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IN A VUCA WORLD*

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Contemporary Issues Summit on Innovation, Inspiration, and Hope in a VUCA World
21st Century Academic Forum
CIS@HARVARD 2017 Conference Proceedings

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Mission: 21 Century Academic Forum is a global group of researchers and educators dedicated to supporting research that has the potential to influence the shaping of educational policy and practices to more effectively prepare students for the unique challenges of the 21st century.

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A 3D Perspective on Technology in Education:
Drives, Dilemmas, Direction

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Abstract

The purpose of education is to stimulate learners' intellectual potential and to allow new concepts to thrive and assimilate with existing knowledge. With the advent of technology, attaining the above objectives can be disrupted, but not excluded, as long as the awareness of the educators remains in the active mode. The key to awareness is seeking the truth. Where is *Veritas*? It can be uncovered in the series of books by David R. Hawkins, devoted to giving prominence to the essence of human consciousness, offering knowledge that can be applicable in all possible domains and provide a straightforward answer to all possible inquiries about the validity of an issue. Hawkins' development of the Map of Consciousness, based on the muscle technique, may be implemented as a cross-disciplinary research tool. In this paper, the author's quest to verify the benefits that technology can bring to the classroom and the value of the human factor in shaping learners' intellectual course gives the rationale for approaching the drives and dilemmas related to and the direction of education with innovation. The study involved the procedure of muscle testing to obtain straightforward responses to inquiries about the benefit of particular stimuli, various innovations and the value of teachers themselves, which turned out to be a revolutionary research concept in the context of education. The findings reveal that classrooms equipped with innovation are not necessarily prioritized learning environments, as it is teachers, especially top professionals representing a high level of integrity, who are of utmost benefit to the learners. Apart from the prior objective, the study demonstrates the impact of calibrated (measured by the muscle technique) energy levels on all the entities, which leaves space for further investigation in the educational setting, or beyond it.

Keywords: technology, education, kinesiology, consciousness

Introduction

A survey of technological advances in domains other than education allows to perceive pros and cons of its application. While the undisputed fact remains that the rapid development of medicine to sustain life and the breakthrough engineering innovations, it also does not escape notice that technology can be of little value to humanity. Genetically-modified foods deprived of core nutrients, aviation and geo-engineering eradicating the natural environment and exploiting immune systems, or the automated voice reception or response systems created for public convenience with a non-human interactive feature come as the examples.

In the wake of ambiguous research outcomes and divergent conclusions about the benefit technology may bring to the classroom, some educators struggle to determine the extent of their engagement with technology. Is technology a fad or a step forward?

In the era of fascination with top-notch digital solutions and at the door of transformative education, it becomes necessary for the academic community to be aware of some potentially detrimental consequences of this modern phenomenon. The alluring voices of the technological education propagators make finding the truth and omitting the falsehood an elusive process. The motives behind pro-innovative education are well-intentioned. Technology was supposed to facilitate the process of gaining knowledge by offering access to a wide range of resources and creating a zone for different styles of learning, as well as to add spice to teaching and learning by blending entertainment with academic purpose. Online and hybrid courses diversify and apparently enhance educational offerings. What draws attention is a discrepancy between what students want and what they need. In practice, state-of-the-art innovations do not necessarily lead to worthy learning outcomes. Excessive use of technology in the classroom might jeopardize our students' academic accomplishments.

As many research attempts ensue with the view of proving or defying the effectiveness of computer-assisted teaching or learning, the role of teachers and their internal qualities that impact the student's success seem to settle in the niche. And this is a teacher who links the learning objectives with the desired outcomes with or without a particular tool or within a given setting. And the prerequisite to a teacher's contribution to the learners' success is an effective communicative exchange. Communication is the core of humanity and it stems from the relationship. The intermediary role of computers will not replace the interpersonal contact. Technology operates with the tools, but it lacks the soul. Given the above, does technology ignite or muffle learning?

Foy (2011) warns in his book, *A Necessary Vigilance*, that "it is our understanding of humanity, and of life, which ought to be determining the course of technology – not the reverse" and that "technology can sufficiently alleviate or defer a difficulty that we do not recognize its ethical and spiritual implications" (p. 85).

What inspired the author to focus on the impact of technology on learners is her experience in numerous academic settings and her observation of learners' addiction to online resources, their struggles when it comes to conceptualizing and generating arguments offline, and passive attitudes. Instead of serious research, we see the glued-to-the-screen syndrome and the responses elicited by the Enter Key when nominated to tackle a question as well as rampant plagiarism tactics, resulting from overusing the Internet as a universal resource, especially blatant in their online submissions. Therefore, did the digital revolution translate into the conceptual evolution? Or maybe the phenomenon reflects the gist of the statement that

"technological progress has merely provided us with more efficient means for going backwards" (Huxley, 1956)?

The persistent patterns in learners' behaviors laid the foundation for the research goal: to verify the benefit of educational innovations, and to bring to light the role of teachers, their qualities and the human interaction in the learning environment. Hawkins' revelation of the Map of Consciousness (1995), relating to the domain of kinesiology, or muscle testing, sparked the study context and the selection of the research tools for the kernel of the investigation and the heart of this paper.

Background

Study of Applied Kinesiology

The study of 'applied kinesiology' involving the movement of muscles was initiated by Goodheart (1976), who discovered that certain indicator muscles go strong or weak in the presence of either favorable or harmful physical stimuli. Another researcher, Diamond (1979), expanded the experiment, concluding that emotional and intellectual stimuli, apart from the physical ones, can also elicit the respective reaction of the muscles, which established the discipline called 'behavioral kinesiology.'

Hawkins' research originates from the extensive work of Goodheart and Diamond, and is based on and in defence of nonlinear dynamics, the theories formulated by those representatives of science who overrule the laws of causal determinism found in the Newtonian paradigm. In his book *Power versus Force* (1995), Hawkins sets the ground to discern Truth from Falsehood (= absence of Truth) owing to the muscle responses to anabolic (life-enhancing) or catabolic (life-consuming) stimuli. The muscle procedure reveals unlimited information via the binary nature of responses (YES or NO) to a spectrum of questions pertaining to various domains, subjects, objects, places and other phenomena.

What seems of relevance is the uniformity of response among the subjects as muscles react the same in the presence of the same stimuli among various participants of the study. Thus, they are predictable, repeatable and universal across diverse settings. Conversely, certain factors may affect the conditions and limitations of the study (Hawkins 1995). They include the following variables: Both a tester and a subject must calibrate above 200; Participants must remain impersonal toward the tested subject matter; Willingness of the subject must be expressed; Shift of circumstances or attitudes may affect the results; Distractions in the background should be avoided; The results do not depend on the physical strength of the subject; The test should never serve the confrontational purpose.

Map of Consciousness

Hawkins' numerous studies culminated in the creation of his Map of Consciousness (Table 1), a logarithmic scale of relative truth, comprising and denoting different universal energy fields of the wave nature, identified in nonlinear dynamics as 'attractor fields.' The calibrated levels of the concordant fields, due to the muscle technique, reflect the position of ideologies, motives and attitudes as a consequence of the evolution of consciousness, on a range of 1 to 1000. While the former, the bottom of the scale, represents the 'consciousness' level of bacteria, the latter is the level of the Absolute, the calibrations obtained on earth only by three great Sages: Jesus Christ, Buddha and Krishna (2005).

The particular levels correlate with a spectrum of emotions, life-views and processes. The critical points occur at the juncture of 200, 500 and 700. Below level 200, the attractor fields

revolve around the survival instinct, self-interest, aggression and dominance, which encompass the negative emotions (catabolic). As consciousness evolves over level 200, the energy of life and awareness become aligned with love, the acts of giving rather than getting, the fulfillment of others' needs and the search for spiritual truth. They become life-enhancing (anabolic) contrary to the former, destructive in nature. Truth, power and influence increase from the critical point of 200. Falsehood, identified with force, goes in the opposite direction. Notably, 78% of society worldwide represent the levels below 200, and only 22% are above it, manifesting integrity, dealing with productivity and proclaiming the truth, contrary to the former (Hawkins, 1995).

LEVEL	LOG	Emotion	Life-view	Process
Enlightenment	700-1000	Ineffable	Is	Pure Consciousness
Peace	600	Bliss	Perfect	Illumination
Joy	540	Serenity	Complete	Transfiguration
Love	500	Reverence	Benign	Revelation
Reason	400	Understanding	Meaningful	Abstraction
Acceptance	350	Forgiveness	Harmonious	Transcendence
Willingness	310	Optimism	Hopeful	Intention
Neutrality	250	Trust	Satisfactory	Release
Courage	200	Affirmation	Feasible	Empowerment
Pride	175	Scorn	Demanding	Inflation
Anger	150	Hate	Antagonistic	Aggression
Desire	125	Craving	Disappointing	Enslavement
Fear	100	Anxiety	Frightening	Withdrawal
Grief	75	Regret	Tragic	Despondency
Apathy	50	Despair	Hopeless	Abdication
Guilt	30	Blame	Evil	Destruction
Shame	20	Humiliation	Miserable	Elimination

Table 1 Map of Consciousness by David R. Hawkins

Truth is a different paradigm from logic and thus is not 'provable'. That which is 'provable' calibrates in the 400s. Table 1 shows that the position of Love is higher than that of Reason. While the latter is constrained by linearity and guided by causality (the Newtonian science), the former is marked by the emergence of nonlinear thinking, and the capacity to discern essence, which becomes predominant. As it emanates from the heart, it is characterized by the purity of motive. Discerning Reason from Love is parallel to a dichotomy between a so-called academic and clinical science (Hawkins, 2006) both of whose hallmarks have been listed in Table 2.

ACADEMIC (Newtonian) SCIENCE	CLINICAL SCIENCE
Deals with figures and statistics Focus on: - Concepts and theories - Data - Symbols - Relationships Principle: REASON FEATURE: Inability to distinguish the difference between the symbols (res cogitas) and what they represent (res externa)	Deals with outcomes and results Focus on context: - Intention - Integrity of purpose - Calibration levels of participants Principle: HEART FEATURES: • Versatile • Humble

Table 2 Characteristics of the Academic and Clinical science.

Energy Fields, Human Qualities and Education

As noted, weak attractors (below 200) cause negative influence whereas strong attractors (over 200) produce positive impact. Table 3 shows the selection of various qualities that calibrate as True, within the energy field of 200+, or False, below the critical point of 200 (Hawkins, 2005, pp. 168-169).

Above 200 TRUTH POWER ANABOLIC	Below 200 FALSEHOOD FORCE CATABOLIC
• Excellent • Civil • Reliant • Intuitive • Timeless • Tolerant • Optimistic • Conciliatory • Ethical • Merciful • Selective • Just • Encouraging • Spiritual	• Adequate • Formal • Dependent • Literal • Faddish • Prejudiced • Pessimistic • Inflexible • Equivocal • Permissive • Exclusive • Punitive • Promoting • Materialistic

Table 3 Hawkins' distribution of human qualities according to the calibrated levels

These patterns determine the course of human motives, attitudes, and actions. If we bring this interpretation to education, we can expect teachers to adapt their teaching philosophies to their internal code of ethics, governed by a set of principles based on the particular level of consciousness, either from within the powerful field of energy, or within that of the weak and catabolic one.

Notably, Frego (2006/2017) emphasizes the role of philosophy of teaching and the authenticity of teachers, as the factors affecting the students' success. Palmer (1993) states that it is the identity of the teacher, not a technique which supports a good teaching. In corroboration of the above arguments, the research carried out by Richardson and Swan (1993) demonstrates that the students' high satisfaction level and positive learning outcomes are dependent on the social presence of their instructor in online learning environments. In the context of business, Gartner-Johnston (2014) stresses the value of human approach, respect and positive intent when building relationships and forming interpersonal bonds with partners and clients. This tip could be transferable to the area of teacher-student relations, as it holds the same premise of integrity as the win-win strategy, regardless of the context.

Under such circumstances, unawareness or deliberate ignorance of the attractor, or energy fields and the attributes aligned with them can be detrimental to the students and consequently, to universities. The quality of teaching affects learners' motivation, and evokes their trust, which translates into sustained interest in the learning process. This, on the other hand, leads to establishing reputation for an educational institution.

Indeterminism and Nonlinear Physics

Although the discussion of the metaphysics, or spirituality, gains little applause in conservative scientific circles, some researchers and theorists seek the truth on the levels far above Reason. Long before the Map of Consciousness was developed, many scientists advocated the existence of a higher and more powerful realm beyond human understanding, and whose experiments proved that everything in the universe is inter-connected. As a matter of fact, the deterministic theories supporting causal laws in physics were confronted with the quantum theories that prove that a measurement is a process of the random non-deterministic nature, which is accountable for the unknown properties of a Higher Force.

Bohr (1922) discovered that electrons travelling in orbits around the atom's nucleus can move from a higher to a lower energy field. This later gave rise to Heisenberg's "uncertainty principle" (1930) which questions the precision of measurements of a particle's unique properties. Heisenberg further concludes that observables are dependent of the observer. Also, Compton (1935) supported quantum indeterminacy by adding the postulate of free will. It was based on the assumption that the course of events is directed by the participant's act of choice. In fact, he programs the reality he intends to align with. Thus, a set of physical conditions alone does not determine the outcome, but rather a hidden factor of inner knowledge.

De Broglie (1924) argued that electrons creating the universe consist of wave properties. Planck (1944) held the view that "all matter originates and exists only by virtue of a force which brings the particle of an atom to vibration" and that "we must assume behind this force the existence of a conscious and intelligent mind. This mind is the matrix of all matter." He also made a remarkable statement where he regarded "matter as derivative from consciousness" (1931).

Bohm (1980) shifted the paradigm of classical quantum physics with ontological concepts by postulating that all creation falls into two categories. He formulated the theory that the things we experience with our senses as separate forms illustrate 'the explicable or unfolded order of creation,' whereas the intangible connection of these forms, not governed by the notions of time and space, is a part of a greater wholeness called the 'implicate or enfolded order of creation,' which remains beyond human understanding. In fact, the unobserved forces account for the unpredictable behavior of quantum particles on the deeper level of the non-manifested universe.

To challenge the philosophy of materialism, which rejects the material factors affecting creation, and the Newtonian paradigm of Causality, Sheldrake (1981) proposes a "reality that is not merely derivative from matter," called the "Conscious Self," which accounts for making free choices while its origin does not involve prior formative causes. The Conscious Self impacts the events and interacts with or within the 'morphic fields,' or the quantum fields - the levels that embrace and coordinate given attractors to maintain their integrity. They contain a cumulative collective memory due to the morphic resonance from the past (2012). Sheldrake compares 'morphic fields' as tantamount to Kuhn's "paradigms." Hence, the fields of science are represented by the groups of people assimilated with the given theories and acting under the cumulative influence of the same scientific tradition back in time (1988). Long before, Jung (1978) explored the existence of the 'collective unconscious,' defined as 'the unwritten history of mankind from time unrecorded.'

On the way to elucidate the dilemmas posed by the physicists for many decades, Hawkins delves into the nature of the universe whose energy field he defines as 'consciousness of infinite power and dimension beyond time' manifested as 'matter.' For life to come into being, matter must be supported by evolution, which adds the dimension of 'time.' The equation of matter and time is 'space,' all of which can be detected by intellectual capacity. "Creation is capable of being known solely by virtue of the presence of consciousness, which is the very matrix of all essence. Thus, consciousness is the irreducible a priori reality by which the linear is perceived by the subjective awareness of the nonlinear" (2006, p. xvii).

Alexander (2012) unravels the 'enigma of Consciousness' and confirms 'a deeper fabric of existence,' or the higher spiritual realm, owing to his near-death experience and a subsequent journey to a celestial paradise, whose detailed account he provides in his book *Proof of Heaven*. He offers a profound description of the holographic nature of the universe, mind, brain, and Consciousness, functioning on the same plane of connection. The Truth, according to Alexander, may be obtained by a synergy of science and spirituality, together 'yielding unimaginable power.'

Research Design

The intention of the study was to explore the benefit the application of technology in its different dimensions, can bring to learners, and the value of the human factor and interaction, demonstrated by a teacher in the classroom. Various stimuli were taken into consideration when performing the test. Notably, the scale 1-100% was applied for the convenience of interpretation where the critical point of integrity, truth and life-enhancing qualities begins at 10%. The aspects that underwent the testing procedure included:1) Different methods of content delivery: in-class, online and blended teaching, 2) Proportion of the teaching excellence across North America and globally. The assumption behind the characteristics of 'top professionals' was based on their alignment with the qualities above level 200, that is demonstrating a high level of integrity,

professional excellence, optimism, motivation, etc. (see Table 3), 3) Human vs Technology impact on Memory Retention and Ethics, 4) The role of Flipped Classrooms vs Teachers in-class in education, 5) The benefit of some popular state-of-the-art innovations to the learner.

Research Procedure

To perform the kinesiological test, two participants were required: a subject and a tester, both representing the level of integrity far above 200. The subject stood erect with his right arm relaxed at the side, the left arm held out laterally, parallel to the ground. The test administration was based on making a declarative statement related to the value of a particular stimulus (e.g. flipped classrooms) in the educational context and triggering the muscle reaction. The yes/no response indicated the calibrated level of the stimulus. To obtain the muscle response, the tester placed her right hand on the subject's extended left arm just above the wrist and pressed it downward each time the statement was uttered. If the muscles went weak and the arm collapsed, it was an indication of a false statement. If the utterance was true, the muscle remained firm and the arm did not drop, which confirmed the 'integrous' (virtuous) nature of the stimulus. The starting point for each question was 10% as the minimal value of integrity based on the truth and with the good-intentioned foundations, thus, having a benefit to education. If the minimal range was confirmed, a series of questions continued following the scale in the upward direction until the muscles reported falsehood by the arm falling down.

Data Collection and Interpretation

The study entailed stimuli that reflected a number of categories related to the context of innovative education and teachers themselves. Different aspects of technology and human contribution to the learning process were subjected to the muscle testing.

As the discussion of the best mode of content delivery continues in academic circles, the question of its benefit to learners initiated the test. The collected data (Table 4) uncover that the teacher persona in class scores the highest (80%) compared to online (68%) and hybrid (74%) courses offered fully or partially 'behind the scenes' of the traditional educational setting.

CONTENT DELIVERY	LEARNER BENEFIT GLOBALLY
In-class teaching	80 %
Online courses	68 %
Blended teaching	74 %

Table 4 Learner benefit of traditional teaching versus teaching with technology

Since the human factor proved the greatest value in the previous analysis, there was an investigation into the proportion of the desired teaching force across some selected American and Canadian cities. One can see (Table 5) that both North American countries rank similarly

(21-22%) when it comes to the average of all the cities, but only Ottawa, New York, and Toronto exceed one third of the best teachers.

Country	City	TOP TEACHERS (Integrity Level of 80%+)
USA	TOTAL Boston New York Chicago	21% 14% 34% 10%
CANADA	TOTAL Toronto Ottawa	22% 30% 35%

Table 5 Distribution of Top Teachers across USA and Canada

The above results prompted the researcher to compare the quality of North American teachers with those across the globe including Europe and Asia (Table 6). It was found that teaching excellence is best represented by Dutch and Scandinavian nationalities in general (31%), but if the major cities only are scrutinized, the top professionals emerge in Ljubljana (37%), New Delhi (36%) and Cracow (32%), which proves the strength of educational institutions in Slovenia, India and Poland respectively.

LOCATION Outside North America	TOP TEACHERS Integrity Level of 80%+
UNITED KINGDOM	10%
ENGLAND	20%
FRANCE	20%
Paris	30%
GERMANY	20%
Berlin	24%
RUSSIA	15%
Moscow	25%
SLOVENIA	30%
Ljubljana	37%
POLAND	20%
Cracow	32%
THE NETHERLANDS	31%
SWEDEN	21%
NORWAY	31%
FINLAND	31%

INDIA	28%
New Delhi	36%
CHINA	7%
Beijing	20%

Table 6 Distribution of Top Teachers around the globe excluding North America

The next stage was an inquiry about how technology and human factors affect the learning process in terms of the desired outcomes and the axiological aspect (Table 7). Interestingly, the results show that while technology makes a more remarkable contribution (30%) to the memory retention than average educators (20%), the teaching elite is responsible for as much as 80% of this process. Top teachers are also more influential in the domain of ethics, which is confirmed by the result of 67%.

Impact	TECHNOLOGY	HUMAN	
		Average Teachers	Top Teachers - Integrity level of 80+%
Memory retention	30%	20%	80%
Ethics	10%	20%	67%

Table 7 Technology vs Human Impact on Memory Retention and Ethics

The learner benefit due to the application of so-called 'flipped classrooms' juxtaposed with the teacher impact became the next target of the research (Table 8). The outcomes indicate that both globally (20%) and in Canada (60%), the teacher's presence affects the learning environment for the better. Strikingly, American first-rate teaching professionals are in balance with the quality of the alternative teaching method, where the proportion of 62% illustrates both cases. This can be explained by the fact that the popularity of flipped classrooms has grown mainly in USA.

Learner Benefit	FLIPPED CLASSROOMS	TEACHER IN-CLASS	
		Average integrity level	Integrity level of 80+%
Globally	10%	15%	20%
USA	62%	42%	62%
CANADA	52%	30%	60%

Table 8 Learner benefit of Flipped Classrooms vs Teacher In-Class

The final test on muscles was administered with a view of verifying how a myriad of applications and other digital solutions prove beneficial to the learner. It was found that the Safari search engine (84%) outweighs significantly the Google browser (64%). Similarly, Power Point is in the lead (70%) compared with another competitive presentation program, Prezi (42%). A perplexing finding indicates that the VINE application provides no benefit to the learning environment. Relatively low scores of TED Talks, an online educational offering, albeit widely popular in academic circles, show it has only a 15% positive impact on the learner. Of no surprise comes the Turnitin result as low as 2% of the potential (if any) learning benefit, which - with the researcher's experience in witnessing plagiarism attempts - is quite justifiable. The LearnIT2Teach platform, both innovative and educational, has an impressive score of 75%.

