universities and public organizations for the benefit of the entire region.

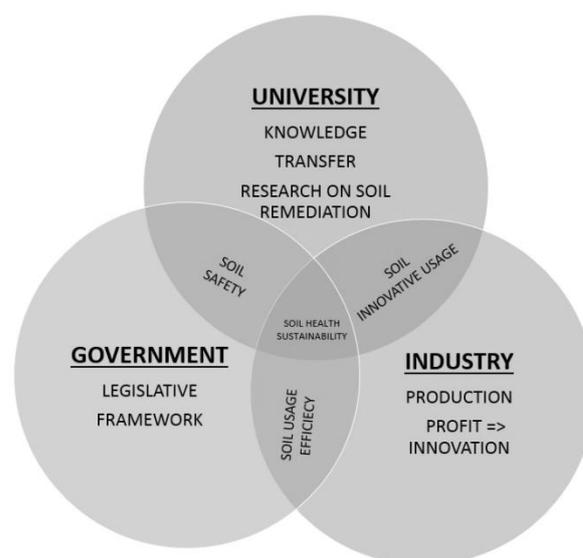


Fig. 4 The conceptual framework of Triple helix in soil remediation field. Source: author's construction

IV. CONCLUSIONS

Projects promote collaboration between different organizations in the Baltic Sea countries in research related to the ecological sustainability in the region by implementing workshops, online meetings and other joint planning activities so that the engaged organizations and countries will learn, develop and contribute their own perspectives to face the challenges of environmental and sustainability planning in Baltic Sea Region. It may be for instance, phytoremediation tourist glass park in Boda glasswork in Sweden where gathered knowledge of making a tourist park in an old landfill area is used as a marketing tool. Also Estonian Kudjape landfill becoming the park has enlarged the wide public interest to sustainable solutions – as we see these solutions in life not in academic shelves or municipality plans in distant future. The main goals of all mentioned project in the paper is fulfilling plans established by the Helsinki Commission (HELCOM), EU Strategy for the Baltic Sea Region (EUSBSR) - creation of cross-sector

partnerships within different countries in the Baltic Sea catchment area in different levels of the society is the promising strategy. The role of partnership between different organizations will be to support and stimulate cooperation in Baltic Sea region for sustainable relationship among partners.

ACKNOWLEDGMENT

The research was supported by Interreg Interactive Water Management (IWAMA) and Baltic Beach Wrack - Conversion of a Nuisance To a Resource and Asset (CONTRA) as well as RBR (Reviving Baltic Resilience) Interreg-V-A project, grant No. STHB 02.02.00-22-0092/16 of EU South Baltic Programme 2014-2020. Great thanks to Swedish Institute about the PECEC and LASUWAMA projects and Geo IT Ltd. from Republic of Latvia. Additionally it was supported by the European Union, the European Regional Development Fund, and the Central Baltic Programme project CB295 "Practical actions for holistic drainage management for reduced nutrient inflow to Baltic Sea (NUTRINFLOW)". Finally it was supported by the European Union, the European Regional Development Fund, and the Interreg V-A Latvia – Lithuania Programme 2014-2020 project LLI-325 "Innovative brownfield regeneration for sustainable development of cross-border regions (BrownReg)

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Stochastic Analysis of Transport of Heavy Metals in a Spatially Variable Soil Fields near Dye Industries