INNOVATIONS (Browsers, Programs, Apps, & Other)	BENEFIT TO LEARNER
Google	64%
Safari	84%
Powerpoint	70%
Prezi	42%
Kahoot!	25%
VINE	0%
Padlet	37%
LearnIT2Teach.org	75%
TED Talks	15%
Turnitin	2%

Table 9 Application of various Innovations in Education with Benefit to Learners

Research Implications

The ramifications of the findings above are far-reaching. The research outcomes via the muscle responses, reverberating with the voice of the universe, are the testimony of what is true, positive and desired, hence beneficial from the learner's perspective, prospectively speaking.

In the context of education, it becomes evident that energy patterns influence teachers and consequently, their impact on learners (emotions are contagious). In the context of technology, the calibrated levels of software, learning platforms and various applications, and more importantly, the attractor fields of their designers and developers, affect the benefit, if any, to its recipients – both teachers and students, and in broader terms, institutions that purchase and apply these innovations. The authenticity and validity of the above can be measured by the science of consciousness and its capacity to calibrate levels of truth. The following should be considered: 1)Investment in highly regarded teaching professionals should be the prime concern of hiring institutions, 2) There is a need for charismatic, passionate and integrous (seeking Truth as the primary virtue) educators linking their know-how with successful content delivery, 3) Let teachers teach, and let technology advance itself – building the bridge between these two should be mutually approved, and after all, will be inevitable in the long run, 4) Do not force technology through the windows if unwelcome through the door. Some innovations (Vine, Turnitin) have

been shown to offer few benefits, 5) Teachers should keep students' aware of additional resources available online, but remain the source themselves, 6) Define the extent of technology, 7) Promote the applications and programs in alignment with their authentic purpose (according to the obtained calibrations) rather than with the pitch behind the marketing strategy, 8) Integrate technology with in-class teaching, but do not replace teaching with technology, and 9) Teach with HEART and SPIRIT (rather than "plugged in").

Conclusion

Hawkins' research (2005) opened the gates to the universal, omnipresent and verifiable through replicability, Truth. The inexplicable became explicable. The time to drop dogmatic beliefs in favor of search for the spiritual pathway is now. Occupying the lower levels of consciousness will still persist among a larger proportion of the population for the time being, but the revelation of Truth, or Enlightenment, is destined for every human being, as Hawkins notices (2005). In the context of education and the hitherto presented study, to maximize the human (teacher) potential, one needs to resort to developing the qualities that transcend the negative field, which is 200 on the scale of Consciousness, and start speaking for the Truth. While the benefits to learners will be countless, to teachers – the process will turn rewarding. The more illuminated a teacher, the more sparkling the learning process will become.

The muscle testing proved effective, not only in the psychological but also educational application, which was demonstrated by this research concept, realization and final remarks. The startling outcomes may freeze an attempt to sanctify technology in the educational setting. The studies conducted so far have brought researchers to the approximation but not to the essence of what they have been looking for. The kinesiologic test can recall an ancient magic mirror and a modern lie detector. The calibration levels of individuals determine their intentions and actions, and consequently their impact on the others. In this study, the influence of technology versus educators has been investigated. The calibrations of the stimuli reflect what can benefit learners, or become deleterious by simply uncovering whether they are aligned with Truth, or Falsehood, or whether they are associated with Power vs Force respectively.

It is clear that technology will continue to exert an effect on classrooms, educational institutions and educational administrative systems, but eventually, it is in the interest of all scholars who spread the word to sow the seed that reaps the harvest. The Map of Consciousness casts a new light on the relevance of the energy fields in relation to technology and the human element. Alignment with the attractor, or energy field, informs about the position and intention of those in charge of inventing or propagating technology as well as the teaching process. And this research is the Rubicon (the critical moment) for those who are fueled by negative stimuli, a materialistic view-point, and consequently, a vested interest of gain, to proceed in the right direction, as the energy levels indicate it.

A flicker of hope, in this volatile world of complex theories and uncertain behaviors, is that Truth aligns with Veritas, which is to come onto the surface due to the primary tools of disseminating information – education and research, and ideally, with enlightened educators and kinesiologically-tested research. The prelude to such options begins here.

References

Alexander, E. (2012). *Proof of Heaven: A Neurosurgeon's Journey into the Afterlife.* New York: Simon & Schuster Paperbacks.

Bohm, D. (1980). *Wholeness and the Implicate Order*. London: Routledge & Kegan Paul.

Bohr, N. (1921). Atomic Structure. *Nature*, 107 (2682), 104-107. Bibcode: 1921Natur.107.104B. doi:10.1038/107104a0

Compton, Arthur (1935). *The Freedom of Man*. New Haven: Yale University Press.

De Broglie, L. FoundPhys (1970). The Reinterpretation of Wave Mechanics. *Foundations of Physics*, 1 (1), pp.5-15. 1: 5. doi:10.1007/BF00708650

Diamond, J. (1979). Behavioral Kinesiology. New York: Harper & Row.

Foy, M. (2011). *A Necessary Vigilance.* Lulu.com: "It is our understanding of humanity, and of life, which ought to be determining the course of technology – not the reverse", p.85

Frego, K. A. (2006). Authenticity and relationships with students. *New Directions for Adult and Continuing Education*, 111, pp. 41–50. doi: 10.1002/ace.226

Frego K.A. (2017, February). *What is our teaching philosophy? Insights from our teaching metaphors.* Paper presented at the TESL Conference in Ottawa, Ontario.

Gaertner-Johnston, L. (2014). *Business Writing with Heart.* Seattle: Syntax Training.

Goodheart, G. (1976). Applied Kinesiology. Detroit: Privately published.

Hawkins, D.R. (1995). *Power vs Force.* New York City, Carlsbad: Hay House, Inc.

Hawkins, D.R. (2005). *Truth vs Falsehood.* Toronto: Axial Publishing Company.

Hawkins, D.R. (2006). *Transcending the Levels of Consciousness.* New York City, Carlsbad: Hay House, Inc. "Creation is capable of being known solely by virtue of the presence of consciousness, which is the very matrix of all essence. Thus, consciousness is the irreducible a priori reality by which the linear is perceived by the subjective awareness of the nonlinear" (2006, p. XVII).

Heisenberg, W. (1930). *The Physical Principles of the Quantum Theory.* The University of Chicago Press

Huxley, A. (1937). Ends and Means: *An Inquiry into the Nature of Ideals and into Methods.* Toronto: Oxford University Press, London: Chatto&Windus. "Technological progress has merely provided us with more efficient means for going backwards", p. 9. Retrieved from https://archive.org/stream/endsandmeans035237mbp/endsandmeans035237mbp_djvu.t

Jung, C.G. (1978). *Psychological Reflections.* Princeton: Princeton University Press.

Palmer, P.J. (1993). Good Talk About Good Teaching. Improving Teaching through Conversation and Community. *Change*, 25(6), 8-13.

Planck, M. (1931). Interview with *The Observer*. London

Planck, M. (1944). Speech in Florence. Italy

Richardson, J.S., Swan, K. (2003). Examining social presence in online courses in relation to students' perceived learning and satisfaction. *JALN,*7(1), 68-88.

Sheldrake, R. (1988). *The Presence of the Past.* New York: Times Books

Sheldrake, R. (2009). *Morphic Resonance.* Rochester, Toronto: Park Street Press.

Sheldrake, R. (2012). *Science Set Free.* New York: Deepak Chopra Books.

Building Health Informatics Technologies for Higher Education in the Health Sciences

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Abstract

Building a new state of the art university campus for undergraduate and postgraduate education requires a unique setup that encapsulates the latest in educational advancements and their supporting equipment. Blending technologies into the architecture of the educational venues so that they become integral to the teaching and learning experience is fundamental. When building solutions for a university specialized in health sciences, it is challenging to identify what is demanded of the technology. This paper focuses on the construction and implementation stages of a university that teaches medical, nursing, dentistry, pharmacology and other allied health professions. This university combines both educational and healthcare facilities in its teaching. Data was collected using a qualitative 'Action Research' approach, whereby iterative implementation cycles revealed best practices and project management constructs. The research shows that a technologically advanced health sciences university campus must not only provide smart classrooms, but should also support clinical skills and science labs, simulators, problem based learning tutorial rooms, computer labs and distant learning classrooms with the latest technologies. The study also reveals that health informatics solutions must be in place to support medical records for mock and real patients, as well as actual dental clinics with radiology information systems and picture archiving and communications systems alike. This paper focuses on the project management and implementation experience of a newly constructed university specialized in health sciences, by shedding light on the deployed technological solutions and by means of highlighting the best practices to be taken into consideration when implementing such tools.

Keywords: Higher Education, Learning Technology, Medical Education, Health Informatics

Background
King Saud bin Abdulaziz University for Health Sciences

King Saud bin Abdulaziz University for Health Sciences (KSAU-HS) is a recently established university in Saudi Arabia. It was founded in 2005 under the umbrella of the Ministry of National Guard, Health Affairs (M-NGHA). The Health Affairs as a governmental non-profit healthcare organization is comprised of two medical cities; one in Riyadh and one in Jeddah. There are also hospitals in Dammam, Al Ahsa and Al Madinah and over 100 primary healthcare centres across the Kingdom of Saudi Arabia. KSAU-HS is closely affiliated with the Health Affairs' hospitals as the academic arm of the organization. The KSAU-HS university campuses and accommodations are physically located on the same grounds as the hospitals.

The university has three campuses in three different cities; Riyadh, Jeddah and Al Ahsa. The Riyadh campus is the largest site and hosts seven colleges; Medicine, Nursing, Dentistry, Pharmacology, Public Health & Health Informatics, Science & Allied Health Professions and Applied Medical Sciences. Its sister site in Jeddah has four colleges; Medicine, Nursing, Science & Allied Health Professions and Applied Medical Sciences. The Al Ahsa site is the smallest campus and hosts three colleges; Medicine, Science & Allied Health Professions and Applied Medical Sciences. Being the academic leg of the M-NGHA operation, the KSAU-HS provides and supports courses and opportunities for continuous medical education and oversees the residency training programs.

The M-NGHA sites also encompass the King Abdullah International Medical Research Centre. All three KSAU-HS university sites are connected with each other and also with the M-NGHA hospitals via high-speed data carrying complex wide area network (WAN) communications infrastructure. As a university, KSAU-HS is by all means complex in its structure and purpose.

Purpose of the Study

Although there is a wealth of literature about Health Informatics education and the issues involved (Hasman et al., 2011; Haux, 2008; Johnson & Friedman, 2007; Mantas et al., 2010) (Bacigalupo, Bath, Booth, Eaglestone, & Proctor, 2001), there is very little discussion on the role of Health Informatics practice and tools in higher education in the health sciences and medical fields. The purpose of this paper is to highlight some of the intricacies involved with building information technologies for a geographically dispersed university campus specialized in the medical and health sciences disciplines by examining a case study in practice through an Action Research methodological approach. More specifically, this paper focuses on creating a design blueprint by exploring the complexity of building technologies in health sciences education. The study observes how technologies were blended into the educational architecture, explores how to best combine educational and healthcare technologies, and observes the construction & implementation stages of the project.

Introduction

Continuing Medical Education

Healthcare needs to compete with other sectors for an information literate workforce and to equip its workforce through on going refreshment of information skills (Bacigalupo et al., 2001). Technology solutions have for many years been integral to supporting advanced education provision. Continuing education of healthcare professionals is a key element for the quality and efficiency of a health system. Technology solutions like telemedicine tools enable the communication and sharing of medical information in electronic form, and thus facilitate access to remote expertise. A physician located far from a reference centre can consult its colleagues remotely in order to resolve a difficult case, follow a continuous education course over the Internet, or access medical information from digital libraries or knowledge bases. These same tools can also be used to facilitate exchanges between centres of medical expertise: health institutions of a same country as well as across borders (Geissbuhler, Bagayoko, & Ly, 2007).

Virtual Reality

Virtual reality has also been used as a training mechanism for healthcare practitioners learning to use surgical endoscopic equipment (Sewell & Thede, 2013). Traditional medical education using books, lectures, physical models, and cadavers may no longer be the most efficient methods for teaching complex anatomical relationships. A study by Silverstein et al. (2006) was designed to measure whether teaching complex anatomy to medical students using immersive virtual reality is an improvement over traditional methods. They conducted a study using a networked immersive virtual reality system. First-year medical students were given workshops one day before or after a traditional three-hour lecture or laboratory session. Students who attended only the traditional session served as a comparison group. Improvements demonstrated a statistically significant advantage to the brief virtual reality session over the traditional session, while improved results for those who were exposed to both the traditional and immersive sessions was also better than for the students who were exposed the traditional session. Silverstein et al. (2006) conclude that immersive virtual reality can be an effective enhancement to traditional surgical-anatomic educational curricula.

Biomedical Informatics

Information technology has become pervasive in all aspects of healthcare. It is present in microscopes; in DNA sequencers; in chips for bacteriology; in all types of devices, from pacemakers to MRIs; it is the cornerstone of running hospitals and building community networks. Building the virtual physiological human would not be thinkable without information technology. Advances in DNA sequencing from the field of biotechnology can make it possible to know the whole genome of a patient at a reasonable cost and time in the near future. This opens the door to the practice of a more personalized medicine. Beyond this, advances from physics, chemistry and engineering are facilitating new ways of intervention in the human body to repair or replace parts of it that have failed to perform its function properly, either by accident, disease or aging. These developments are shaping the areas known as Nano medicine and regenerative medicine. Similar advances are occurring in other areas such as sensors or mobile devices.

The challenges related to the promotion of interdisciplinarity can impact on the design of programs for the education of future scientists in biomedical and health informatics. Hasman et

al. (2011) encourage the promotion of training in skills that can be used for these programs. They also encourage the use of social networks to interact and participate with other communities and multidisciplinary research networks utilizing technology to bridge the gap between academic theory and real world practice and to meet students' demands to see the wider picture behind modernization of health services. Furthermore, they stress the importance of education in methods of retrieval, organization and filtering of information that would allow learners to keep abreast of the latest developments in their areas of interest. All of these can be supported with advanced technology tools when technology is considered used as a facilitator of transferable skills. Furthermore, they explain how stimulating collaborative work across multiple health professions has enabled students to understand multiple perspectives of stakeholders by modelling the same social interaction in electronic environments. This demonstrates how technology can enable advanced, social and collaborative learning in healthcare education.

Technology Trends in Higher Education

The Gartner report (Lowendahl, Thayer & Morgan, 2016a) evaluates the top ten business trends that will drive the global higher education industry in 2017, highlighting the impact on IT organizations that are significant to leaders in higher education. These trends include Competency-Based Education, Reinventing Credentials, Analytics Everywhere, Rankings, Breaking Boundaries, Revenue Diversification, Increasing Political Intervention, Innovative Learning Spaces, Personalization in Education and Student Recruiting.

The Gartner Report (Lowendahl, Thayer & Morgan, 2016b) also identifies the top ten strategic technologies relevant to the higher education industry in 2017, highlighting the impact on technology. These technologies include Open Microcredentials, Digital Assessment, Predictive Analytics, Adaptive Learning, Virtual Reality and Augmented Realty, Hybrid Integration Platforms, Institutional Video Management, Artificial Intelligence, Listening and Sensing Technology and Robotic Telepresence. Organizations need to take the time to assess which of these business trends and strategic technologies they have adopted. Most if not all of these trends and technologies should be evident in the fabric of what drives technology strategy adoption in higher education.

Trends in Higher Education in Saudi Arabia

There is evident trending growth in Higher Education in Saudi Arabia. In 2003 there were only eight public universities and seven private colleges in Saudi Arabia with a total enrolment of 550,000 students per year. While in 2014 the Kingdom witnessed significant reform in the provision of higher education with twenty-five public universities, thirty private universities and colleges totaling an enrollment of 1,200, 000 students per year. At least thirty of those educational institutes offer degrees in healthcare.

Spending on Education and Healthcare in Saudi Arabia

According to the Fiscal Budget for the Year 2017 (Kingdom of Saudi Arabia Ministry of Finance, 2017), Saudi Arabia's highest expenditure allocation is on Education & Training with an allocated SAR 200 Billion ($53.3 Billion), which is even higher than Health and Social Development with a budget of SAR 120 Billion ($32 Billion). Compared with spending on Military of SAR 191 Billion ($ 51 Billion) and Security & Regional Administration which SAR 97 Billion ($ 25 Billion), the expenditures on education are notably high (Table 1).

SN	SECTOR	PROJECTED EXPENDITURES 2016	ACTUAL EXPENDITURES 2016	PROJECTED EXPENDITURES 2017
1	Public Administration	28,463,916	26,770,107	26,716,039
2	Military	179,098,762	205,096,320	190,854,490
3	Security & Regional Administration	102,395,439	100,626,987	96,687,000
4	Municipality Services	34,686,603	24,960,543	47,942,215
5	Education	207,144,501	205,826,142	200,329,066
6	Health & Social Development	124,835,481	101,435,223	120,419,691
7	Economic Resources	36,797,919	38,248,009	47,260,814
8	Infrastructure and Transport	30,827,314	37,584,060	52,164,000
9	Public Programs Unit	95,750,065	84,452,609	107,626,685
	TOTAL	**840,000,000**	**825,000,000**	**890,000,000**

Table 1 2017 Budget Kingdom of Saudi Arabia (Kingdom of Saudi Arabia Ministry of Finance, 2017)

Methods of Research

Action Research

Learning by doing is a powerful paradigm and proven as a reliable methodological approach in education; whereby Bacigalupo et al. (2001) explain that students and staff alike can benefit from an action learning approach. In this study a qualitative 'Individual Action Research' approach was used to collect and analyse the data. Data were collected using field notes, analytical memoing, project reports and hundreds of pages of meeting minutes. The latter two were collected over several years spanning from 2010 to 2017. The data were collected and analyzed through various Action Research Cycles (Lingard, Albert, & Levinson, 2008; Peters & Robinson, 1984). Ultimately, the collection focused on four action research cycles; Planning the Project, Implementing the Project, Receiving the Project and Reflecting on Lessons Learned (Figure 1).

Project Implementation Stages

Action research iterative analyses of the four cycles were conducted for four distinctive project implantation stages; 2008: Planning, 2010: Implementing, 2013: Receiving, 2016: Closeout (Figure 2). The findings of the detailed analyses of the various implementation cycles revealed the key components and challenges of building the health informatics technologies for the various colleges and entities of the university campus.
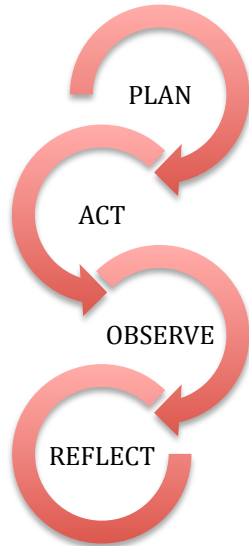
Figure 1 Action Research Cycles
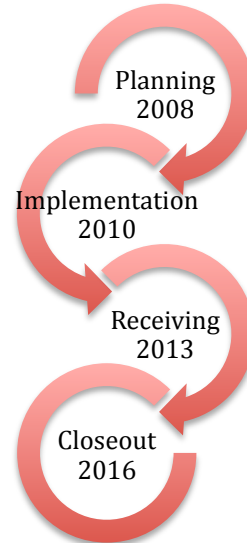
Figure 2 Project Implementation Stages

Results and Discussion

Technologically Advanced Health Sciences University

Observing the various cycles of the project over time and reflecting on the stages revealed health informatics solutions are vital in health sciences education; resulting in eight themes of focus: 1) Building the Infrastructure, 2) Clinical skills and Simulation Centers, 3) Science and Computer labs, 4) Specialized Colleges & Dental Informatics, 5) Virtual Patient for Problem Based Learning Tutorial Rooms, 6) Video Conferencing, 7) Research Labs, and 8) Live streaming Surgeries.

Building the Infrastructure

Being geographically dispersed, building the network infrastructure for the three KSAU-HS campuses and integrating them with each other and the hospitals was an achievement in itself. The three dispersed campuses are connected via the network since the three campuses operated as one university. High speed data carrying network designed and implemented by market leaders and one of the most advanced in the regions providing seamless integration between all sites. A user can easily transfer their profile between regions and have full access to their data, email and other resources from any of the three regions.

Internal IP telephony between the three regions, video conferencing for meetings and for teaching, cross campus seminars and symposiums, conferences, and even the live transmission of surgeries across campuses for teaching purposes is used. Many educational and related extra-curricular activities are care broadcast between the convention centres' main auditoriums including graduation ceremonies, awareness presentations, and inaugural ceremonies.

Clinical Skills and Simulation Centers

Leveraging technology when teaching clinical skills was at the core of the clinical skills and simulation centers built for the three campuses of KSAU-HS. This in itself was a major and challenging project requiring the procurement of specialized equipment. With these types of teaching environments instructors are able to record and save sessions for viewing or feedback therefore allowing them to teach clinical skills without being physically present with the students. Ultimately, by video recording the simulation sessions, instructors and students can observe recorded sessions in real time or offline.

Science and Computer labs

Designing the various labs required special attention. The medical equipment required separate isolated virtual networks to connect devices like microscopes to their backend systems while being seamlessly integrated in the designs of the labs (Figure 3).

Figure 3 Science Labs

Medical education requires students to regularly take objective structures practical examinations. Specialized computer labs were designed for this with the highest levels of security while allowing the students to observe the cases and comfortable conduct their examinations in a secure environment (Figure 4).

Figure 4 Computer Labs

Specialized Colleges & Dental Informatics

A case study examining classroom instructional practices at a U.S. Dental School found that learning experiences that will actually be used in practice are essential to ensuring that active learning and critical thinking are demonstrated in the curriculum (Behar-Horenstein, Mitchell, & Dolan, 2005). The specialized requirements of a dental school are considered the most technologically challenging out of all colleges within the KSAU-HS. Actual dental clinics complete with patient records and real patients become an integral part of the academic college building bring into the design the challenge of providing dental informatics solutions within the core of the dental college.

Virtual Patient for Problem Based Learning

Using the support of technology as observed in an e-learning case study based approach provides one mechanism for group interaction, social learning and collective problem solving (Bacigalupo et al., 2001).

The KSAU-HS College of Medicine opted to adopt a hybrid curriculum that offers a problem based learning (PBL) approach as one of its main strategies along with lectures and other teaching and learning strategies. PBL in this program is extended to a full problem-solving life cycle, starting form enquiry, through investigation and diagnostic decision-making to management and prevention of the problem in a defined number of steps; either eleven or nine steps. The classrooms used for this type of teaching are setup with a meeting room style seating with a limited number of participant (usually limited to 10 students). This is very different from traditional teaching styles and the audio-visual technologies that support this type of teaching were incorporated in the KSAU-HS campus design.

Overall, the number of PBL classrooms in the campus far outnumbers the traditional classrooms. Since these classrooms are designed to teach in small groups, yet each one of them requires a full audio visual setup with interactive board and projector, computer and sound system. The investment in audio visual technologies to support this type of teaching was

substantial, where it is not possible to reply on large classrooms or auditoriums for teaching. The ratio for audio visual setup to number of students becomes around 1 to 10. Using advanced technologies PBL can be offered online allowing hands on experience for students.

Video Conferencing

The classrooms across the regions of KSAU-HS are technologically advanced with over 220 multimedia equipped classrooms. The university campuses are strategically designed to support teaching from any region/site within the infrastructure via video conferencing. These classrooms allow physically dispersed campuses to interlink and let instructors collaboratively teach across the regions and between different colleges within the region itself. Two very successful examples at KSAU-HS are the Masters Medical Education and Masters of Health Informatics (Justinia & Shalaby, 2014) programs that are successfully taught by faculty physically present in Riyadh across three regions (Figure 5).

Teaching through a video conferencing supported approach is a constructive tool that can facilitate the provision of a successful postgraduate course. This type of setup can provide an excellent setting for knowledge exchange and improved collaboration between students. Instructors' time can also be used more efficiently by eliminating the need to repeat sessions. While students generally prefer to learn with a physically present instructor, using video conferencing creates the opportunity to offer educational programs to students in locations that would have otherwise been excluded. (Justinia & Shalaby, 2014).

Figure 5 Video Conference Classroom

Research Labs

King Abdullah International Research Centre is the research arm of the organization. The centre itself is also technologically advanced and fully equipped as a state of the art research centre. Equipping the labs with the latest technologies was considered a project in itself and required specialized attention during the installation phases of the implementation (Figure 6).

Figure 6 Research Labs

Live Broadcast of Surgeries

One of the advantages of having he university campuses linked to the hospitals is allowing the students to virtually observe live broadcast of surgical operations via medical quality specialized cameras that transform the massive theatres in each campus into a virtual operating theatre (Figure 7).
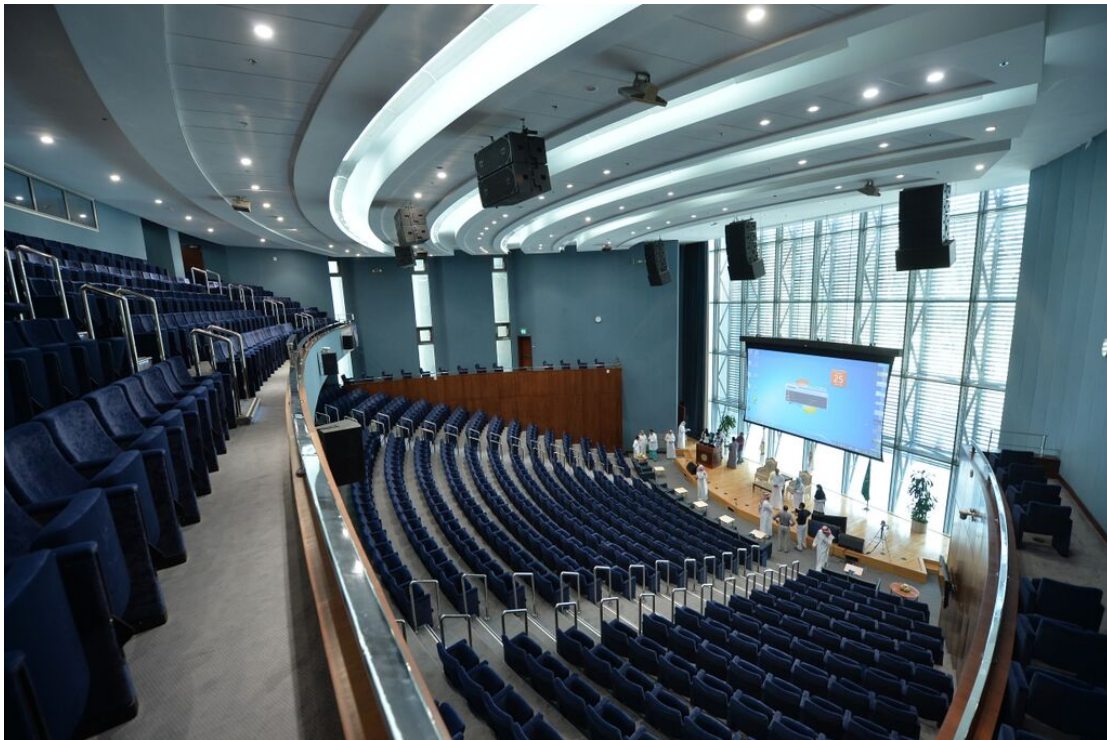

Figure 7 Broadcasting at Convention Centre

Conclusions

Summary of Findings

The leaders of KSAU-HS set out to build a state of the art university campus for undergraduate and postgraduate education with a unique setup that encapsulates the latest in educational advancement and supporting technologies. This vision was incorporated into the architecture of the educational venues that become integral to the teaching and learning experience for faculty and students alike. Their aim was to benchmark themselves against world-class leaders in medicine. KSAU-HS emerged as a technologically advanced health sciences university campus that provide smart classrooms, and supports clinical skills and science labs, simulators, problem based learning tutorial rooms, computer labs and distant learning classrooms with the latest technologies and health informatics solutions. KSAU-HS as university specialized in the health sciences -and spread across three regions of Saudi Arabia- is very unique. Joined with the epic medical cities that engulf it, the university is privileged and in an opportune position for success. The university has a chance to emerge as a model site for technologically innovative medical education, and has the potential to advance the provision of healthcare in the region by reinforcing the root of education using technology tools.

Challenges and Lessons Learned

It is estimated that only one third of healthcare IT projects achieve success (McCarthy, Eastman, & Garets, 2014). Additionally, half of all large-scale IT projects go beyond original budgets by 45% and 7% over intended time, while delivering 56% less value than predicted. (Bloch, Blumberg, & Laartz, 2012). This project was not without its challenges. Mainly, there were project management challenges that can be summarized into six points: 1) Multiple vendors and subcontractors, 2) Linking various types of technologies, 3) Project delays: advances in technology outpaced the implementation, 4) Venders lacked of expertise in Health Informatics, 5) Vendors lacked a holistic view during implementation, and 6) Dispersed delivery of key functions.

Despite the challenges, the university merged as a model site in the Middle East. The smart campuses at KSAU-HS literally pulsate with technology. The underlying technical infrastructure was built to support three interlinked campuses that can literally see each other from within every lecture hall and the advanced technologies have proven as a positive driver for students and faculty alike.

References

Bacigalupo, R., Bath, P., Booth, A., Eaglestone, B., & Proctor, P. (2001). Studying health informatics from a distance: issues, problems and experiences. *Health Informatics Journal, 7*(3-4), 138-145.

Behar-Horenstein, L. S., Mitchell, G. S., & Dolan, T. A. (2005). A Case Study Examining Classroom Instructional Practices at a U.S. Dental School. *Journal of Dental Education, 69*(6), 639-648.

Bloch, M., Blumberg, S., & Laartz, J. (2012). Delivering large-scale IT projects on time, on budget, and on value. Retrieved from http://www.mckinsey.com/business-functions/business-technology/our-insights/delivering-large-scale-it-projects-on-time-on-budget-and-on-value

Geissbuhler, A., Bagayoko, C. O., & Ly, O. (2007). The RAFT network: 5 years of distance continuing medical education and tele-consultations over the Internet in French-speaking Africa. *Int J Med Inform, 76*(5-6), 351-356. doi:S1386-5056(07)00006-8 [pii]10.1016/j.ijmedinf.2007.01.012

Hasman, A., Ammenwerth, E., Dickhaus, H., Knaup, P., Lovis, C., Mantas, J., . . . Sarkar, I. N. (2011). Biomedical Informatics ‚Äì A Confluence of Disciplines? *Methods of Information in Medicine, 50*(6), 508-524. doi:10.3414/me11-06-0003

Haux, R. (2008). *Good Health Informatics Education*. Paper presented at the Saudi E Health Conference, Riyadh, Saudi Arabia. http://saudiehealth.com/

Johnson, S. B., & Friedman, R. A. (2007). Bridging the gap between biological and clinical informatics in a graduate training program. *Journal of biomedical informatics, 40*(1), 59-66.

Justinia, T., & Shalaby, H. (2014). Video Conferencing and Distant Learning: Teaching Postgraduate Health Informatics Courses through Video Conference Supported Collaborative Learning Environments. *The International Journal of Technologies in Learning, 20*(2), 1-17.

Kingdom of Saudi Arabia Ministry of Finance. (2017). 2017 Budget Kingdom of Saudi Arabia: Public Statement Copy. Retrieved from https://www.mof.gov.sa/en/budget2017/Documents/The_National_Budget.pdf

Lingard, L., Albert, M., & Levinson, W. (2008). Grounded theory, mixed methods, and action research. *BMJ, 337*(aug07_3), a567-. doi:10.1136/bmj.39602.690162.47

Lowendahl, J.-M., Thayer, T.-L. B., & Morgan, G. (2016a). Top 10 Business Trends Impacting Higher Education in 2017. G00304275. Retrieved from https://www.gartner.com/doc/3556821?ref=unauthreader&srcId=1-4730952011

Lowendahl, J.-M., Thayer, T.-L. B., & Morgan, G. (2016b). Top 10 Strategic Technologies Impacting Higher Education in 2017. Retrieved from https://www.gartner.com/doc/3557217/top--strategic-technologies-impacting

Mantas, J., Ammenwerth, E., Demiris, G., Hasman, A., Haux, R., Hersh, W., . . . Wright, G. (2010). Recommendations of the International Medical Informatics Association (IMIA) on Education in Biomedical and Health Informatics. First Revision. *Methods of Information in Medicine, 49*(2), 105-120. doi:10.3414/me5119

McCarthy, C., Eastman, D., & Garets, D. E. (2014). *Effective Strategies for Change*. Chicago: HIMSS.

Peters, M., & Robinson, V. (1984). The origins and status of action research. *the Journal of applied Behavioral Science, 20*(2), 113-124.

Sewell, J., & Thede, L. (2013). *Informatics and Nursing: Opportunities and Challenges* (4th ed.). Philadelphia: Lippincott Williams and Wilkins, WoltersKluwer Health.

Silverstein, J., Ehrenfeld, J., Croft, D., Dech, F., Small, S., & Cook, S. (2006). Tele-immersion: Preferred infrastructure for anatomy instruction. *Journal of Computing in Higher Education, 18*(1), 80-93. doi:10.1007/bf03032725

Media Technology and Justice: Teaching Interactive Storytelling for the Greater Good

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Abstract

This research will consider ways to bridge the gap between Computer Science and Media Communications and while doing so create Social Justice for student success. New Media, as it has been referred to, is considered content available on-demand through the Internet, a digital device, usually containing some kind of interactivity and creative participation. It is the interplay between technology, images, media and communications. The next generation of newspaper, radio, television, and film students need to have a working knowledge of the technologies that are available for the creation of their work and taught to use this knowledge to create a voice. The work is interdisciplinary; in communications we understand the necessity of reporting, disseminating information and good storytelling. In documentary we understand the instructional and historic aspects of media and technology and in the non-profit sector, we see the need for expanding outlets for good. So, the true necessity is to utilize "new media" technologies to advance social causes while reporting information, informing citizens and creating a great story. There is no longer a need to be a computer scientist in order to have a working knowledge of communication technologies and how they will benefit our work. There are many free and easy to use applications available for the creation of interactive communications. A goal of this research is to give communications students a better understanding of the technology that is both, currently at their disposal, and on the horizon, so that they can use it in their media, communications and storytelling to be a voice for their generation. This is Qualitative-Empirical Study that puts these ideas into action. There is a survey at the end of the course that is qualitative in nature and allows for the participants to share ideas and feelings about the technology and approach.

Keywords: Media Technology, Interactive Storytelling, Digital Media

Introduction

My experience in the ten years that have been teaching media, art and technology to Millennials is that they are only experts in their own daily technology. This means that they can move around their personal circles of social media and know all the apps on their cellphone. But does this mean that they are technology experts? Absolutely not. They know what they want to know and what works for them to socialize and get required work done. A recent survey by ServiceNow concluded that so-called, "digital natives" are not as tech savvy as we might think (White, 2015).

According to Chris Pope, senior director of strategy at the technology services company ServiceNow, most digital natives grew up accustomed to using social media and texting for communicating and not learning other programs or software (White, 2015).

As White indicates, Millennials are very fast paced and in the moment. They want their media in small quick bits. The audience now finds itself reacting to media in the same way. If the story is not told quickly we just go to another site, channel, or app to get it faster. This has become standard for communications. We are all in a hurry. When is the last time you spend an hour talking on the phone? 30 minutes? 10 minutes? It is just easier to text what you need to know and move on. Or television, do you give a show a fighting chance? Or if it has not gotten your attention in the first 15 seconds, are you onto another channel?

Facebook's video consumption has increased by 75% in the past year, reaching 8 billion daily video views; over 1.5 million small businesses posted a video (or a video ad) on Facebook in September 2015 (Kalogeropoulos, 2016). According to the Reuters Institute Report, this was, in part, due to the fact that the average length for the Facebook native news videos was 75 seconds (Kalogeropoulos, 2016).

Shorter form videos are well suited to online delivery, as viewers can dip in and out and access a range of content at once rather than committing to viewing the long form piece.

I am sure that most of us can agree that we are all becoming "swift-media" consumers. We spend more time using media but, when we do, we want our stories to be faster. The purpose of this study is to use these ideas to create a project that allows viewers to become involved thought interaction. Interaction is now the key to creative online storytelling. Knowing how to, and understanding the importance of creative interaction is a major step in creating stories that will allow for social awareness to create civic engagement.

Background

Technology clearly plays a role in representational options (Ellis, 2012). Interactive technology is based on the functionality of the system, in other words, the ways that the information is retrieved. Interactivity is based on user control.

Interactive and Cross-media innovations have created a new model of communication that can go in many directions, where audiences can both consume and produce in the social activist setting and by 2005, more possibilities grew for online participation (Whiteman 2003). The introduction of peer-to-peer broadcasting, largely influenced by YouTube created ever-expanding possibilities for social networking and change. Sites like Facebook continue to add to social networking possibilities. Web 2.0 has created a truly unique opportunity to explore international communities (Miller, 2009).

Interaction allows for the five C's to occur: communication, collaboration, community, creativity, and convergence (Faraj, 2011). Through the creation of an interactive story and the use of social media, communication of some kind will occur. If the story is told well and the social media plan is put into place properly, the community will collaborate creatively. New interactive tools allow the viewer to take on a collaborative role as creator. When the viewer is encouraged to add their voice to a project, it enhances the community and welcomes others to do the same. This type of interactivity allows the user to become

intimately involved with the project and the social cause.

And there is no mistaken the fact that the Internet, and its surrounding technologies, have created media and technology convergences as well as convergence of consumption as students use different media simultaneously to create both art and news. And there is also the convergence of rules that has caused the blur in the roles of creator, producer and consumer (Friedman, n.d.).

According to Dovey (2014), the content of the blog world, Facebook, Twitter, Instagram or Flickr are all real, journalistic, and expressive and this is what interactive storytelling encompasses. These social media outlets are living documentaries for those who create them. New tools for collaboration and sharing in social media platforms build a participatory culture that creates the formation of groups with common views and goals (Jenkins 2006). These groups create communities with enthusiastic, innovative citizenship that work to self-organize for common purposes and causes through this social media (Nash, Hight & Summerhayes, 2014).

With all of this in mind, we now are charged with teaching our students how to create media, whether, radio, television, film or online media, with our consumers in mind. They must create fast paced, informationally sound and esthetically pleasing works.

This is where critical perspectives and creative production practices are imperative in teaching our next generation of media producers.

First making sure that Communications/Media students have both the historical and theoretical backgrounds to lay the groundwork in their craft but then making sure that they have knowledge of the emerging technologies available to help create fast-paced, informative, entertaining and interactive story-making.

Documentary film, in some form, has been part of our culture and society since the early 1900's. In the 1930's John Grierson began using film to show the world things he believed they needed to see, and the Advocacy/Social documentary was born. Films that represent the world's conditions have continually grown in popularity over the years. Now, with the advent of new technologies the social/advocate documentary is once again becoming a force to be reckoned with. Documentaries not only expose audiences to foreign people and unknown places, but they are also helping to create social movements of important causes and marginalized populations.

Interactive documentaries are a new form of documentary, with its roots in the interactive Internet. Interactive Documentary has gone through many iterations including use of CD ROM and early Internet access. It was not until the mainstreaming of the World Wide Web and Web 2.0 in 2004 that Interactive Documentaries could take their place on the documentary stage. Web 2.0 created a relationship between the documentary author and user as both, producer/viewer and co-creators (Ashton 2012).

Documentary filmmakers have been producing commentaries concerning the world's marginalized people and places in an effort to shed light on the problems and help create social movements to effect change for the future (Moyano, 2011). New technologies are now in place that can elevate this light to a much greater audience, through the use of interactive storytelling and multi-media platforms.

Using the background that has been laid out by documentary film and infusing interactive media and internet capabilities, this study looks at how we can advance a social justice cause using current and developing technologies.

Methodology

This is Qualitative-Empirical Study puts these ideas into action. There is a survey at the end of the course that is qualitative in nature and allows for the participants to share ideas and feelings about the technology and approach.

Emerging Technologies for Media Interaction: The Course

With this course the student begins by creating a website, using a front-end web design tool, such as Wix.com. Both teacher and student followed the 16 week cycle to create an interactive documentary for a social justice cause.

The student must choose a social cause or their capstone subject area (dealing with social awareness) and create the site in that vain. The site is required to have at least 4 pages, video, audio and interaction to start. The site also contains a blog. The students then create a mobile app to accompany the site.

Next we look at virtual and augmented reality. We are currently using Aurasma to create augmented reality photos that can be placed on the website and also a business card or brochure. We then play with gaming and animation and create a game that will be added to the site.

In an effort to get the sites up and running and test their interaction, we create and connect all social media: Twitter, Facebook, Instagram, Youtube, Soundcloud, Pinterest and Linkedin. We also set up Analytics.

The final phase of the class is launch the sites, create a social media tactical plan/campaign and track the analytics.

This course not only created a home-base for the social cause, but it also allowed for several convergence points for audience interaction (Mobile, Augmented Reality, Gaming, Video, and Audio). Audience can be analyzed from each location they enter the site, through the analytics.

Tools such as mobile apps, virtual reality, augmented reality, animation, gaming and technologies for learning are now all part of the "tool-kit" that the interactive storyteller or social change agent, has at their disposal for creating good interactive stories. As Simon Staffans (2011), of Re-Think New Media Solutions puts it, we are looking at a shift towards a collective journey. Due to a connected society and made possible by technology, stories and narratives can be seen as a collective. These stories are uniquely individual but also dependent on the collective (Simon 2016). We need to consider all of the tools of interactivity when planning the interactive aspects of the project.

A Mobile application can be connected to the website housing the interactive/social change story and can aide the interaction. This can be done by creating a mobile friendly version of the site and then connecting it to a software, such as Appsbar (appsbar.com), to create the app and icon for any mobile device. This tool is simple and free to use.
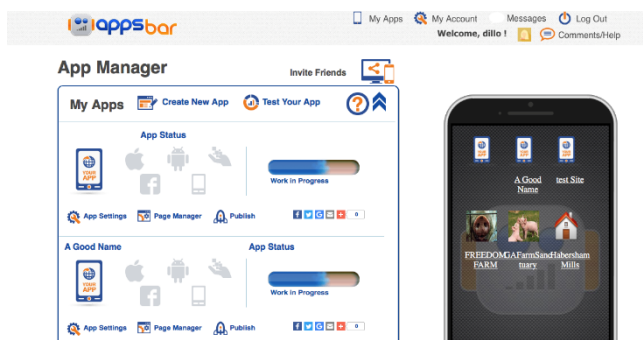
Figure 1. Appsbar

Augmented reality is also based on mobile. This environment allows a still picture to come to life for the user through the camera on their phone. This can be used on advertisements or as an enhancement to the interactive storytelling experience. Aurasma (Aurasma.com) is an example of a good, simple and free resource for creating beautiful augmented reality pieces for any project.
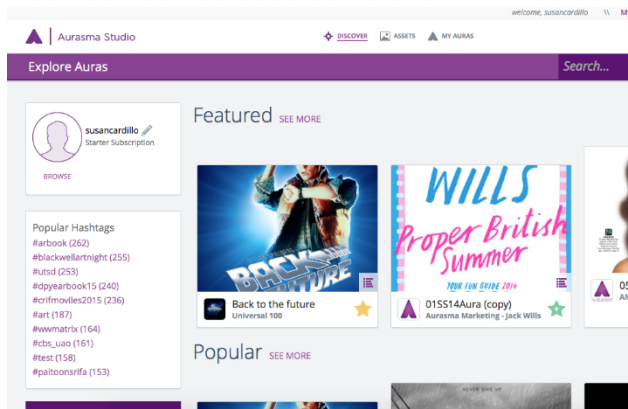
Figure 2. Aurasma

Virtual Reality- With the advent of 360 cameras and Google cardboard (among others) virtual reality can be created for any interactive storytelling project. 360 cameras are now fairly inexpensive and editing can take place in Adobe Premiere. Youtube enables VR video to play on their channels. But there are also the virtual worlds that can hold a "world" for the project as well. Secondlife is a good example of such a world. The storyteller can create a virtual world for the cause where people can gather, get more involved with the cause and find out how to get involved in "real" life.

Figure 3. Second Life

Animation and gaming are also strong areas of advancement in storytelling. There are several tools that will help the interactive storyteller add animation or gaming to their story to create yet another level of engagement and interactivity.