Arun Kumar, Ashu Rani

Abstract—In third world countries, industries mainly cause environmental contamination due to the lack of environmental policies or oversight during their implementation. Some dye industries contribute massive amounts of untreated effluents that are released directly into drains and used for the irrigation of crops and vegetables. This practice causes not only soil contamination with an excessive amount of heavy metals, but is also considered a source of toxicity in the food chain, i.e., bioaccumulation in plants and ultimately in human body organs. The objective of this research study is to assess the spatial distribution of the heavy metals like chromium (Cr), cadmium (Cd), and lead (Pb) in the soil fields near such industries. A rational approach to studying the field variability is stochastic modeling. A stochastic model of transport of heavy metals in a spatially variable soil field is established. The model is aimed for solving the problem of flow and transport and their relationships in a homogeneous soil. Soil properties and, therefore, the 'variables' outcome from the model, are subjected to uncertainty and are regarded as random variables that can be defined in terms of their statistical moments. Hence, in spatially variable fields, stochastic modeling may represent realistically the actual field phenomena and may provide the main statistical moments, mean and variance by simplified models. Computation of mean and coefficient of variation (CV) of the saturation (S) are done in this analysis which demonstrates the capacity of the approximate model to simulate deterministic field conditions during leaching of heavy metals. The model is undertaken by the following principles: the transport of metals is vertical, the spatial variability takes place in the horizontal plane, the soil has uniform water content and solute concentration prior to leaching is uniform. The main purpose is to calculate the expected concentration of the heavy metals and its variance as a function of depth and time in any field near dye industries.

Keywords—spatially variable field, heavy metals, stochastic analysis, leaching

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Applicability and Reusability of Fly Ash (FA) and Base Treated Fly Ash (BTFA) for Adsorption of Catechol from Aqueous Solution: Equilibrium, Kinetics, Thermodynamics and Modeling

Swarnima Agarwal, Ashu Rani

Abstract—Catechol is a natural polyphenolic compound that widely exists in higher plants such as teas, vegetables, fruits, tobaccos, and some traditional Chinese medicines.

The fly ash-based zeolites are capable of absorbing a wide range of pollutants. But the process of zeolite synthesis is time consuming and requires technical setups by the industries. The marketed costs of zeolites are quite high restricting its use by small scale industries for removal of phenolic compounds. The present research proposes a simple method of alkaline treatment of FA to produce an effective adsorbent for catechol removal from waste water.

The experimental parameter such as pH, temperature, initial concentration and adsorbent dose on the removal of catechol were studied in batch reactor. For this purpose the adsorbent materials were mixed with aqueous solutions containing catechol ranging in 50 – 200 mg/L initial concentrations and then shaken continuously in a thermostatic Orbital Incubator Shaker at 30 ± 0.1 °C for 24 h. The samples were withdrawn from the shaker at predetermined time interval and separated by centrifugation (Centrifuge machine MBL-20) at 2000 rpm for 4 min. to yield a clear supernatant for analysis of the equilibrium concentrations of the solutes. The concentrations were measured with Double Beam UV/Visible spectrophotometer (model Spectrscan UV 2600/02) at the wavelength of 275 nm for catechol.

In the present study, the use of low cost adsorbent (BTFA) derived from coal fly ash (FA), has been investigated as a substitute of expensive methods for the sequestration of catechol. The FA and BTFA adsorbents were well characterized by XRF, FE-SEM with EDX, FTIR, and surface area and porosity measurement which proves the chemical constituents, functional groups and morphology of the adsorbents. The catechol adsorption capacities of synthesized BTFA and native material were determined. The adsorption was slightly increased with increase in pH value. The monolayer adsorption capacities of FA and BTFA for catechol were 100 mg g^{-1} and 333.33 mg g^{-1} respectively and maximum adsorption occurs within 60 minute for both adsorbents used in this test. The equilibrium data are fitted by Freundlich isotherm found on the basis of error analysis (RMSE, SSE and χ^2). Adsorption was found to be spontaneous and exothermic on the basis of thermodynamic parameters (ΔG° , ΔS° and ΔH°). Pseudo-second-order kinetic model better fitted the data for both FA and BTFA. BTFA showed large adsorptive characteristics, high separation selectivity and excellent recyclability than FA. These finding indicate that BTFA could be employed as an effective and inexpensive adsorbent for the removal of catechol from waste water.

Keywords—Catechol, Fly ash, Kinetics; Isotherms, Thermodynamic parameters.