Photoshop is a simple way of creating easy to use animations for a project. There is a frame animation tool built into Photoshop that is simple to use.

There are also online resources, that will help the storyteller create simple animations to advance, entertain and engage the audience.

Figure 4. Animation

Sites like Sploder.com and the University of California at Santa Cruz', Game-o-Matic will allow storytellers to create simple game creation.
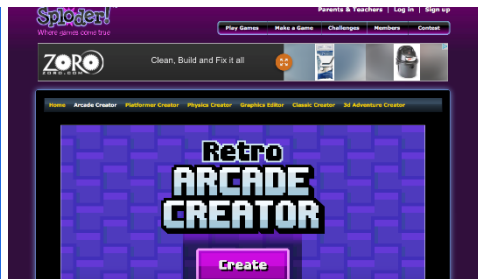
Figures 5 and 6. Game Creators

Tools for learning- these tools allow for video to be imported into the tool in order to create a learning experience, such as a quiz or response before moving forward. An example of this is Zaption.com.
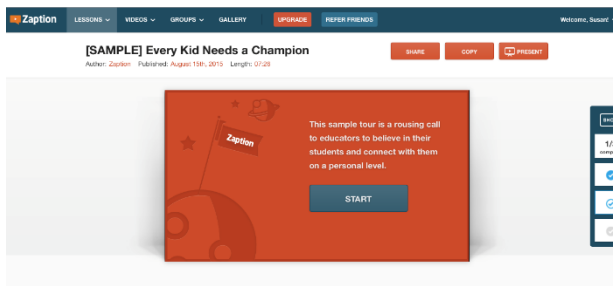
Figure 7. Zaption

These are just examples of a few of the emerging tools of interactivity, collaboration, and participation that an interactive storyteller can use to create a project that will engage, entertain and help to create social awareness, civic engagement and social change. All of these tools can be embedded into the social cause storyteller's website or blog.

Analytics is the discovery and communication of meaningful patterns in data. It is imperative that students know and understand the use of analytics. Most of the tools mentioned above, each have their own set of analytics but the site can also be connected to Google Analytics to keep a "one stop" location for understanding how and when citizens are engaging in the social awareness site.

Once engaged, these tools, along with good storytelling techniques, can take social awareness to the publics, create citizen engagement and, as an ultimate goal, create social change.

Discussion

Once this course was complete, the students were asked to take a survey about their experience with the different tools.

The survey first asked:

1)   Do you think the class and site should be built around
- o   You
- o   A social cause
- o   A subject of your choosing

Sixty-five percent (65%) of the class responded that the class should be built around a subject of their choosing. With 35% saying that it should be built around a social cause. As a disclosure here, the students did not come into the class knowing that the subject of the project would be a social cause. Many were just taking a technology course and found themselves involved in social justice. The survey tells us that the students were interested in creating the projects but not necessarily for the benefit of a social cause.

The next question broke down each of the areas of the course and asked; For each of the areas we worked in or talked about, please tell me which you liked best, did not like at all, thought could be eliminated, do more with, or any other suggestions:

1)	Mobile Applications	6) Animation
2)	Augmented Reality	7) Social Media/SEO
3)	Virtual Reality	8)Wix.com (front-end user web building)
4)	Learning Technologies	9) Interactive Documentary
5)	Gaming	

The areas that the students liked least in this study were Learning Technologies, Animation, Gaming and Mobile Apps. The most popular areas of the course were Augmented Reality and Wix (100% said that these were their favorites), Social Media and Interactive Documentary.

Augmented Reality and specifically Aurasma got the most attention in the comments. The students were very excited about this technology and thought there were endless ways of using it in both storytelling and marketing. They also appreciated the ease of Wix.com in creating beautiful, interactive, blog friendly websites for free. One students proclaiming, "Wix is my new favorite thing to do!"

When commenting on the Learning Technologies, they were unsure of its potential for creating civic engagement since people do not want to feel like they are being tested when they visit an interactive story. They found Animation difficult and Gaming was deemed unnecessary for the cause. Gaming is a great tool of interaction, but the level the student would have to get to, as a game creator, was far beyond the scope of this class.

An interesting finding through this survey was that the students had little interest in the Mobile Application. Their comments mentioned that they could create a user-friendly mobile site with Wix so it was unnecessary to have an app that would just take up room on their phones.

The students are on the right track here. We know that apps are changing, but where the technology goes next is still a work in progress.

Paul Adams (2016), VP of Product at Intercom put it this way:

> In a world of many different screens and devices, content needs to be broken down into atomic units so that it can work agnostic of the screen size or technology platform. For example, Facebook is not a website or an app. It is an eco-system of objects (people, photos, videos, comments, businesses, brands, etc.) that are aggregated in many different ways through people's newsfeeds, timelines and pages, and delivered to a range of devices, some of which haven't even been invented yet. So Facebook is not a set of webpages, or screens in an app. It's a system of objects, and relationships between them.

As the next phase of mobile interaction is being developed it will move beyond the app, as we know it. We will stay tuned to this and learn how to best utilize the interactive features of mobile communications to advance causes.

The Social Media aspect of the course was popular with the student with comments that indicated that it was a place they were comfortable with so, it was fun to "play around in". But not many of the students mentioned SEO as something they found interesting or cared about. There were a few students who were surprised at the ways they could create search engine optimization, as it never occurred to them before.

And finally, although they did not create one, they were very interested in the concept and review of Interactive Documentary. The response was very positive to creating smaller independent stories that worked together as a whole but could be separated and spread out on social media to create the greatest interaction.

Overall this course was a great success. Communications students learned new technologies for storytelling as well as gaining an understanding on how to reach an audience, to effect social awareness and change. As an instructor I learned that this type of course is every changing. Technologies are changing, improving and disappearing on a regular basis and as a teacher and learner of media technologies, our work is never done.

Future Work and Conclusion

The next phase of this project will be to have students create an Interactive Documentary for social awareness and change. Interactive documentaries are capable of relaying deep and complex information in compelling ways. The shift in audience metrics from "exposure" to "engagement" offers important opportunities for students to think about communication. This form can be structured in what could be describe as "micro-narratives"—small narrative units that, like Legos, can be disaggregated and reconfigured in various ways (Uricchio 2015).

"If the growth of interactive documentary does anything, I think it will open our eyes to the hundreds of possibilities of telling stories in original ways, and re-defining what a story is, what an audience is, and what a maker is." Gerry Flahive, National Film Board of Canada

The objectives will be to use the tools of technology to film/edit short, meaningful segments that will create a story. The story will shed light on a social cause. The students will use the knowledge and practice they gained from the first part of this course to create a social media campaign and interaction through blogging, to create an audience and effect social change. Analytics will be used to measure citizen engagement in the cause and interaction data will be collected to determine social change.

References

Adams, P. (2016). The End of Apps as We Know Them. Intercom. Retrieved from: https://blog.intercom.io/the-end-of-apps-as-we-know-them/

Aguayo, A., Cherwitz, R., Jarvis, S. E., & Spiro, E. (2005). Documentary Film/video and Social Change: A Rhetorical Investigation of Dissent.

Aston, J., & Gaudenzi, S. (2012). Interactive Documentary: Setting the Field. *Studies in Documentary Film*, *6*(2), 125-139. doi:10.1386/sdf.6.2.125_1

Dovey, J. (2014) Documentary Ecosystems: Collaboration and Exploitation. In Nash, Ellis, J. (2011). *Documentary: witness and self-revelation*. Routledge.

Faraj, S., Jarvenpaa, S. L., & Majchrzak, A. (2011). Knowledge collaboration in online communities. *Organization science*, *22*(5), 1224-1239.

Friedman, L. (n.d.) Using Social Media Technologies to Enhance Online Learning. Retrieved from: http://www.thejeo.com/Archives/Volume10Number1/Friedman.pdf

Hight, C., & Summerhayes, C. (Eds.). (2014). *New documentary: Emerging platforms, practices and discourses*. Palgrave: Macmillan.

Jenkins, H. (2006). *Convergence Culture: Where Old and New Media Collide*. NYU press.

Kalogeropoulos, A. (2016). The Future of Online News Video; Executive Summary. Reuters Institute Report. Retrieved from http://digitalnewsreport.org/publications/2016/future-online-news-video/

Miller, E. (2009). Building Participation in the Outreach for the Documentary The Water Front. *Journal of Canadian Studies/Revue d'études Canadiennes, 43*(1), 59-86.

Moyano, M. (2011). *Documentaries for Social Change: An Examination of Blooming Hope*. St. Thomas University.

Nash, K., Hight, C., & Summerhayes, C. (Eds.). (2014). *New Documentary Ecologies: Emerging Platforms, Practices and Discourses*. Palgrave: Macmillan.

Newman, W. F. (2011). *Remediating the documentary*. Thesis. Northern Illinois University.

Staffans, S. (2011). One year in transmedia. URL http://transmythology. com/2011/11/22/simon_staffans-one-year-in-transmedia [visited 11/09/2012].

Uricchio, W. (2015) Mapping The Intersection Of Two Cultures: Interactive Documentary And Digital Journalism. MIT Open Documentary Lab.

White, M. (2015) This Is Millennials' Most Embarrassing Secret. Retrieved from http://time.com/3844483/millennials-secrets/

Whiteman, D. (2003). Reel Impact: How Nonprofits Harness the Power of Documentary Film. *Stanford Social Innovation Review, 1*(1), 60.

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Tripura Bamboo Mission: Cohesive Power of Small and Medium Enterprises

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Abstract

Small and medium enterprise (SME) clusters are social and cultural conveyors of community cohesion, welfare, and self-actualization. SMEs are more relevant in areas, which are located in geographically difficult to reach regions that are still wedded to their traditional practices of eking out a livelihood from natural resources. They help transform tribal handicraft communities into dynamic economically sustainable clusters through innovative knowledge bases, pro-poor growth strategies, and appropriate market development. Tripura Bamboo Mission (TBM) in India is one such market driven, community-based intervention that has remarkably enhanced livelihoods of tribal communities who had missed the development race in a VUCA world through knowledge, innovation and transformative action. Tribal communities in Tripura had been subsisting on traditional methods of farming based on burning of bamboo jungles and shifting plantations degrading their natural habitats and perpetuating a situation of hopelessness. In such a scenario, TBM interventions publicised the potential of bamboo crop for a variety of value-added products and numerous profitable applications to make it a source of dispersed employment generation and economic activity. Based on a case study approach, the paper assesses the impact of TBM on artisan families' income, entrepreneurial advancement, and social empowerment. Analysis also demonstrates a 'ripple effect' that connotes reverberating positive impact tribal women have on their families and communities. The aim is to measure TBM's impact and also identify ways to up-scale its universal application among other such communities straddling India's tribal landscape.

Keywords: Small and Medium Enterprises, Cluster Development, Tripura Bamboo Mission, Social Impact

Introduction

"Clusters are not unique, however; they are highly typical - and therein lies a paradox: the enduring competitive advantages in a global economy lie increasingly in local things - knowledge, relationships, motivation - that distant rivals cannot match."

Porter (1998a)

Small and Medium Enterprises (SME) are powerful vehicles that drive the growth of the Indian economy. SMEs depend on the indigenous knowledge of the tribal communities and harness the untapped potential in rural areas. Since independence, particularly with the inception of five year plans, concern for tribal development has always been high on the Government's agenda. As local growth engines, the SMEs augment the sustainable economic development of the tribal areas. They have the capacity for innovation, are a source of job creation, and fuel entrepreneurial spirit and innovation in the tribal artisans thus fostering competitiveness and employment.

Bamboo crafts are one of the oldest traditional cottage industries of India providing livelihood to the tribal societies within the country. The manufacturing units are mostly located in rural and small towns, with a huge market potential in India and abroad. India Export Promotion Council for Handicrafts (EPCH) reported growth to be at a rate of 10 per cent for the handicraft exports in 2017 compared to 18.3 per cent in 2016, owing to the demand from global markets, especially in Latin America, Europe and the Middle East.

Tribal artisans earn their livelihood by undertaking shifting cultivation and supplement it with income from other activities like handicrafts. The tribal communities in these remote areas are largely cut off from the developments of the globalized world, yet have to bear the consequences of being rooted in the old practices and not keeping pace with the changing times. They continually battle the growing challenges with little capacity and means to overcome them. In 1991 with the ensuing globalization in India and the massive storm of increased competition, communities were rendered defenceless in the face of *Vulnerability, Uncertainty, Complexity and Ambiguity (VUCA)*.

VUCA amplified the challenges for the artisans with greater competition that made their knowledge and skills become increasingly redundant. With a fragmented sector and small-scale craft production mainly done for local and self-consumption, artisans find it difficult to compete with sellers from across the globe with their traditional products. Due to lack of product and process innovation the artisan products were undervalued in the global market. Eventually, artisans had to commoditize the traditional products and these could no longer be produced in isolation.

It is at this point, that the uniqueness of the tribal bamboo handicrafts was captured and value added through TBM, which made the SMEs in the tribal communities powerful economic agents of economic development in Tripura. Such economic expansion has also had a social implication where the importance of SMEs as social and cultural conveyors of self-actualization, social cohesion, and community welfare is recognized. To further the development of SMEs, the government introduced a cluster-based approach to make artisans self-reliant and productive for the economy. It aimed at enhancing their economic well-being independent of overall quantitative economic success. Cluster approach in rural economic growth takes into consideration a holistic community development through enhancement of traditional skills and

knowledge base, pro-poor growth strategies, and necessary market development to sustain such a growth. Clusters value adds the traditional products and offer competitive pricing in the global market. This paper, therefore, assesses the socio-economic and cultural impact of TBM on the tribal artisans of Tripura.

Why Bamboo?

The entire region is rich in natural resources and alternative livelihoods. Hence subsistence is primarily based on the exploitation of these natural resources. One such natural resource abundantly available in the state is 'bamboo' which in local lore is also known as *'green gold'*. Bamboo has the properties of being developed or be manipulated into various types of value-added products for the greater economic benefit through dispersed employment generation and social development. Bamboo thus provides the necessary resource base for expanding small and medium enterprise sector that would generate employment and income to alleviate poverty in the neglected rural areas and communities. With such properties, bamboo can be considered as an excellent entry point for poverty alleviation programs and initiatives.

The local environment also greatly facilitates the establishment of new enterprises, business ideas that contribute to the success of the region, generating a virtual multiplier effect, which in turn leads to rapid inclusive growth. The district can thus be viewed as a nursery that not only feeds the companies in respect of their business needs but also constitutes a laboratory for testing new schemes of social cohesion and innovative ideas in terms of labour organization.

Tripura Bamboo Mission as a Sustainable Design

Tripura constituted the first state bamboo policy in the country, namely, *'Tripura Bamboo Mission'* (TBM) in 2006 with a focus on enhancement of turnover of bamboo sector coupled with provision of livelihood opportunities. The Mission achieved its objectives through a cluster development approach involving institution building, industrial linkages, and better market and credit facilities coupled with resource up gradation. To improve the efficiency of the Mission and develop a contemporary and dynamic work culture, the state Government implemented the mission in a Public Private Partnership (PPP) mode. In the year 2007, it engaged IL&FS Cluster Development Initiative Limited as the project implementing agency (PIA).

TBM has a *'Farm to Market'* approach and aims to optimize the end-to-end value chain (process innovation) spanning from plantation and resource generation to marketing of value added finished products (product innovation). The initiative leverages market link through various entrepreneurs in the five major sub sectors of bamboo like incense sticks, bamboo mats, utility handicrafts, bamboo furniture and a host of industrial products.

Through this design TBM aims to achieve multi-pronged objectives. It discourages shifting cultivation among the tribals. Second, it boosts the turnover of the Bamboo sector and thirdly, to provide the communities with a sustainable livelihood.

Literature Review

Global to Local

The VUCA world not only affects the individual but also the tribal communities. As a result of free trade and dumping, domestic production and sale of products declined and people struggled to make a living from the traditional designs. A complex supply chain with too many intermediaries from raw material procurement to the sale of products exacerbated the impact of VUCA. However, while the markets were made accessible through globalization, the importance

of *territoriality* (location and geographic distribution) was not lost either. There exist contrasting views on the significance of location for economic activity post globalization. Some scholars believe that globalization renders location irrelevant and it marks the 'end of geography' (O'Brien, 1992), the 'death of distance' (Cairncross, 1997) and the 'delocalisation of economic and social relationships' (Gray, 1998). Others argue that globalization promotes "greater regional economic distinctiveness, and that regional economies rather than national economies are now the salient foci of wealth creation and world trade" (Martin and Sunley, 2003, p.3). *Territory*, therefore, has an "ability to organize its development in an increasingly globalized economy" (Beauviala-Ripert *et al.*, 1993, p.2).

In order to enhance localized productive capacities, economic actors (entrepreneurs and corporations) across the globe developed new forms of economic coordination. Such economic coordination demands fostering reciprocal understanding and mutual cooperation among the agents of regional development by focus on human and social capital, and formal and informal norms.

A. Marshall (1890) in the *Principles of Economics* envisioned such a region where the business structure is comprised of small locally owned firms that make investment and production decisions locally. He believed that "specialized industries in particular localities or *industrial districts*" benefit from the fact that "The mysteries of the trade become no mysteries; but are as it were in the air" (p. 271). He viewed the district as a relatively stable community which enables the evolution of a strong local cultural identity and shared industrial expertise.

It is here that the association between the tribal artisans of Tripura and the authorities is facilitated through a cluster-based approach, to create a social partnership of sustainable value. Such a partnership, with shared commitment to orchestrate collaborative actions and decision-making helps artisans compete in the VUCA world. The localized production system is often "conceived as a set of interdependent activities that are technically and economically organized and territorially conglomerated" (Maillat, 1998, p. 117). The participants under TBM share and develop collectively and form hubs which generate new ideas and technological progress. Scholars argue that competitive advantage is a result of collective outcome rather than an individual process. Such a "grouping of economic, social, political and cultural elements" forms the *innovative milieu* (Maillat, 1998). Innovative milieu or collective learning was first introduced by the *Groupe de Recherche European sur les Millieux Innovateurs* (GREMI) (Camagni, 1991).

But what is fundamental to note here is that "the localized production system is actuated by a territorial logic [environment] (milieu)" corresponding to "the technological and market environment" (Maillat, 1998, p. 117). Crucial to such systems is 'networking' or the process of interaction and learning among the agents, making the milieu innovative. Scholars argue that clusters and the network of SMEs reduce uncertainty, maintain competitive advantage and foster innovation. It is this collective process undertaken by the private, public, and collective organizations that develops the local environment and forms the basis of an innovative milieu. The innovative milieu provided by TBM encourages collaboration, both internal and external and gives rise to solidarity among the participants.

Artisans, as a result of globalization and the ensuing VUCA conditions, had to commoditize the traditional products since these could no longer be produced in isolation. Such a change came to be viewed as a destruction of the indigenous knowledge base and tradition, but in fact was just an accommodation. Ronald Robertson calls this *'glocalization'*. The global culture does not replace the local or assimilate the local culture into global one, rather just

accommodates to produce a hybrid culture. Robertson argues that the 'glocalization' theses emphasizes that "it is a process of the global creation of the local and, moreover, the localization of the global" (Matheson *et al.*, 2006, p.4). In many regions of the world, artisans have been identified as the second largest sector of rural employment after agriculture (Basu, 1995 cited in Seung-Eun and Littrell, 2003, p. 357). Further, "as a means of livelihood, handicrafts provide an ideal avenue for creative, independent entrepreneurs" (Morris, 1996, p. 4). In addition, they offer opportunities for seasonal employment and small production processes, and the sector is often a default occupation for producers who have limited options for employment.

Porter and Kramer (2011) argued that working alone and having a narrow approach to business tends to ignore the societal, environmental and economic aspects. Instead they suggest that companies and communities should work together for a common purpose of creating *'shared value'* – "generating economic value in a way that *also* produces value for society by addressing its challenges." A shared value approach reconnects company success with social progress. One way of achieving the shared value is by building a supportive industry cluster.

Clusters, therefore, lend themselves to poverty concerns directly - through employment, income and well-being generated for the working poor, and indirectly, through their wider impact on the local economy. Within a cluster, firms create and exchange knowledge through face-to-face interactions. SME clusters offer dynamic efficiency gains as a result of "greater capacity utilization, greater specialization, enhanced technological capabilities, greater learning by doing, higher process and product innovation" (Rabellotti, 1999, p.1572).

As a result, governments now formulate regional development policies based on industrial clusters that promote innovation and networks of cooperation "as a tool for regional competitiveness" (Diez, 2001, p. 909). The clusters of SMEs are engines of growth and development of the regional economic systems. It is the implementation of these interventions in collaboration with the 'capitals' at the disposal of the community and the organizations that facilitate the innovation process. An artisan cluster under TBM is a geographically concentrated (mostly in villages/townships) household unit that produces handicraft/handloom products. In a typical cluster, such producers often belong to a traditional community, producing the long-established products for generations.

Indian SMEs have tremendous potential to generate income and employment for the country. Despite structural deficiencies that hinder effective and profitable participation in the global markets (Peres and Stumpo, 2000, 2002), SME clusters have the potential to upgrade the value chains and facilitate better market linkages and subsequent socio-economic development. Clusters result in externalities or *'collective efficiency'* originating from the constant interaction of economic actors on various industrial activities (Schmitz, 1999). This helps organizations and localities gain more comparative advantages in the face of global competition (Schmitz, 1999).

Clusters and the Five Capitals Model

To cope with the changing global environment, the Indian economy in 1991 adopted new reforms and introduced the Liberalization, Privatization and Globalization (LPG) model with which rapid changes in the dynamics of production and trade took place. Gradually, a significant proportion of trade was conducted through coordinated value chains with globally acting suppliers, decreasing transportation costs and emerging new destinations. Firms engaged in global production networks provide opportunities for economic upgrading by engaging in higher value production or repositioning themselves within the value chains. In labour-intensive industries, such an expansion generates employment opportunities especially for women, migrant

workers and poorer households (Raworth, 2004). Participation in the value chain leads to the socio-economic development of the producers "through enhancement of skill, product development, added value in product and chain, technology development, business enabling environment through better policy and linkages with markets" (Arshad and Reza, 2012).

Improved business relations, as a result of collaborative efforts under TBM provide smallholders with higher income benefits, improved access to critical services for production, and more stable market relationships. Cluster development under TBM is based on the principle of *'collaborating while competing'*. It is market driven, inclusive and collaborative. The wonder plant is intimately interwoven in the socio-cultural fabric of the state. Bamboo-based economic activities are an intrinsic part of the life of the people. TBM also aims at the development and implementation of a sustainable community based production model with concomitant benefits for forest conservation.

Methods of Research

The impact of TBM is based on a conceptual understanding of the *Sustainable Livelihood Analysis (SLA)* framework as suggested by the Department for International Development (DFID, 1999). This approach was used to identify asset ownership, strategy implemented and outcome achieved, institution influenced and vulnerability context faced by hard-core poor households in sustaining their livelihoods. The questionnaire was divided into eight parts, namely socio-demography information, human asset, physical asset, financial asset, social asset, natural asset, food security and health status. This was substantiated through an in-depth case study exploring the nature and levels of productive capital asset development. Impact pathways were then analyzed for TBM to understand what changes have occurred since its inception and how the positive impact can be enhanced and policy changes be made to reduce any negative effects.

Findings and Discussion

In proposing TBM as a sustainable design, IL&FS Clusters provided for a socially cohesive environment following the path of the 3Es, that is, Education, Employability and Employment. These are the pillars that support such lasting reforms. To highlight the impact of these reforms, the 3Es and various livelihood strategies have been aligned with the five capitals of the sustainable livelihoods framework to achieve sustainable development that finally leads to individual and community empowerment. This will help demonstrate how tribal artisans are inspired to embrace product and process innovation with a hope to thrive in the VUCA times.*TBM 'educates' the artisans for 'jobs' to build human capacity for 'employability' as well as for 'coping' livelihood strategies in a fast moving and complicated world.*

Intervention to Impact # 1: Creation of *Innovation Hubs* via 'Cluster Development and Technology Induction'

Partnerships bring individuals together such that the benefits of cooperation are demonstrated. Artisans with special skills producing higher volume of value added bamboo products are concentrated in small pockets, called Common Facility Centres (CFC), with a distinct sub-sector created within it. These are the *'Hubs of Innovation'* that augment social inclusion. Clusters are a hub of training, procurement, marketing and production with a package of incentives in the form of hard and soft components.

Institution development, here is the key input for TBM success, the most important *'leave-behind'* component functioning as a link between the market and the producers. Common Facility Centres are set-up to extend Technical and Design support. Design support for product innovation was especially for handicrafts and furniture making.

Figure 1 Product Innovation at CFC

Design transformations were kept in tandem with the domestic and global market with branding and market support. IL&FS Clusters partnered with online shopping giants like Amazon and Flipkart to provide bamboo crafts a global platform. Design training and workshops were given by Master Craftsman.

CFC provide market access beyond the cluster or the local market through reduced friction in trading and more specifically through reduced transportation and transaction costs. Here we address the first barrier of the VUCA world to development, Volatility. The impact of a volatile market on the sector is countered by Marx's **Valorizability**, that is, the creation of **value**.

Marx (1867) argues that the production process is both a labour process creating **use-values** and a **value-creation** process through which additional **new value is created** (Crawley, 2016). The worker must create not only new value but surplus value. A *value creation process* which goes beyond the point at which the worker has just created the equivalent of the value of his own labour power, and begins to increase the value of capital, is a *valorization process*, not just a value creation process (Scott, 1996, p. 294). The enhancement of capital value, thus "becomes a purely *social* phenomenon" (Douai, 2009, p. 264).

Intervention to Impact # 2: *Community cohesion* via "SHG creation under Cluster Development"

CFCs were formed particularly in areas where high production and market potential exists. To facilitate coordination, *Self Help Groups* (SHG) are formed within the communities which realign the relationship between cluster activities and artisans. Inactive SHGs were regrouped and provided capacity building and management support. Creation of such self-regulating communities assists business processes and augments grassroots linkage of communities with the cluster facilities. The process of integration facilitated by TBM strengthens the social capital by developing positive relationships towards shared understanding and common values.

Building such *community cohesion within and between communities is an essential step towards improving people's quality of life.* This aspect of the intervention addresses the 'U' in the VUCA. Uncertainty here is transformed through reforms to **Unifiability**. Artisans shed uncertainty of markets and methods and absorb new trends while preserving indigenous knowledge by the unification of their efforts.

Intervention to Impact # 3: Process Innovation

Supply chain of the Incense process takes place at different geographical locations from the Norht East to the South of the country. As a result the supply chain has a large number of traders and transporters at different stages. The bamboo industry is fragmented and hence competition is fierce. There is high dependence on distributors and retailers for marketing. This reduces the margin for actual workers i.e. the bamboo stick makers and the rolling commmunity. The manufacturer has to operate in a highly cost sensitive situation and any quality lapse in the stick or rolling results in higher concumption of perfume which proves detrimental to the overall cost. The large supply chain as a result reduces the margins for the artisans.

The above Complexity is addressed in the Mission by the simplification of the supply chain and adding *Cognizability* to the process. Most things of worth and interest are beyond the cognizability of single individuals like scientific developments and how technology works, but this only poses a problem. Here again, collaborative communities become more cognizable and adapting as a team.

Intervention to Impact # 4: *Working & Learning* via "Community and Individual Capacity Building"

Sustainable bottom-up community development lies in building community capacity. Investing in human capital strengthens the skills, competencies and abilities of people and communities. IL&FS Clusters imparts skills training to artisans, which gives substance to empowerment. If empowerment is the value, then capacity building is the content. It makes the individuals the 'actors' to perform 'effectively, efficiently and sustainably'. TBM builds on local strengths and promotes community participation and leadership, as well as ownership of both the problems and the solutions. Provision of adequate resources to support these processes greatly increases the likelihood of long-term benefits from such activities for rural communities.

Intervention to Impact # 5: Rise of Women Entrepreneurs

The 3Es are key to women empowerment. They have a positive multiplier effect for overall social and economic development when women, in the same extent as men, access economic and financial resources. TBM offers the tribal women a platform to invest in themselves and in turn benefit the whole society while augmenting gender equality. At the same time, providing women the opportunity to invest in their talents has a *ripple effect* on the community, whereby more women are encouraged to take the entrepreneurship route. The 3Es in the process make women more 'employable' compared to previous times, thereby empowering them.

> "I am started my first business at the age of 16, with a capital investment of Rs.10,000 borrowed from my father. I made bamboo sticks for local Bamboo mat manufacturers. I became part of TBM in 2007-08. TBM gave me the opportunity to participate in national level workshops to explore new ideas and innovation for my business. I established my company which now has a turnover of 24 lakhs. Having my own set-up made me financially secure. It also gave other women the encouragement to work with me and set-up similar ventures in the community."

Intervention to Impact # 6: *Financial Inclusion* via "Credit Support Fund"

Tripura has adequate banking network to support budding entrepreneurs and artisans. Interaction with banks, reveals that more than the availability of credit, the issue is of suitability of entrepreneurs for formal credit channel. Most entrepreneurs in the Bamboo sector do not have the capacity to avail bank credit as they have little to show in terms of the net worth and are not in a position to put the stipulated promoter's contribution. There is also a lack of an entrepreneurial culture in the state and most economic activities are state driven. Most of the government schemes are for the organized sector, while almost all the entrepreneurs working in the bamboo sector are unorganized, essentially being small artisans working from homes preventing them from availing such facilities.

TBM started an intensive capacity building initiative in the self-help groups, especially those that were ripe for credit intervention. These SHGs were helped in formulation of a suitable business plan for public sector banks providing micro finance. Banks which are hesitant to lend to individuals are more likely to come forward and provide credit for CFCs on the strength of groups. TBM encouraged entrepreneurship through venture capital/private equity tailored to artisan needs.

Intervention to Impact # 7: *Environmental Sustainability* and *Food Security* via "Resource and Plantation Development"

Bamboo is not merely the poor man's timber but is also the rich man's delicacy. It is a source for food, fodder, furniture, building materials, paper, particle board, energy, and medicine. It also plays a vital role in environmental amelioration, biodiversity preservation, soil conservation and waste purification. Bamboo is well placed to address the food security through bamboo-based agro-forestry systems by maintaining the fertility of adjoining agricultural lands, and as a direct food source like edible bamboo shoots.

TBM has been promoting bamboo plantation on private land, land allocated under the Forest Rights Act and community land targeting small and marginal farmers since 2010-11. The main objective of promoting bamboo plantation is to provide income to the farmers, meet the demand of domestic and commercial use of bamboo and to ensure food security to the bamboo artisans of the state. Interventions under the Mission encourage common land or homestead plantation around clusters for select species like Muli. Quality planting material is also supplied to the artisans under the Mission. They are trained on environment friendly and scientific methods of farming hence adding to the natural capital of the region.

In the face of *'unknown unknowns'* and the Ambiguity of opportunities therein, artisans through TBM reforms move a step towards ***Assurability***, an assurability of resources, their preservation and a regular source of livelihood.

How natural capital created social value for the individual and the community is aptly depicted by the case of Samarjit Debbarma who is a farmer of West Tripura District, owning 0.8 of rain feed land. Earlier he was a daily agriculture labourer but was unable to feed his family in the paltry amount he earned. With the introduction of a more commercially viable species of bamboo like Kanak-Kaich under the Mission, he was able to get a good growth of the bamboo plants and sold the bamboo poles and Rhizomes at a good price.

> "Bamboo cultivation is the only source of income of my family. Services provided under TBM helped me increase the commercial value of my products."

Conclusion

TBM transformed the lives of tribal artisans and helped them move from a condition of perilous VUCA to a state where VUCA conditions have been overcome. TBM emphasized glocalization and was able to leverage the local knowledge and resources and packaged them to assimilate the local culture into a global one thereby creating a hybrid culture. It helped artisans move up the intervention ladder and create a world where the valorization of human capital and subsequent unification on a community level gave rise to a more cognizable commercial environment with assured returns.

A definitive and even larger impact of the Tripura Bamboo Mission is its adherence to the Sustainable Development Goals. TBM presents itself as a success story that can benefit the larger world through its potential to be replicated in similar societies or sectors. From a research perspective we will be conducting a quantitative study that further establishes the impact and explores the sustainable design in depth.

Tripura Bamboo Mission, as a sustainable livelihood model, innovatively transforms a subsistence crop into a Bambuseros delight. It lends both a cultural cachet to the tribal communities and an economic exquisiteness to products that come from them. Tribals are inspired to embrace product innovation with a hope to thrive in the VUCA times.

References

Arshad, M., and Reza, S. (2012). Socio-Economic Benefits Derived by Poor RuralProducers from Bamboo Value Chain Up-gradation: A study of Tripura, NortheastIndia. *Indian Streams Research Journal*, *2*, 1-4.

Barrientos, S., Dolan, C., and Tallontire, A. (2003). Agendered value chain approach to codes of conduct in African horticulture. *World Development*, *31*(9), 1511-1526.

Beauviala-Ripert, C., B. Pecqueqr and N. Rousier. (1993). *L'internationalisation: un enjeu territorial*, Grenoble, IREPD.

Cairncross, F. (1997). *The Death of Distance*. London: Orion Business Books.

Camagni, Roberto. (1991). *Innovation Networks: Spatial Perspectives*. London: Belhaven Press.

Crawley, C. R. (2016). Critical Theory and Social Media: Between Emancipation and Commodification.

Diez, M. A. (2001). The evaluation of regional innovation and cluster policies: towards a participatory approach. *European Planning Studies*, *9*(7), 907-923.

DFID. (2000). Framework Introduction. Sustainable livelihoods guidance sheets. (http://www.eldis.org/go/topics/dossiers/livelihoods-connect/what-are-livelihoodsapproaches/training-and-learning-materials).

Douai, A. (2009). Value theory in ecological economics: The contribution of a political economy of wealth. Environmental Values, 257-284.

Gray, J. (1998). *False Dawn: The Delusions of Global Capitalism*. London: Granta Books

Maillat, D. (1998). From the industrial district to the innovative milieu: Contribution to an analysis of territorialised productive organisations. *Recherches Économiques de Louvain/Louvain Economic Review*, 111-129.

Martin, R., & Sunley, P. (2003). Deconstructing clusters: chaotic concept or policy panacea?. *Journal ofeconomic geography*, 3(1), 5-35.

Marx, K. (1867). Capital, volume I.

Matheson, C. M., Foley, M., & McPherson, G. (2006). Globalisation and Singaporean festivals, *International journal of event management research*, *2*(1), 1-16.

Morris, W. F. (1996). *Handmade Money: Latin American Artisans in the Marketplace*. Organization of Amer State.

O'Brien, R. (1992). *Global Financial Integration: The End of Geography?* London: Pinter.

Peres, W., and G. Stumpo. (2000). Small and Medium-Sized Manufacturing Enterprises in Latin America and the Caribbean under the New Economic Model. *World Development*, 28(9):1643–1655.

Porter, M. E. (1998). *Cluster and the new economics of competition*.

Porter, M. E., and Kramer, M. R. (2011). Creating shared value. *Harvard Business Review*, *89* (1/2), 62-77.

Rabellotti, R. (1999). Recovery of a Mexican cluster: devaluation bonanza or collective efficiency? *World Development*, *27*(9),1571-1585.

Raworth, K. (2004). Trading away our rights: Women working in global supply chains. *Oxfam Policy and Practice: Private Sector*, *1*(1), 1-52.

Schmitz, H. (1999). 'Collective Efficiency and Increasing Returns'. Cambridge Journal of Economics. Vol. 23, Cambridge.

Scott, J. (1996). Class: critical concepts (Vol. 1). Taylor & Francis.

Seung-Eun, Lee, and Mary Littrell. (2003). Web Sites for Cultural Products: Marketing Potential for U.S. Consumers. *Journal of Fashion Marketing and Management*, 7(4).

Video-Based Finger Spelling Recognition for Ethiopian Sign Language Using Center of Mass and Finite State of Automata

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Abstract

In this paper we describe a method for automated recognition of Ethiopian Sign Language (ESL) finger spelling from a video. The method automatically selects images from a given movie. To select appropriate images for processing from a given movie we develop a computational algorithm and we test suitable values for the algorithm. To understand the meaning of the selected images, it applied image pre-processing techniques, global thresholding, grouping neighbourhood and calculating canter of mass on the selected images. After applying these techniques, the method uses finite state automata to recognize the ESL finger spellings. Besides of this the new recognition method select suitable processed image for consonant recognition. The method recognizes the seven vowels of ESL. The method is experimented using the 238 ESL finger spelling and achieved 91% recognition performance; through which each of the seven vowels have 34 representations from each of the 34 consonants. As a result, the method is appropriate to recognize the ESL finger spellings integrating with the previous or future works on ESL consonant recognition.

Keywords: Sign Language Recognition, Finite State Automata and Video Understanding.

Introduction

Sign languages are the basic means of communication between hearing impaired people. It is made up of an organized system of signs. This includes gestures, mimes and facial movements. Sign language is usually used by the deaf people, or the hearing people who can communicate with deaf people. According to Aleem, Yousuf, Mehmood, Suleman, Sameer, Razi, Rehman and Israr, 2005, sign language is not universal. It varies from country to country or regions within countries. Ethiopian Sign Language (ESL) is the sign language of the deaf in Ethiopia. ESL is complete in both signing and finger spelling. Signing includes the conceptual sign expressions which are dominantly applied to convey meaning in ESL (Masresha Tadesse, 2010) and finger spellings are alphabets used to spell scientific words and names. However, the Ethiopian Sign Language is not well studied and still it is on the infant stage of development. Therefore, a number of research works need to be done in order to address the special needs of the hearing-impaired community of Ethiopia.

Hearing-impaired people usually have communication problems when they want to communicate with hearing people without signing skill. A translator is usually needed when a deaf person wants to communicate with persons that do not speak sign language (Vassilia & Konstantinos, 2002). However, they cannot depend on interpreters every day in life mainly due to the high costs and the difficulty in finding and scheduling qualified interpreters (Aleem, et al., 2005). Therefore, this paper have a contribution in the study of Ethiopian sign language translator. The objective of the research is to develop a method for recognition of Ethiopian Sign Language finger spellings from a video. It introduces a new method on ESL finger spelling recognition.

Overview of Ethiopian sign language finger spelling

Ethiopian sign language has sign alphabets called Ethiopian manual hand alphabets (EMA) (National Interpreter Resource, 2010). These alphabets are used to spell scientific words, names and meanings which do not have single signed words. According to (Masresha tadesse, 2010), ESL has 33 manual alphabets with their corresponding seven movements for each of the 33 alphabets. In 2009, additional one signed alphabet was set for the Amharic letter Ve/ (Masresha tadesse, 2010). Unlike American Sign Language (ASL), ESL finger spellings have movements that change the meaning of the sign letter. According to (Ricco and Tomasi, 2009), ASL finger spellings do not require motions for most of the letters. Instead most of the letters are primary distinguished by the hand shape. Conversely, ESL finger spellings represent by hand shape and motion. ESL finger spelling represents Amharic consonant series with hand configurations, seven movements correspond to the seven Amharic vowel orders (Kyle Duarte, 2010) ( ). This makes Ethiopian sign language continuous. In continuous sign languages, motion detection is essential for recognition of the language. Fig. 1 shows the seven movements of ESL finger spellings that correspond to the seven Amharic vowel orders.
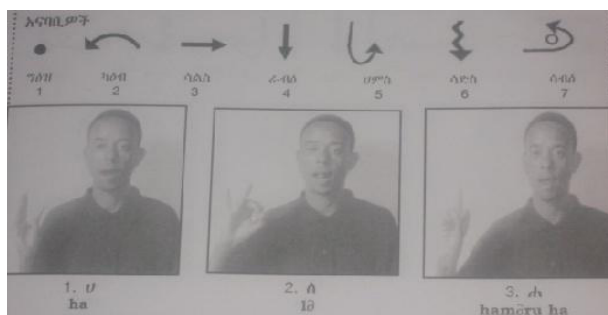

Figure 1 Samples of ESL finger spelling with their seven movements (Ethiopian National Association of the Deaf, 2008)

This study recognizes the seven vowels of each of the 34 Ethiopian sign language manual alphabets and it recommends which picture frame is used for the recognition of the consonant from set of frames. On this research we use center of mass to detect the motion and finite state automata to recognize the movements. In addition, global thresholding and other algorithms are also applied before recognition of the signs.

Signed Hand Segmentation and Feature Extraction
　　　　To segment the signed hand and to extract features, we use four basic steps. These are video acquisition, frame selection, signed hand segmentation, and feature extraction.

Video Acquisition
　　　　Captured video of Ethiopian sign language finger spellings is first acquired by the system. Figure 2 shows sample video input to the system.
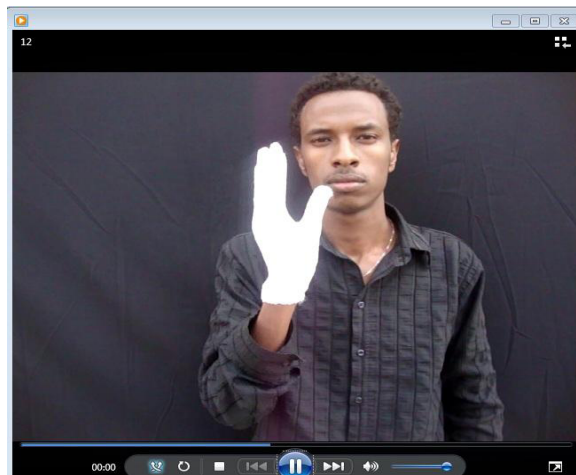
Figure 2 Sample captured video of ESL finger spelling

Image frames Selection
　　　　It is obvious that, movie is a sequence of images over time. For instance, the video represented in Figure 2 have 60 frames or images. Some of the frames from the video are depicted in Figure 3. However, all the frames in the video will not use for recognition of the ESL finger spelling. Therefore, the next step is identifying key frames from a set of frames in a given movie.

Figure 3 Sample frame images of ESL finger spelling from a movie

Processing each frame from the movie is not required for the recognition of the ESL finger spellings. In addition to this, processing and analyzing all frames cause delay of processing time and unwanted space usage. Therefore, we have to select smaller number of image frames than the actual number of frames in a given video. For this reason, we use a variable called initial seed variable (IV) for selecting sequence of images and we also applied a distance based selection technique as well. Initial seed variable has a scalar value and it is used to skip frames from the video during processing. It is useful to minimize the processing time. The value for the variable possibly can be one of the numbers {1, 2, 3… 9}. However, the default value is 9; this is the best value to skip number of frames from the movie. The value of the initial variable is limited to the above set. This is because, the required points (center of masses from frames) are four as we discussed latter on the recognition section and in our data we incorporate a one second length. Therefore, if we try to skip fames more than 9, it can produce error because we may select frame out of the total number of frames. The experiment result for the initial variable is depicted on Table I. We experiment 56 videos to represent the seven vowels and we obtain the best recognition result when IV is 6, 7, 8, and 9.

IV	Vo wel 1	Vo wel 2	Vo wel 3	Vo wel 4	Vo wel 5	Vo wel 6	Vo wel 7	To tal
1	8	7	8	7	7	4	5	46
2	8	7	8	7	7	4	4	45
3	8	7	8	7	7	4	5	46
4	8	7	8	7	7	4	4	45
5	8	7	8	7	7	5	5	47
6	8	8	8	7	7	6	4	48
7	8	8	8	7	7	5	5	48
8	8	8	8	7	7	6	4	48
9	8	8	8	7	7	5	5	48

Table 1: Experiment results for different IV values

However, the initial seed variable may not detect the motion made by the signer alone. This is because of the variation in speed during signing in a single video. Hence, we used a distance based selection technique as we discussed on motion detection section on Section. Figure 4 shows the general flowchart frame selection algorithm. The algorithm selects key frames to process.