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Valorization of Banana Peels for Mercury Removal in Environmental Realist Conditions

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Keywords—Banana peels, mercury removal, sorption, water treatment.

Abstract—Introduction: Mercury is one of the most troublesome toxic metals responsible for the contamination of the aquatic systems due to its accumulation and bioamplification along the food chain. The 2030 Agenda for Sustainable Development of United Nations promotes the improving of water quality by reducing water pollution and foments an enhance in wastewater treatment, encouraging their recycling and safe water reuse globally.

Sorption processes are widely used in wastewater treatments due to their many advantages such as high efficiency and low operational costs. In these processes the target contaminant is removed from the solution by a solid sorbent. The more selective and low cost is the biosorbent the more attractive becomes the process. Agricultural wastes are especially attractive approaches for sorption. They are largely available, have no commercial value and require little or no processing.

In this work, banana peels were tested for mercury removal from low concentrated solutions. In order to investigate the applicability of this solid, six water matrices were used increasing the complexity from natural waters to a real wastewater. Studies of kinetics and equilibrium were also performed using the most known models to evaluate the viability of the process. In line with the concept of circular economy, this study adds value to this by-product as well as contributes to liquid waste management.

Experimental: The solutions were prepared with Hg(II) initial concentration of $50 \mu\text{g L}^{-1}$ in natural waters, at $22\pm 1^\circ\text{C}$, pH 6, magnetically stirring at 650 rpm and biosorbent mass of 0.5 g L^{-1} . NaCl was added to obtain the salt solutions, seawater was collected from the Portuguese coast and the real wastewater was kindly provided by ISQ - Instituto de Soldadura e qualidade (Welding and Quality Institute) and diluted until the same concentration of $50 \mu\text{g L}^{-1}$. Banana peels were previously freeze-drying, milled, sieved and the particles $<1 \text{ mm}$ were used.

Results: Banana peels removed more than 90% of Hg(II) from all the synthetic solutions studied. In these cases, the enhance in the complexity of the water type promoted a higher mercury removal. In salt waters, the biosorbent showed removals of 96, 95 and 98 % for 3, 15 and 30 g L^{-1} of NaCl, respectively. The residual concentration of Hg(II) in solution achieved the level of drinking water regulation ($1 \mu\text{g L}^{-1}$). For real matrices, the lower Hg(II) elimination (93 % for seawater and 81 % for the real wastewaters), can be explained by the competition between the Hg(II) ions and the other elements present in these solutions for the sorption sites. Regarding the equilibrium study, the experimental data are better described by the Freundlich isotherm ($R^2=0.991$). The Elovich equation provided the best fit to the kinetic points.

Conclusions: The results exhibited the great ability of the banana peels to remove mercury. The environmental realist conditions studied in this work, highlight their potential usage as biosorbents in water remediation processes.

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Viability of Irrigation Water Conservation Practices in the Low Desert of California

Ali Montazar

Abstract—California and the Colorado River Basin are facing increasing uncertainty concerning water supplies. The Colorado River is the main source of irrigation water in the low desert of California. Currently, due to an increasing water-use competition and long-term drought at the Colorado River Basin, efficient use of irrigation water is one of the highest conservation priorities in the region. This study aims to present some of current irrigation technologies and management approaches in the low desert and assess the viability and potential of these water management practices. The results of several field experiments are used to assess five water conservation practices of sub-surface drip irrigation, automated surface irrigation, sprinkler irrigation, tail-water recovery system, and deficit irrigation strategy. The preliminary results of several ongoing studies at commercial fields are presented, particularly researches in alfalfa, sugar beets, kliengrass, sunflower, and spinach fields. The findings indicate that all these practices have significant potential to conserve water (an average of 1 ac-ft/ac) and enhance the efficiency of water use (15-25%). Further work is needed to better understand the feasibility of each of these applications and to help maintain profitable and sustainable agricultural production system in the low desert as water and labor costs, and environmental issues increase.