To describe the algorithm in Figure 4, the first image from the set of frames in a given video processed first. This image is possibly used for the recognition of the ESL consonants and it also uses as the first point selected for the recognition of vowels. The consonants can be recognized using the previous study on ESL recognition (Yonas & Raimond, 2010) The next image is in the index 1+ initial seed variable. The rest frames can be selected for process, using initial seed variable or by checking the distance among the previous selected frames. If the distance between previous two adjacent points satisfies the condition for motion occurrence, it uses initial seed variable to select the next frame, otherwise it uses the distance based selection technique.
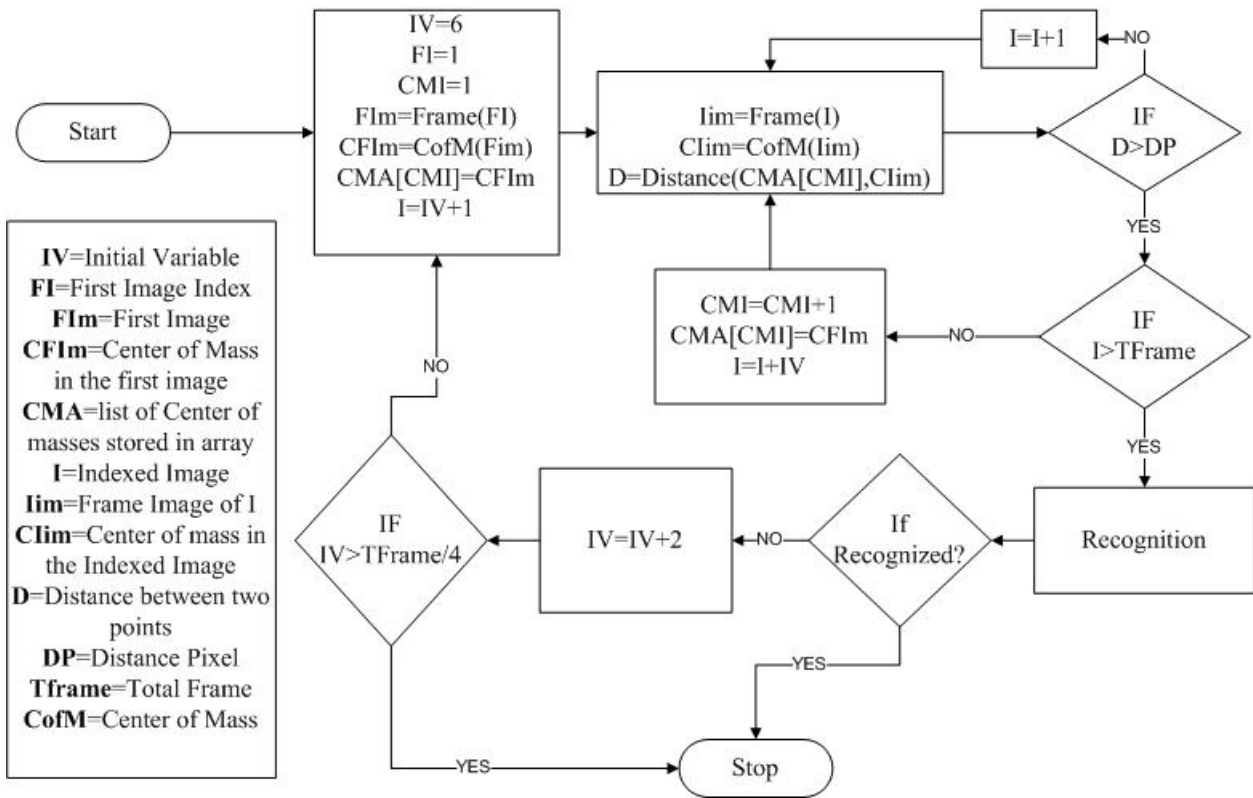
Figure 4 Image selection algorithm from a movie

Distance between selected adjacent points may vary if we only consider the initial seed variable. This happened, because of the speed in a given movie is different. As a result, the system may process frames in the same location or nearby. Distance based selection is essential for having points in different location and approximately uniform distance between points. Three similar distances between adjacent points are used for the recognition of the ESL vowels. This is discussed in the feature extraction section. The frame selection process is used distance based selection technique, if the initial variable will not make a motion. This process can continue by selecting the next frame from the current indexed frame. This process persists until the motion detection assumption is satisfied. The usefulness of initial seed variable and distance based selection is depicted in the Figure 5. In the Figure 5a, the distance between adjacent points doesn't have uniform distance. This is because of the difference in velocity of the signer in a given movie. To make this difference uniform, we use distance based selection technique. In Figure 5b, we observe uniform distance between selected points which represent frames.

Distance based selection uses two adjacent points from two different frames. We find these two points by passing different image processing and analysis techniques like preprocessing, and segmentation of signed hand. As an initial, we use frame one and frame 1+ initial seed variable. Then distance between two points p1(x1, y1), and p2(x2, y2) is computed using Euclidean distance in Equation 1.

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2} \qquad (1)$$

a) Using only IV   b) Using IV and Distance based

Figure 5 Using only Initial seed variable and initial seed variable plus distance based image selection criteria

If the distance between two points satisfies the set condition, it continues to find another point otherwise it calculates distance with the next frame. This process will continue until the end of the number of frames in a given movie. As we can see from Figure 5c, the red color circles are points which are used for the recognition purpose. These circles are points, which satisfy the condition. The blue color circles in Figure 5c show how it processed when the initial variable does not meet the condition. For instance, if we consider the fifth red point counting from the right side, it processed only one frame after the initial variable set. However, in the second point there are a number of frames were processed. This is due to different velocity of the signer in a single movie for a sign.
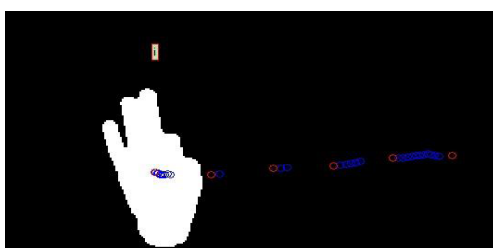
Figure 5c Image selection process from a movie

Finally, the initial variable probably iterates and increases its value. This happened, when all frames in the entire movie were processed and not yet recognized. This process may iterate until the condition IV>Tframe/3 satisfies. This is due to the need of four points for recognition of the ESL as we discussed in on section required points for recognition. If IV>Tframe/3 is true, it produces error. This is because we cannot select a frame, if the index is greater than the total number of frames in a movie. For instance, let us have a signed movie of one second which has 30 frames. If IV is 9, the possible frames used to find the four points can be frame 1, frame 10 frame 19 and frame 28.

However, if IV is greater than or equals to 10, the fourth frame used to find the fourth point will not be in the range. For example, if IV is 10 then possible frames used to find the points are frame 1, frame 11, frame 21, and frame 31. This produced error because frame 31 is not found.

Signed Hand Segmentation
Preprocessing of Images

In this study, the use of preprocessing is to prepare the frames easy for segmenting and isolating sign hand. In the frame selection section, movies are processed and selected image or frame was passed for the next step which is preprocessing of images. The selected images have colored image (combination of Red, Green, and Blue). Hence, every selected image should pass this step and this is essential for the segmentation of the sign hand. On this step, we have the following preprocessing procedures depicted in Figure 6.

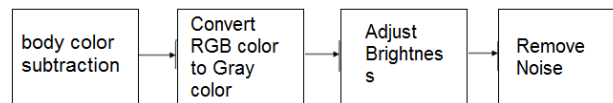| body color subtraction | → | Convert RGB color to Gray color | → | Adjust Brightness | → | Remove Noise |

Figure 6. Preprocessing image procedures

To subtract the body color we obtain a single value from the face color. To detect the face color we use Macromedia Dreamweaver application software. Basically, it is possible to use any other application software to obtain the skin color. Algorithm I describes body color subtraction.

Algorithm 1: Human skin color subtraction algorithm Input: Colored or gray image
Output: Skin colored subtracted image

F←Read_image;

R← f(red);

G← f(green)

B← f(blue)

[R G B]←human Skin color; //RGB have scalar values

F←f(r-R,g-G,b-B); // each scalar value is subtracted from corresponding color value image

After each RGB human skin color subtraction is done, the three different images are combined together. But if the images are grayscale the system subtracts the gray value of the human face color.

Segmentation Using Global Thresholding

Because of its intuitive properties and simplicity of implementation, image thresholding enjoys a central position in applications of image segmentation (Rafael C. Gonzalez, Richard E. Woods, and Steven L. Eddins, 2003). A grayscale image is turned into a binary (black and white) image by first choosing a grey level threshold value (T) from the original image, and then turning every pixel black or white according to whether its grey value is greater than or less than T (Alasdair McAndre, 2004). We already have a gray image from the prior steps, and now this image should be converted to binary image. Suppose that, the gray level image f(x, y) composed of lighted objects on dark background. In order to isolate the lighted objects from the background, we should set some value for T. And using that value it can be grouped in to two using Equation 2.

$$, =1 \qquad , \geq (\ ,\ )0 \qquad , < (\ ,\ ) \qquad (2)$$

The system segments the images into background and foreground using threshold value T. However, choosing threshold value using visual inspection of image histogram or try and error is ineffectual due to the nature of non interactive system. In addition, the chosen threshold value should be used for the entire image. Moreover, the system also needs an automatic choosing of

threshold values. Therefore, the system utilizes an algorithm from Gonzalez and Woods (Rafael C. Gonzalez, et al., 2003) for selecting threshold value iteratively and automatically for global use. Using the algorithm, we convert the images in to binary images, in other words the image converted in to foreground value 1 and background value of 0. However, after segmenting, the foreground image contains objects (noises) less than the size of signed hand. Samples of segmented image with some noise are depicted in Figure 7.
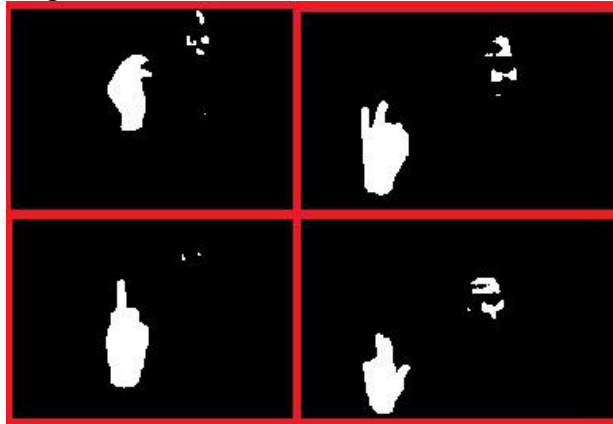

Figure 7. Samples of segmented image after global thresholding

Isolating Signed Hand

Figure 7 shows the result of segmentation using global thresholding. On the other hand, the segmentation process using global thresholding could not isolate the required sign hand. This is occurred since the light effect with the face color makes bright and have high RGB value. Not only the light effect but also small white objects with the signer like cloth buttons and necklace could cause the segmentation process not satisfied yet. However, after segmentation, every created white object with the signed hand is smaller in area size. For this reason, we need a post processing technique for removing these objects; which are smaller in area size than the hand signed.

It is difficult to remove all these unnecessary objects by the common filtering techniques like median filter used in the preprocessing part of this system. To isolate the signed hand from other objects, it is required to group connected objects in the entire image. On the other hand, grouping connected objects is better segmentation technique if we used 4-connected neighborhood. Grouping 4-connected neighborhood is useful to isolate objects connected by the corner side of the adjacent pixel. After grouping each different object from the entire image, the largest object in area is selected for the next process. This means, the connected block with maximum number of pixels are selected as a sign hand. The algorithm used to segment this object is here in Algorithm 3.

Algorithm 2: Algorithm for isolating hand sign

Input: Segmented image using global thresholding, it has other objects with the sign hand
Output: Isolated sign hand image

1. Get image from segmentation process

2. Group connected objects using 4-connected neighborhood

3. Calculate pixel size of the regions

4. Select the largest area

5. Put the selected area on its location with its previous frame size

After selecting the largest area which is the sign hand, all unnecessary objects in the entire image is removed. Only the signed hand is presented with its previous frame size. Figure 8a, and Figure 8b shows before and after post processing respectively. The use of putting the image to the previous frame size on its location is useful for the recognition of vowels of ESL. However, the selected image used for the consonant recognition can be resized according to the previous study on ESL recognition (Yonas & Raimond, 2010).

a)   b)
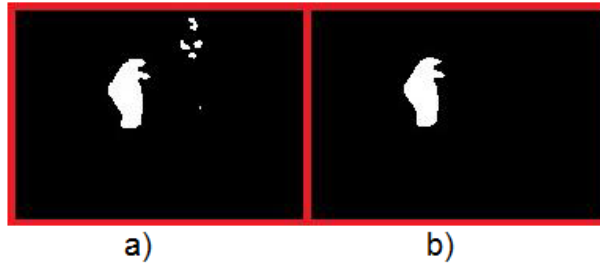
Figure 8 Isolated signed hand

Feature Extraction

From the segmented signed hand, the vital information is a single dot which is the center mass of the object.

Computing Center of mass

To detect the motion of the frames, it is necessary to take a reference point of each segmented image. Therefore, we use center of mass of the segmented sign hand. The center of mass is the mean location of all the masses in a given environment. In other words, the center of mass is the point at which you can balance all the objects. The law of center of mass is defined by Equation 3:

$$= \quad =1 \qquad =1 \tag{3}$$

Where Mi is for objects or masses and Ri is distance

In our case, the objects that we are assuming as individual masses are the number of pixels from an entire image. In addition, every object in the given image has one of the two values, which is the foreground weight of 1 and background weight 0. The objects also represented in a two dimension plane, x and y. For two dimensional image f, the pixels values are represented by f(x, y). Therefore, the mean location for Rx and Ry are:

$$R_x = \frac{\sum_{i=1}^{m} \sum_{j=1}^{n} i * f(i,j)}{\sum_{i=1}^{m} \sum_{j=1}^{n} f(i,j)} \tag{4}$$

$$R_y = \frac{\sum_{i=1}^{m} \sum_{j=1}^{n} j * f(i,j)}{\sum_{i=1}^{m} \sum_{j=1}^{n} f(i,j)} \tag{5}$$

Therefore the center mass is:

$$= (\quad , \quad) \tag{6}$$

Based on Equation 6, the algorithm used for finding center of mass is presented in Algorithm 3.

Algorithm 3: Algorithm for extract features

Input: Isolated signed hand, f (x, y)

Output: Point that represents the center mass of the sign hand

1. Read image f

2. Rx←0, Ry←0, n←0

3. Find w←Width of f

4. Find h←Height of f

5. For i=1 to w

6. For j=1 to h

7. If f(i, j) ←foreground image // if 1

8. Rx=←Rx+i

9. Ry←Ry+j

10. n←n+1

11. End if

12. End for

13. End for

14. Rx← Rx/n

15. Ry←Ry/n

16. R←f(Rx,Ry)

Some of the center of masses from the set of frames for the ESL manual alphabets is depicted in Figure 9.
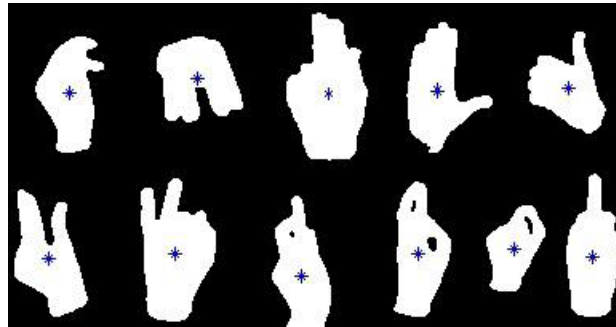
Figure 9 Sample of Center of masses of the ESL manual alphabets

Recognition

Motion Detection

The ESL finger spelling integrates hand form with movements. Hence, motion detection is essential before recognizing the ESL finger spellings. According to [7, 6], ESL manual alphabets have seven movements corresponding to the seven Amharic vowel orders. The first vowel order (Geez) is a motionless, others have six special movements. Therefore, to understand these movements it is practical to detect the motion state.

In order to identify these movements, first it is decisive to decide the length of the distance LD, which is an assumption for no movement. The movement made by unconsciously hand shaking of the signer, error occurred in image processing, unconsciously body movement of the signer and camera vibration are assumed to be the motion is in a motionless state.

LD= unconsciously hand shaking + error in image processing + camera vibration + unconsciously body movement

To choose the length of LD, we used the maximum distance between the initial frame and others in a given movie of vowel-1 (Geez). Even if the first vowel is represented by stationary motion, there are motions made by LD. Therefore, we have to assume the motion made less than or equals to LD is in motionless. The algorithm used to find LD is presented in Algorithm 4. During motion detection, we always calculate the center of mass from the first frame and it is used as a first point for recognition. Hence, the first frame is the reference point to detect the motion. Therefore, in order to assume the motion made by LD, the starting point is frame one. However, during finding LD we cannot assume that the maximum distance is between frame one and last frame. This is because of the motion is made by a kind of vibration. This is the reason why we need algorithm to find the LD.

Algorithm 4: Finding distance LD

Input: Video Clip for vowel-1 (Geez)

Output: The Maximum distance between frame 1 and others

1. Read Video V_Geez

2. Find the total number of frames of V_Geez, Tframe

3. LD←0

4. For I=2 to Tframe

5. Find distance, D =Distance(Frame 1, Frame I)

6. If D>LD Then

7. LD=D

8. End if

9. I←I+1

10. End For

11. Stop

Using Algorithm 4, we test all of the ESL vowel-1. As a result, we obtain 34 different lengths of LD representing motion made by the 34 ESL vowel-1 finger spellings. From the experiment result, we select the maximum one for the actual LD. From our data, we obtained the minimum value of LD is 2.7869(pixels), the maximum value of LD is 16.8525 and average value of LD is 8.3247.

Required Points for Recognition

To recognize the seven movements, we use points that represent frames. In our case, the seven vowels of Ethiopian Sign language are characterized by at least three connected lines or four points. This is because, if the number of points is less than four points, it cannot differentiate all movements and if it is greater than four points it has an impact on decreasing the processing time. These points are represented in terms of x and y directions. In this case, P1 is represented by (x1, y1) which is the center of mass of frame 1 from the given movie, P2 is (x2, y2), P3 is (x3, y3), and P4 is (x4, y4).

Now it is essential to have an ideal machine, that takes properties of these points and produce the corresponding vowel number representation. Therefore, automata are our choice in this case. To understand the vowel or movements, we use a non deterministic finite state automaton.

A non-deterministic finite state of automaton is defined by: M= (Q, Σ , ∂, q0, F)

Q- Finite set of internal states

Σ-Finite set of input alphabets

∂- Q X (Σ U { λ })→2Q, where λ is an empty string

q0- is the initial state q0∈Q

 F- is a set of final states F C Q

The finite set of alphabets used in the recognition of ESL is derived from LDx, LDy and the four points. To find the required alphabets, it is necessary to find the difference between adjacent points. Accordingly, X21=x2-x1, X32=x3-x2, X43=x4-x3, Y21=y2-y1, Y32=y3-y2, and Y43=y4-y3. From this, movements we considered when X21> LDx, X32> LDx, X43> LDx, Y21> LDy, Y32> LDy, Y43> LDy, X21<- LDx, X32<- LDx, X43<- LDx, Y21<- LDy, Y32<- LDy, and Y43<- LDy. Along with, movements will not consider when abs(X21) LDx, abs(X32) LDx, abs(X43) LDx, abs(Y21) LDy, abs(Y32) LDy, and abs(Y43) LDy. Therefore, we have 18 input alphabets for the recognition of the vowels. The minus (-) signs are used for the left and down direction. Table II shows the 18 inputs alphabets are grouped into six directions from the screen point of view.

Left direction	Right direction	Up direction	Down Direction	In stationary X-axes	In stationary Y-axes
X21<-LDx, X32<-LDx, X43<- LDx	X21> LDx, X32> LDx , X43> LDx	Y21<- LDy, Y32<- LDy, Y43<- LDy	Y21>LDy, Y32>LDy, Y43> LDy	abs(X21)≤ LDx, abs(X32)≤ LDx, abs(X43)≤ LDx	abs(Y21)≤ LDy, abs(Y32)≤ LDy, abs(Y43)≤ LDy

Table 2 Possible input alphabets grouped in to six directions

To form a general finite state of automata, it is important to discus strings that can generate vowels using the 18 input alphabets. For simplification reason, we symbolize the possible input conditions as shown in Table 3.

Letter	Condition	Letter	Condition	Letter	Condition	Letter	Condition
A	X21<- LDx	f	X43> LDx	k	Y32> LDy	p	abs(Y21)≤ LDy
B	X32<- LDx	g	Y21<- LDy	l	Y43> LDy	q	abs(Y32)≤ LDy
C	X43<- LDx	h	Y32<- LDy	m	abs(X21≤ LDx	r	abs(Y43)≤ LDy
D	X21> LDx	i	Y43<- LDy	n	abs(X32)≤ LDx		
E	X32> LDx	j	Y21> LDy	o	abs(X43)≤ LDx		

Table 3 Symbolize input alphabets by small letters

As a final point, the automata used to recognize the ESL vowels defined by:

M=({q0,q1,q2,q3,q4,q5,q6,q7,q8,q9q10,q11,q12,q13,q14q15,q16,q17,q18,q19,q20,q21, q22,q23,q24q25,q26,q27,q28,q29 q30,q31, q32,qf}, {a, b, c, d, e, f, g, h, i, j, k, l, m, n, o, p, q, r}, ∂, q0, {qf}), ∂ defined by the following transition graph:
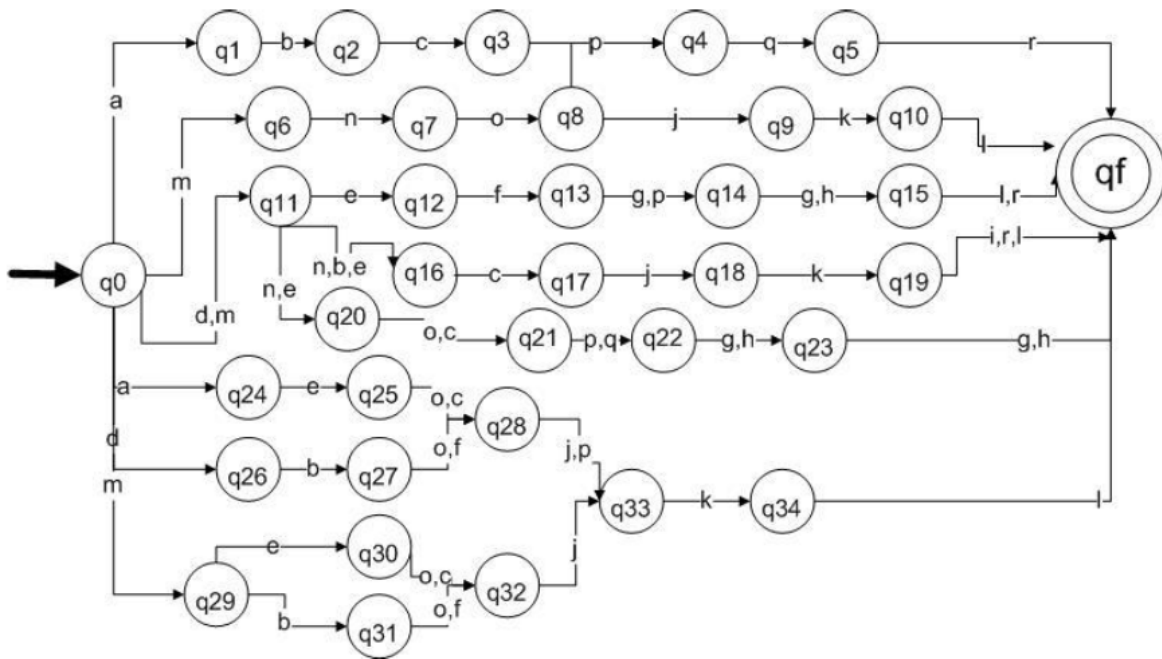
EXPERIMENT AND RESULT

In this research, we obtain the signs using a single digital camera with the help of white glove. The signer wears white glove for a reason of easy segmentation. The camera is taken by a person while the signers stand with black background. The camera is set in front of the signer. The data used for this experiment is collected by four signers. The data is collected in terms of video mode. All signers spelled together all of the 238 ESL finger spellings. A single movie is represented to a single sign. Consequently, the 238 ESL manual alphabets are incorporated in our data. Furthermore, the data is clustered using the seven vowels of the ESL finger spelling and evaluated the performance of the vowels. Each clustered vowels have 34 signed videos.

The seven movements of ESL vowels are assigned to a value of one, two up to seven numbers. The validation of the recognition of the system works by crosschecking the vowel with its file name of the movie. If the result of the recognition of the sign is equal with the file name of the movie, then it counts as recognized otherwise it counts us unrecognized vowel.

The experiment is done to evaluate the recognition performance of the new method. We can see this using the overall recognition performance of the system, recognition performance of each vowel group and recognition performance per signer. The overall recognition performance of the system is calculated using the Equation 7.

System Performance=(Total Number of Recognition of Vowel)/238×100 (7)

Accordingly, the overall system recognition performance is 90.75 %. This means 216 finger spellings are recognized from total of 238 finger spellings. The performance of the clustered vowels is calculated using Equation 8. The recognition performance results of each clustered vowel are listed in Table 4.

Vowel clusterd Performance=(Total Recognition of Vowel Clusterd)/34×100(8)

As we can see from Table IV vowel 1, vowel 2, vowel 3, vowel 4, and vowel 5, have excellent recognition accuracy. Vowel 6 and Vowel 7has also satisfactory result but errors occur due to error in signing inputs. The move for vowel -6 is zigzag, and then signers can make this simple vibration of hand. Consequently, the assumption for movement of sign could not detect the motion in the x-axis. In case of Vowel-7, due to the input of some signs are rotated on its fixed point and created similarity with vowel-1-. However, if the data could be collected in a more accurate way and if the signers strictly follow the rule how to sign, better result can be obtained.

Vowels	Total Number of Vowel	Recognized Vowels	Recognized Percentage (%)
Vowel-1-	34	33	97.0588
Vowel-2-	34	33	97.0588
Vowel-3-	34	32	94.1176
Vowel-4-	34	31	91.1765
Vowel-5-	34	32	94.1176
Vowel-6-	34	28	82.3529
Vowel-7-	34	27	67.4116

Table 4 Experimentation Result of vowels

Conclusion

In this study we design and develop a method used to recognize vowels of Ethiopian sign language from a video. In this work we applied image preprocessing algorithms, image segmentation, and post processing before trying to understand the signs. In addition, we used image selection algorithm to increase the efficiency of the system. Preprocessing and post processing are used for accurate recognition. We also used image segmentation to identify the sign hand from the entire image.

To recognize the vowels of ESL, we extract features from the segmented sign hand. The extracted feature from the entire image is the center mass of the signed hand. The extracted information was used to detect the motion and to recognize the vowels. Group of center masses are finally used for the recognition of vowels. To recognize these vowels, we employed finite state automata.

For the successful completion of the study, we collect all of the 238 ESL figure spellings by four signers in terms of video mode. The data is experimented using our system. As a result, the overall system achieved 90.75% recognition performance. Therefore, it is possible to conduct projects and researches for more work on the language by using this study as a base. Moreover, the thesis has its own role on the study of motion detection and image processing applications.

References

Alvi, A. K., Bin Azhar, M. Y., Usman, M., Mumtaz, S., Rafiq, S., Razi, U. R., & Ahmed, I. (2005). *Pakistan Sign Language Recognition Using Statistical Template Matching.* Proceeding of the World Academy of Science, Engineering and Technology, Las Cruces, USA.

Alasdair McAndre. (2004). *An Introduction to Digital Image Processing with Matlab*", Notes for Digital Image Processing. Retrieved from http://visl.technion.ac.il/ labs/anat/An Introduction To Digital Image Processing With Matlab.pdf

Duarte, K. (2010). The Mechanics of Fingerspelling: Analyzing Ethiopian Sign Language. Sign Language Studies, 11(1), p. 5-21.

Ethiopian National Association of the Deaf. (2008). Ethiopian sign language dictionary, Addis Ababa, Ethiopia.

National Interpreter Resource Links. (2011). *Ethiopian Manual Hand Alphabets.* Retrieved from httpwww.terpslink.net\WSL\EtSL.html

Rafael C., Gonzalez, Woods, R. E., & Eddins, S. L. (2003). *Digital Image Processing using Matlab*. Prentice Hall.

Ricco, S. and Tomasi, C. (2009). *Fingerspelling Recognition through Classification of Letter-to-Letter Transitions.* In Proceedings of ACCV (3), p.214-225.

Tadesse, M. (2010). *Automatic translations of Amharic text to Ethiopian sign language.* A thesis submitted to the school of graduate studies of Addis Ababa University.

Vassilia N. & Konstantinos G. (2002). *Hidden Markov Models for Greek Sign Language Recognition.* Proceedings of 2nd WSEAS International Conference on Speech Signal and Image Processing ICOSSIP, Skiathos, Greece.

Yonas A., & Raimond K. (2010). *Ethiopian sign language recognition using Artificial Neural Network.* In Proceedings of the international conference on Intelligent Systems Design and Applications (ISDA) IEEE, p.995-1000.

Pharmacy Students' Perception of Communication Skills in Health Sciences Practices Course

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Abstract

Employing effective oral communication skills is one of the major concerns of accurate and healthier interactions in various health environments. When it comes to Turkey, it is still relatively one of the new concepts to be focused on by healthcare providers, specifically to the field of clinical pharmacy. To build effective communicative skills further in the academic and professional field, eighty two third-year pharmacy students at Istanbul Kemerburgaz University, Turkey participated in Oral Communication Skills in Health Sciences Practices Course which was adapted from an existing course run by the Skaggs School of Pharmacy, University of Colorado. The students practiced case-based scenarios, class role plays and interviews in the frame of patient centered care approach through the course delivered in 2015 and 2016 spring terms. This study aims to show the students' perception regarding this course with the results of a pretest and posttest subsequent to a semi-structured interview for student evaluation. Expectedly, the results of the student questionnaires (n=59) indicated both group of students rated the course higher compared to their initial views; providing them new perspectives in patient centered care, introducing new terminology and increasing their career prospects whereas the results were not favorable for their advancement of oral communication skills "in English" and practicing their skills in the profession in international settings.

Keywords: Student perception, Communication skills, Patient centered care, Clinical pharmacy

Introduction

Employing effective oral communication skills in health sciences has been given much attention as one of the major concerns of more accurate and healthier interactions in various health environments. Within these environments, as being the core component of "healthcare provider" – "communication" – "patient" cycle, the pharmacist's role has shifted from the authoritative to a more observant as well as being empathic, collaborative, harmonious and informational (Epstein & Street, 2011). Apparently, it is one of the major issues to be focused on by all healthcare providers, specifically in the field of pharmacy. It is the pharmacist; the professional enables the effective communication in the numerous interactions with patients mainly in clinical settings, and other healthcare environments.

In the concept of patient-centered communication, it is emphasized that foundation of the pharmacist – patient collaboration is vital for the both parties in the patient care process. An effective, integrated care is the outcome if an ongoing communication and cooperation is kept with health care professionals, pharmacists and physicians. ("Pharmacists Patient Care Process", 2014) Pharmacists' communication with patients can be best achieved through improving their active listening skills, ability to display empathy and certain degree of professionalism, building rapport with the patient, and being aware of the ethnical diversities. Furthermore, pharmacists and their staffs must acknowledge the value of interpersonal communication as an essential element in building trust between patients and the pharmacy community (Beardsley, Kimberlin & Tindall, 2007). Therefore, the improvement of prospective pharmacy students' communication skills for clinical settings through convenient training and education is apparent (McDonough & Bennett, 2006).

Oral Communication Skills in Health Sciences Practices Course

Through the collaboration of the University of Colorado (UC) and Istanbul Kemerburgaz University (IKBU), the course titled "Oral Communication in Health Sciences Practices" was adapted from an existing course at Skaggs School of Pharmacy, UC and it was taught to third-year Pharmacy students in two consecutive spring terms in 2015 and 2016 Academic Years. An inter-organizational and interdisciplinary approach between Istanbul Kemerburgaz University (IKBU)'s Faculty of Pharmacy and the School of Foreign Languages cooperation was needed to run the course due to the nature of a communication skills course; (1) primarily its being in English language and (2) the requirement for the use and instruction of effective various linguistic functions as the framework for mainly Indian Health Services (IHS) and other highlighted communication patterns.

The implementation of the course raised the question about the students' perceptions of their improvement of communication skills in patient-centered care, which is the core component of pharmaceutical care; relatively a new concept in clinical pharmacy settings in Turkey (Sancar, Okuyan, Apikoğlu, & İzzettin, 2013).

A general comparison of the outcomes of the assessments along with the students' perceptions of the oral communication skills course given may help visualize these prospective pharmacists' approach and attitude towards multifaceted and multicultural, and therefore, complex interactions with their patients and other health care providers by using English language in constantly changing, ambiguous health-related settings.

Methods

This study was conducted by using both qualitative and quantitative methods for two different groups of third-year pharmacy students attending the course titled "Oral Communication in Health Sciences Practices". The participation and attendance to the course was obligatory for both groups. The total first group comprised 7 males and 22 females and the second group comprised 26 males and 23 females; 78 students with a mean age of 21.9.

A 30-hour & 10 week course contained 2 lesson hours of input on the patient-centered communication and 1 hour of oral practice session with various case scenarios. In these sessions, students actively employed verbal and non-verbal communicative skills through specific practices; taking medical history, prescription counseling, self-care product counseling, and motivational counseling. The input sessions were delivered by using active learning strategies and oral practice sessions which included case discussions, role-plays followed by pair and group assessments.

The students' communication skills were evaluated through 2 oral mid-term exams along with a written part for each and 3 separate communication assessments. The in-class oral practice sessions which included frequent reinforcement of input on the five communicative competence components: linguistic, strategic, sociocultural, actional and discourse were followed up after presentations of each main topic (Celce, Dérnyei, & Thurrell, 1995). In these sessions, the students were continuously introduced subjects in relation to the patient-centered communication. They both studied and practiced the cases containing various interactions between patients, healthcare providers and pharmacists. The students were provided with continuous feedback before and after their role-play performances in the group and/or pair work activities.

The trained 78 students were handed a 48 item evaluation survey at the beginning and at the end of the course to collect data for this study. The survey consisted of four major parts; (1) Demographics, (2) Language & Course, (3) Expectations & Outcomes, and (4) Comments. A 5 point Likert-scale (1=strongly disagree to 5=strongly agree) was used for the questions asked in pre and post surveys which were both the same in structure and content. The Cronbach Alpha value was calculated for the reliability of (2) Expectations and Outcomes part from which the quantitative data was retrieved. The five items of this part of the survey are as presented in Table 1. The qualitative data was collected both from (4) the Comments part of the post-surveys and the focus group interview held with the participation of randomly selected 7 students from each group in the last week of the course. The students' responses to the questions on what they think about (Q1) the course, (Q2) the assessments, (Q3) oral communication skills in general were recorded and grouped as 1st group and 2nd group's views on the course as presented in Table 3. The written comments from the surveys were also added to the chart displaying commonly used words along with their appearance frequencies defining the course provided.

The rubrics used by Skaggs School of Pharmacy, University of Colorado "Taking a Medical History Rubric, Counseling on Self Care Product Rubric, Counseling on Prescription Product Rubric" were used for the evaluation of the students' oral communication skills. The means of both group's oral communication skills grades they collected from the Oral Assessment Part of the two midterm exams and three individual Oral Assessments were also screened and are displayed in Figure 4.

The 1st group completed the assessments through face-to-face interview sessions and they were evaluated through the rubrics by four different groups of standardized faculty from the School of Foreign Languages and the Faculty of Pharmacy. A methodical change in this

assessment was implemented for the 2nd group in the second year. The students were given the patient-pharmacist case scenarios in advance and they were asked to record and hand in their performances to be assessed by the same standardized faculty. The results of this change in the assessment for both groups (n=78) and the frequency for each group, demonstrated in Table 2, was compared to monitor the outcomes.

Results and Discussion

Fifty-nine (59) pre- and post-surveys were gathered from each group, comprising 76 percent of the total student number completing the course. Student consent was explicit in their completion of the surveys. The Cronbach Alpha value of .93 indicated that the internal reliability of the Part III of the survey was adequate.

Based on the data from the pre- and post-surveys, Table 1 shows that students who received the course were mainly positive both at the beginning and at the end of the course. As it is seen, both group of the students' course expectancy and sense of achievement upon completing the course were high. The majority of the students gave 4-5 for the items on the Likert scale which hold the percentage of ˜77 – displaying a stable positive perception without any dramatic changes before and after the training.

Part III *I believe this course will help me / helped me*	Pre Mean	Pre SD	Post Mean	Post SD
improve my oral communication skills in English	4,00	,946	3,91	,915
learn new terminology and vocabulary for effective communication	4,06	1,04	4,13	,730
gain new perspectives in patient centered care	3,89	1,10	4,25	,882
increase my career prospects	3,93	,980	4,00	,909
practice my profession in international settings	4,00	,964	3,98	,973

Table 1. Pre- and Post- Course Survey Mean and Standard Deviations

The data in Table 1 shows that the students' belief in their learning new terminology and vocabulary for effective communication (M=4.06), gaining new perspectives in patient centered care (M=3.89) and the course's help in increasing their career prospects (M=3.93) was comparatively lower prior to the training. Apparently, participation in the communication skills course most effectively promoted the students' gaining new perspectives in patient centered care, which constitutes the core component of the course provided. However, there is a decrease in the students' belief in their "oral communication skills' improvement in English" (Pre-M=4.00, Post-M=3.91) and "practicing their profession in international settings" (Pre-M=4.00, Post-M=3.98) that required further investigation.

The data presented in Figure 1 may help explain the reason for the decline in the students' perception of their oral communication skills improvement in English, the language of the all courses delivered at the university. When the students' background in learning English was focused to display the years spent acquiring the language (1-5, 6-10, 10 + yrs.), it was found that 88 percent of them have been learning it for over 6 and more years. The students, therefore, may have changed their belief that the course did not contribute to their communication skills in

English at all since most of them may have already known the introduced verbal communication patterns as "How do you feel today?", "What did your doctor tell you to expect from this
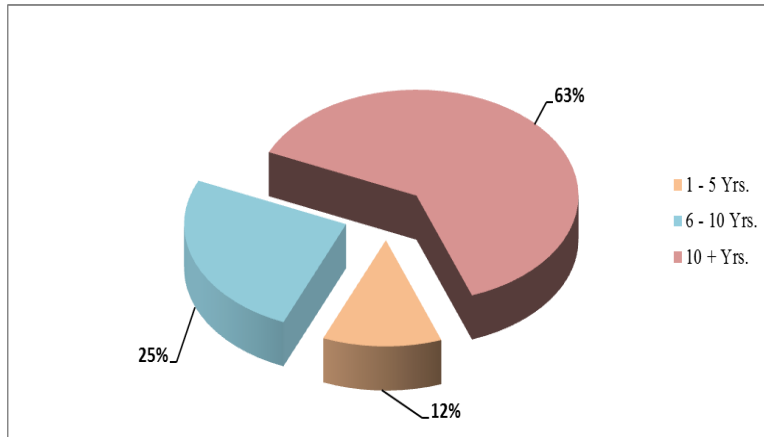
medication?", and/or "Could you please show me how to use this medication?".

Figure 1. Students' Background in Learning English

Screening of the student nationalities may contribute to discover the reasons behind the slight downturn in the means for the last item searched in the survey: "The course will help me practicing the profession in international settings". As Figure 2 and Figure 3 show that 43 Turkish students consisted the majority of the group, holding 75 percent of the total student number, whereas the remaining 16 students held 25 percent of the trainees from various -but mainly- Eastern, Middle-Eastern, African countries; Nigeria, Iraq, Egypt, Syria, Iran, The United Arab Emirates, Bulgaria, The UK and Greece. Subsequent to the training they received, the group holding the majority may have changed their view that they would never like or have the chance to work abroad in an international, therefore, multinational and multicultural environment as clinical pharmacists.
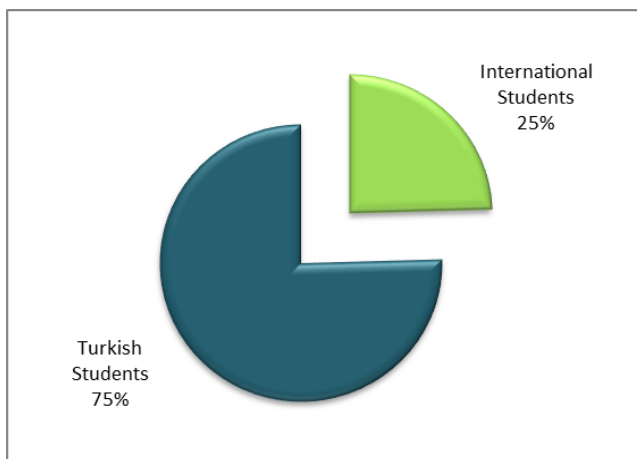
Figure 2. Overall Percentages of Student Nationalities
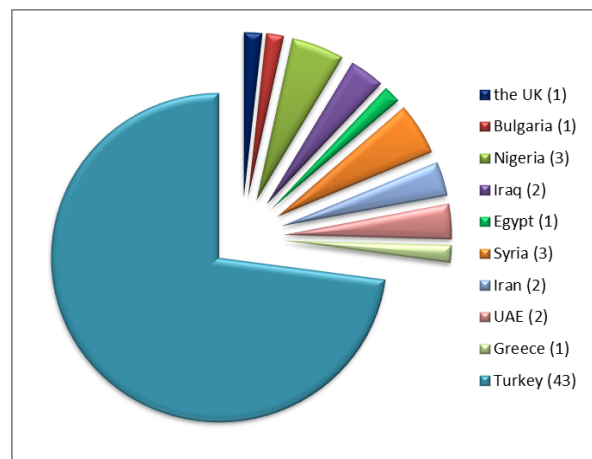
Figure 3. Students' Distribution of Nationalities

The results of the Oral Assessments point out an overlap between the students' sense of achievement in the patient centered care approach and various lexical input provided through the course. As indicated in the pre- and post- means of survey item #2 (Pre M=4.06, Post M=4.13) and item #3 (Pre M=3.89, Post M=4.25), trainees' belief in these areas demonstrated positive change in parallel to their communication assessment grades as shown in Figure 4.
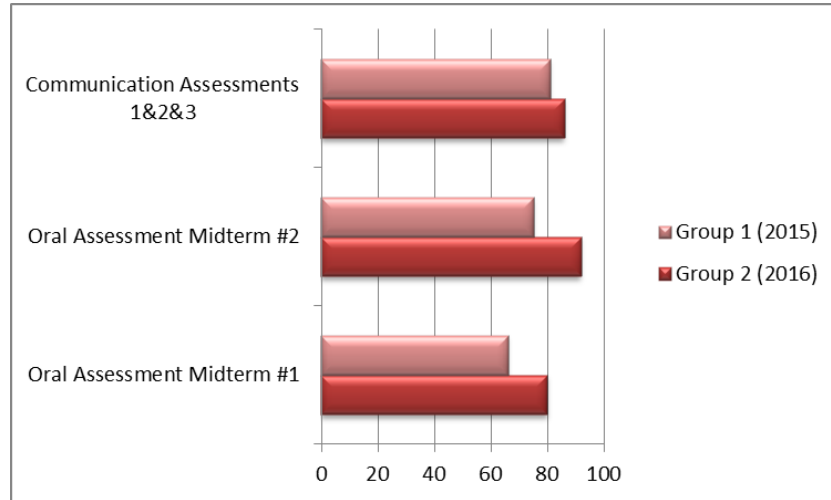
Figure 4. Students' Grades of Oral Assessments

The change in the oral assessment method was implemented in the second year to achieve better outcomes for each skill practiced through the course. The statistics on Table 2 demonstrates that in contrast to the first group assessed in face-to-face encounters, the second group of trainees received relatively higher grades with the means 74.42 of the former and 86.19 of the latter. It is clear that assessments over videotaped performances contribute to students' communicative skills to a considerable extent.