Keywords—automated surface irrigation, deficit irrigation, low desert of California, sprinkler irrigation, sub-surface drip irrigation, tail-water recovery system

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LCA of Waste Disposal from Olive Oil Production: Anaerobic Digestion and Conventional Disposal on Soil

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Abstract—Extra virgin olive-oil (EVO) production is an important economic activity for several countries, especially in the Mediterranean area such as Spain, Italy, Greece and Tunisia. The two major by-products from olive oil production, solid-liquid Olive Pomace (OP) and the Olive Mill Waste Waters (OMWW), are still mainly disposed on soil, in spite of the existence of legislation which already limits this practice. The present study compares the environmental impacts associated with two different scenarios for the management of waste from olive oil production through a comparative Life Cycle Assessment (LCA). The two alternative scenarios are: (I) Anaerobic Digestion and (II) current Disposal on soil. The analysis was performed through SimaPro software and the assessment of the impact categories was based on International Life Cycle Data and Cumulative Energy Demand methods.

Both the scenarios are mostly related to the cultivation and harvesting phase and are highly dependent on the irrigation practice and related energy demand. Results from the present study clearly show that as the waste disposal on soil causes the worst environmental performance of all the impact categories here considered. Important environmental benefits have been identified when anaerobic digestion is instead chosen as the final treatment. It was consequently demonstrated that anaerobic digestion should be considered a feasible alternative for olive mills, to produce biogas from common olive oil residues, reducing the environmental burden and adding value to the olive oil production chain.

Keywords—Anaerobic Digestion, Waste Management, Agro-Food Waste, Biogas.

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Diagenesis of the Permian Ecca Sandstones and Mudstones, in the Eastern Cape Province, South Africa: Implications for the Shale Gas Potential of the Karoo Basin

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Abstract—Diagenesis is the most important factor that affects or impact the reservoir property. Despite the fact that published data gives a vast amount of information on the geology, sedimentology and lithostratigraphy of the Ecca Group in the Karoo Basin of South Africa, little is known of the diagenesis of the potentially feasible shales and sandstones of the Ecca Group. The study aims to provide a general account of the diagenesis of sandstones and mudstone of the Ecca Group. Twenty-five diagenetic textures and structures are identified and grouped into three regimes or stages that include eogenesis, mesogenesis and telogenesis. Clay minerals are the most common cementing materials in the Ecca sandstones and mudstones. Smectite, kaolinite and illite are the major clay minerals that act as pore lining rims and pore-filling cement. Most of the clay minerals and detrital grains were seriously attacked and replaced by calcite. Calcite precipitates locally in pore spaces and partly or completely replaced feldspar and quartz grains, mostly at their margins. Precipitation of cements and formation of pyrite and authigenic minerals as well as little lithification occurred during the eogenesis. This regime was followed by mesogenesis which brought about an increase in tightness of grain packing, loss of pore spaces and thinning of beds due to weight of overlying sediments and selective dissolution of framework grains. Compaction, mineral overgrowths, mineral replacement, clay-mineral authigenesis, deformation and pressure solution structures occurred during mesogenesis. During rocks were uplifted, weathered and unroofed by erosion, this resulted in additional grain fracturing, decementation and oxidation of iron-rich volcanic fragments and ferromagnesian minerals. The rocks of Ecca Group were subjected to moderate-intense mechanical and chemical compaction during its progressive burial. Intergranular pores, matrix micro pores, secondary intragranular, dissolution and fractured pores are the observed pores. The presence of fractured and dissolution pores tend to enhance reservoir quality. However, the isolated nature of the pores makes them unfavourable producers of hydrocarbons, which at best would require stimulation. The understanding of the space and time distribution of diagenetic processes in these rocks will allow the development of predictive models of their quality, which may contribute to the reduction of risks involved in their exploration.

Keywords—diagenesis, reservoir quality, Ecca Group, Karoo Supergroup

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