	Mean	Median	Std. Dev.	Range	Min.	Max.
Group 1 Face-to-Face	74,42	74,16	15,41	66,00	32,00	98,00
Group 2 Video Recording	86,19	87,33	5,98	26,67	68,33	95,00

Table 2. Frequencies for Assessments in the Face-to-Face Group and the Video Recording Group

The focus group interviews were held subsequent to the communication skills course for both the first group and the second group of learners. The students' answers to the three questions were listed as follows:

	1st Group (2015)	2nd Group (2016)
Stdt.1	*I am sure the things we have learned will help me greatly in my pharmacy store in the future.*	*Every lesson was interactive and we did lots of role-plays after the theories, so I remember everything.*
Stdt.2	*Didn't like the idea of memorizing all the dialogs and the questions to ask the patient, but now they are nailed in my mind.*	*The lessons were quite enjoyable. Their being so motivated us in other departmental lessons.*
Stdt.3	*Face to face encounters were quite useful indeed. We got so excited before them. This caused us remember everything by heart.*	*We had the chance to stop the record and correct the problematic points and rerecord our videos. We had to shoot ourselves for so many times.*
Stdt.4	*I still doubt if I will have enough time to introduce myself to each patient; ask all the questions in the correct order when the store is filled with people.*	*This video recording way helped me get quite good grades for the oral exams. I feel lucky.*
Stdt.5	*I think this course did not contribute to my speaking skills; neither for my accuracy nor fluency because we already knew how to use simple words while communicating with the patient.*	*I plan to have "a private counseling corner" for my patients for free, just to inform and follow them up well. This will make a difference.*
Stdt.6	*There was much stress and tension during the oral exams, the assessment method should be the same for future students; it should not be changed.*	*The video recording type of exams helped us improve our friendship and further our collaboration.*
Stdt.7	*I learned a lot of terminology and new vocabulary, but I did not learn anything new for my English speaking skill, except for the word "pneumonia".*	*I believe I improved my communication skills a lot; especially when I compare my first video on counseling and the last one. The change is great indeed.*
Comments (4)		
Word frequencies - based on their appearances in students' written comments:		
excellent (5), helpful (2), new (5), role-plays (3), demanding (3), enjoyable (6), stressful exams (4), thank you (7)		

Table 3. Views Presented in the Focus Group Interviews & Comments (4) Part of the Post-Survey listing the commonly used vocabulary while defining the course.

As the above answers demonstrate, the majority of the students held the opinion that they favored course due to its being motivational, containing interactive sessions and role-plays, enabling corrective repetitions and less stressful assessments through the video recorded assessment method. In line with the pre- and post-surveys, the improvement in the oral communication in terms of English is not favored as it is seen in the statements recorded in focus groups. A group of words/phrases holding positive attributes "excellent, helpful, new, enjoyable and thank you" were noted down as frequent words along with the ones with negative attributes "demanding, stressful" which the learners used for the training provided.

Conclusion

As the outcomes of this study demonstrate, the communication skills course was effective in improving both groups' communication skills in general. It is obvious that the course introduced the students with new perspectives in patient centered approach along with new terminology and vocabulary used in their prospective health-related interactions and environments. Although the trainees retained the belief and expectation that the course increased their career prospects, it was found they were not positive that the course improved their oral

communication skills in English. Similarly, their belief in practicing the profession in international settings was not favored by the groups. Therefore, future studies should give special attention to the reasons why students rated the first and the latter lower.

This study also implies that the innovative changes as "video recorded vs. face-to-face role-plays" in the oral assessments in similar courses, specifically in communication skills courses, may help increase the outcomes expected from the trained undergraduates.

There were limitations to this study since it was conducted with the two groups of third-year pharmacy students attending the Oral Communication in Health Sciences Course in 2015 and 2016 spring terms; leaving out the third group of trainees. The primary aim of the study was to determine the perceptions of these trainees towards the course provided. The pre- and post-surveys designed only to investigate the beliefs of the students; leaving out the dimensions of the demographics and further analysis of different variables among these two group members.

It would be a suggestion that more pharmacy students should be introduced to oral communication skills course within the frame of patient centered care approach as it constitutes the core of the paradigms of today's health environments.

A further investigation may be conducted in the future to find out the pharmacy students' attitude and perceptions for their careers as they start practicing clinical pharmacy. With such study, the effectiveness of the course and its actual results based on the reflections of the trainees about real life experiences may be screened and documented from the perspective of patient centered care.

References

Beardsley, R., Kimberlin, C. & Tindall, W. (2007). *Communication skills in pharmacy practice*. Philadelphia: Wolters Kluwer/Lippincott Williams & Wilkins

Celce-Murcia, M., Dérnyei, Z., & Thurrell, S. (1995). Communicative competence: a pedagogically motivated model with content specifications. *Issues in Applied Linguistics*, *6* (2), 11-29

Epstein, RM., & Street R.L., Jr. (2011). The values and value of patient-centered care. *Ann Fam Med.*, *9*:100–3. doi: 10.1370/afm.1239

McDonough, R.P., & Bennett, M., S. (2006). Improving communication skills of pharmacy students through effective precepting. *Am J Pharm Educ.*, *70* (3):58. doi: 10.5688/aj700358

Pharmacists' Patient Care Process. (2014, May 29). Retrieved from https://www.pharmacist.com/sites/default/files/files/PatientCareProcess.pdf

Sancar, M., Okuyan, B., Apikoglu Rabus, Sule., & Izzettin, FV. (2013). Opinion and knowledge towards pharmaceutical care of the pharmacists participated in clinical pharmacy and pharmaceutical care continuing education program. *Turkish Journal of Pharmaceutical Sciences*, (10), 245-254.

Impact of Work Life Harmony on Overall Life Satisfaction in VUCA Economy

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Abstract

To find out the effects of time spent in office on employees' overall life satisfaction especially in volatile, uncertain, complex and ambiguous economy, this article uses a very large, representative set of sample data from India in various industries. The results show that higher the time spent on office working hours in general lead to decreased satisfaction especially in industries known as VUCA. Rather, increasing working hours and overtime have higher negative effects on life and job satisfaction, whereas the desire to reduce working hours has not much significant impact on satisfaction. In 2016, nearly 72% of employees wanted to reduce their working hours and wanted to have ample time to spend with family. The total number of hours which employees want to reduce on their time spent in office is driven mainly by overtime compensation and other employee benefits offered by companies. Hence this study further guides for better time management and better employee benefits introduction in a VUCA economy.

Keywords: Work-Life Balance, Performance, Flex time arrangements, work life conflicts

Introduction

Indian organizations give more flexibility to their employees, in terms of work place and work time flexibility. But in India organizations find difficult to sustain in the market mainly because of the conditions like Vulnerable Rupee (Indian currency), Fiscal health and macroeconomic stability, Growing divergence between consumption and investment, Demonetization, The non-performing assets menace and rivalry among businesses to capture the market and to maintain a steady margin so organizations demand their key employees to work very hard to protect their business from being bankrupt, even for MNCs. For making a competent organization, most of the businesses focus on "Maximizing the utilization of labour and machines" which ultimately leads to work-life conflicts among employees and which in turn leads to whole life dissatisfaction including job dissatisfaction especially in IT/ITES sector in India where strict adherence to employment laws rarely exists.

Background

As a strategy to gain more financial gain by achieving employee loyalty which indirectly demands their employees to work hard, organizations are now happy to provide them with more employee benefits and financial gains. As a result, employees are too happy to spend time in office than with family. Or, even if they work from home, they are still spending more time for official purposes. This in turn started to affect adversely their family life. Subsequently, employees found difficulty in maintaining a good whole life satisfaction even if they secured financial gains and at some point of time this even led to utter job dissatisfaction, absenteeism from work, errors in job, unfitness for job etc. Even though there are studies in work-life balance, no one ever researched on the impact of time spent in office. Most of them focused only on actual working hours or overtime to work life satisfaction. That is the rationale behind this study. Recently, Swedish government introduced paid couple relationship break in between job every week after recognizing the importance of this.

Literature Review

We have gone through a few research studies in work life balance. Some of them are mentioned below briefly:

In 2003, Michelle Arthur in his study of Fortune 500 firms found that announcements of work-life initiatives were associated with increased shareholder returns: some $60 million per initiative per firm. The author argues that once a work-life practice becomes normalized, it signals the market that the company is more desirable. In 2006, Jeffrey Hill, Brent Miller, Sara Weiners and Joe Colihan in their studies revealed the perception of greater productivity, higher morale, increased flexibility and longer work hours due to telework, as well as an equivocal influence on work-life balance and a negative influence on teamwork. Using a quasi-experimental design, quantitative multivariate analyses supported the qualitative findings related to productivity, flexibility and work-life balance. In 1996, Edward Shepard, Thomas Clifton and Douglas Kruse in their studies of 36 pharmaceutical companies in the U.S. found that the use of flexible work hours can have a real effect on performance: an increase of some 10% in firm productivity. In 2008, Wendy Casper & Christopher Harris in their study found that work-life practices increase attachment, loyalty and commitment to the organization. In 1995, Thomas, L.T. & Ganster D.C. in their studies found that family-oriented policies create more perceived control that lowers stress and increases job satisfaction. In 1991, Pitt-Catsouphes and Marchetta in their studies review telework studies and show from qualitative research from employees and their managers that productivity went up 10% to 30% with telework. The reason has been supported by other studies—people work more hours from home than at the office, but they enjoy it more because they

have more control over their time. In 2000, Jill Perry-Smith, & Terry Blum in their studies analyzed performance in 527 U.S. companies and found that firms with a wider range of work-life practices had greater performance, profit-sales growth and organizational performance. In 2005, Diane Halpern in her study details the cost of stress, burnout and absenteeism in organizations and how more flexible time policies can help cut those issues and their price tags. In 1998, Ellen Ernst Kossek and Cynthia Ozeki in their study shows that people who report high levels of both work-to-life and life-to-work conflicts are likely to report lower levels of job satisfaction and organizational commitment. In 2011, Sunday Azagba & Mesbah Sharaf in their study looks at the connection between job stress and medical costs associated with it for organizations that employ people with stress. They found that medical costs for employees with high or medium stress cost 26% more than other employees. In 2012, Patricia Roehling, Mark Roehling, & Phyllis Moen in their study found in a sample of 3,381 American workers that flexible time policies and childcare assistance was associated with employee loyalty for those with family responsibilities. In 1998, Samuel Aryee, Vivienne Luk, & Raymond Stone in their study examined the influence of family-responsive variables and the moderating influence of gender on the retention-relevant outcomes of organizations, commitment and turnover intentions. Results of regression analysis revealed that satisfaction with work schedule flexibility and supervisor work-family support were related to both retention-relevant outcomes. In 1994, Robert Bretz, R. D. & Timothy Judge in their study the lack of access to work-life practices predicted turnover intentions among managers. In 2002, Stella Anderson, Betty Coffey & Robin Byerly in their study found that work-life conflict contributes to reduced work effort and performance and increased absenteeism and turnover.

Methods of Research

Data and Variables

In this study we have used 8 types of variables; Demographic variables [age, gender, urban/rural, marital status, has kid under age 17 years, type of employment (part time or full time)], Levels of satisfaction [job satisfaction, personal income satisfaction, free time satisfaction, family life satisfaction, household income satisfaction, whole satisfaction], Flex Time Arrangements, Leadership positions [Highly qualified, top management, middle management, lower management, daily wage worker], Overtime arrangements [OT Day-off, OT Partly Day-off, OT Paid, OT Unpaid], Commutation [daily, weekly], Work autonomy, and Time spend in office (TSO)[Actual, Desired, Extend, Reduce]

Hypotheses

In my study, I am just focusing on the impact of time spend in office to work life harmony and no other factors. Hence, my research hypotheses are:

H1: An employee's time spent in office (TSO) has negative effect on various types of satisfaction.

H2a: Overtime has a negative impact on satisfaction only if the desired time spent in office is lower than actual ones.

H2b: Paid overtime eliminates the negative impact of overtime on satisfaction.

H3: Flexi-time arrangements have a negative impact in life and job satisfaction.

Conceptual model of the study

The conceptual model of this study is depicted below.

Before 2003, only working hours and overtime influenced the work life harmony; while after the introduction of flexi time arrangements and other employee benefits like telecommuting, educational partnerships, other physical trainings and classes, employee spent more time in office or office related things than at home; which led to conflicts in maintaining a proper balance in life and in long term led to higher job dissatisfaction,

absenteeism rate, turnover intentions, errors in job, unfitness for job and physical or mental illness.
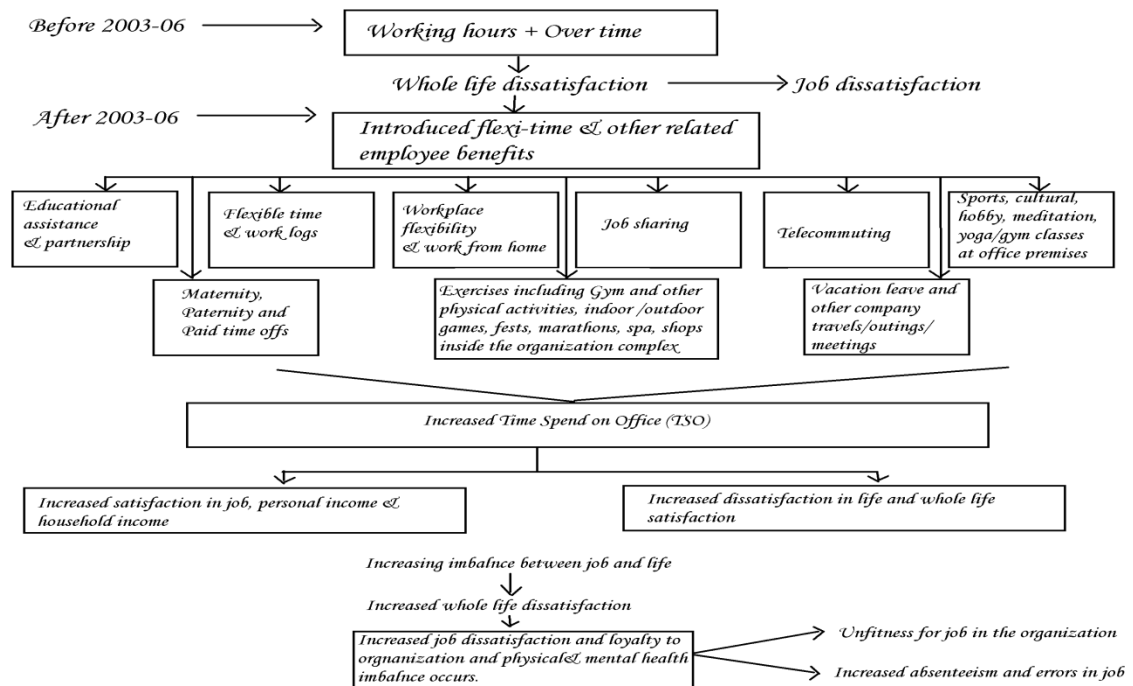
Methodology

Data was collected from 1,307,130 employees from various industries, ages, occupational level, gender, marital status and from various parts of India using direct interview method and questionnaire method via social media sites.

Total employment strength of the country: 29,650,000 (as per Ministry Of Statistics and Program Implementation-MOSPI, 2017)

That means 4.5% of the total population is being taken as sample for this study using the simple random sampling technique. I have used online questionnaire methods, schedules and judgement sampling for this study.

Findings

Hypotheses Analysis

Accepted H1, An employee's time spent in office (TSO) has negative effect on various types of satisfaction. Accepted H2a, Overtime has a negative impact on satisfaction, only if the desired time spent in office is lower than actual ones. Rejected H2b, Paid overtime eliminates the negative impact of overtime on satisfaction. Accepted H3, Flexi-time arrangements have a negative impact in life and job satisfaction.

Time Spend in Office (TSO)

From my study it was found that full time and part time employees actually spend time in office more than what they desired and desired TSO is higher for full time employees than part time employees. Either full time or part time employees don't want to extend their TSO, rather than full time employees want to reduce their TSO than part time employees.

Female employees want to spend time in office less than what male employees preferred to be. Amount of overtime by both genders and both type of work are significantly same because of the introduction of various technologies availability nowadays. In fact more than 71% of employees want to reduce their time spent in office and who want to reduce or extend time spent in office are significantly less satisfied towards their whole life. And employees who want to reduce TSO are happier with their free time utilization.

Age and willingness to change time spent in office has no significant difference.

Coming to the actual time spent in office, full time employees spend more when they are young (below 45) and for part time employees there is no much difference due to age factor. For full time employees, actual TSO equals 47.89 hours on average, but desired TSO of 44.23 hours is significantly lower (paired t test, 1% significance). For part time employees, actual TSO equals 23.97 hours on average, but desired TSO of 22.52 hours is significantly lower (1% significance). Desired TSO is extreme significantly higher for full time employees than part time employees (96% higher). No significant difference between part time employees' and full time employees' desire to extend their TSO (1% significance). In fact, full time employees want to reduce their TSO by 33% than part time employees (1% significance). Female employees want to spend time in office 21% (less than 8.417 hours/week) less than male employees among full time employees and 5% less (less than 1.313 hours/week) in case of part time employees (1 % significance). Amount of overtime work done by both genders equals approximately 2.99 hours/week for both genders; not changed significantly over time. Amount of overtime by both kinds of work equals approximately 2.94 hours/ week- no significant change over time. More than 71% want to reduce time spent in office, approximately 1.62 hours/week; significant change over time, even though it would reduce their income (1% significance). No significant difference between part time employees' and full time employees' availability on overtime 76.8% and 77.012% at 1% significance. Employees who want to reduce or extend their TSO are significantly less satisfied with their whole life (average of 2.087 at 5) (1% significance). Employees who want to reduce their TSO are significantly happier with their free time utilization (65%) at 1% significance. However, there is no significant difference in willingness to reduce or extend TSO with related to their age. For full time employees, there is significant change in actual TSO with their age at 6% (1% significance). For part time employees, there is no significance in actual TSO with their age (1% significance).

Work Time Arrangements

These are the percentage allocation by work time arrangements, which can be either by employer, employee or fixed. Or it can be complete flex time across the organization.
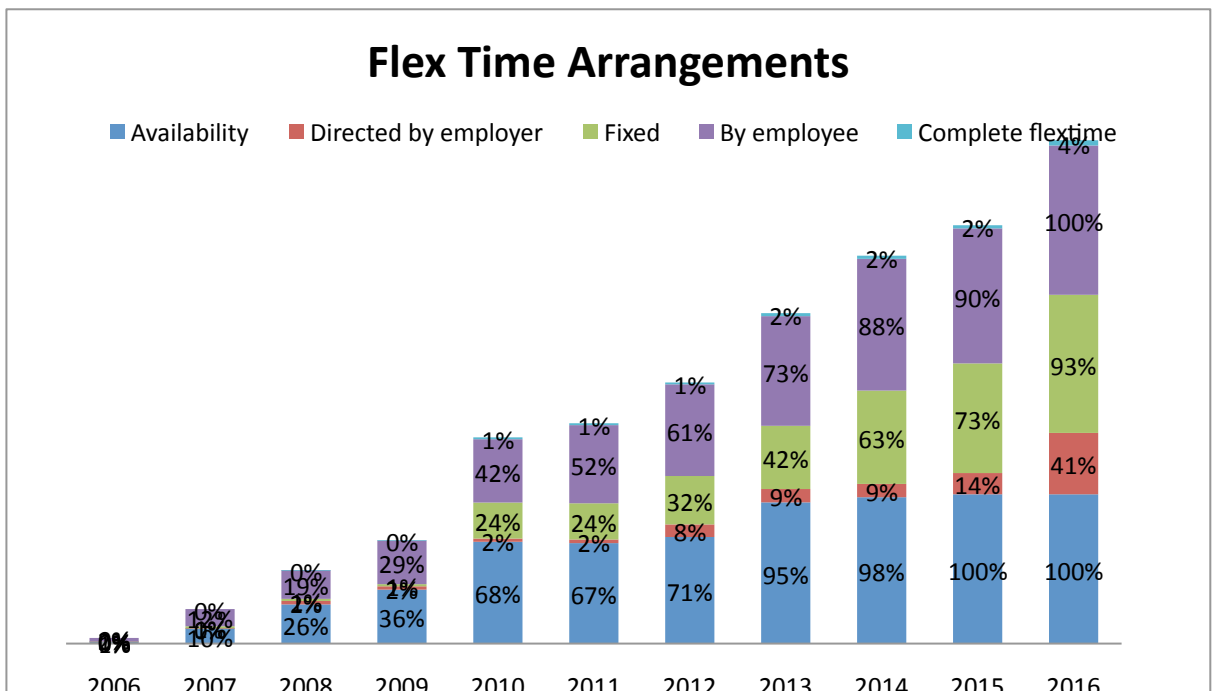
This is the percentage wise table for the said chart.

	2006	2007	2008	2009	2010	2011	20
Availability	1%	10%	26%	36%	68%	67%	71%
Directed by employer	0%	0%	2%	2%	2%	2%	8%
Fixed	0%	1%	1%	1%	24%	24%	32%
By employee	2%	12%	19%	29%	42%	52%	61%
Complete flextime	0%	0%	0%	0%	1%	1%	1%

Satisfaction

According my study on 1.3 million employees from various industries, ages, occupational levels, gender, marital status and from various parts of India found that on average on a 5-point scale (Likert scale), Job satisfaction is 2.36, Personal income satisfaction is 3.54, Household income satisfaction is 2.01, Free time satisfaction is 2.363, Family satisfaction is 2.363 and Whole life satisfaction is 2.818. Hence we can just say that, even though employees are satisfied in their personal income, they are not satisfied in other factors in work life harmony; that is job satisfaction, household income satisfaction, free time satisfaction, family life satisfaction and whole life satisfaction.

The outcomes are: Job satisfaction – Average 2.36: Not satisfied; Personal income satisfaction – Avg. 3.54: Just satisfied; House hold income satisfaction – Avg. 2.01: Not satisfied; Free time satisfaction- Avg. 2.362: Not satisfied; Family life satisfaction – Avg. 2.363: Not satisfied; Whole life satisfaction – Avg. 2.818: Between not satisfied and just satisfied.

Age-Wise Satisfaction

From these charts, it is found that life satisfaction is higher or almost stable in age below 30 years and even though fluctuating above 60 years are also good at life satisfaction. In job satisfaction too, it is higher in below 30 years and average for age between 30-45 years. For free time satisfaction and family life satisfaction, age below 30 years and above 60 years are more satisfied. If these graphs are analysed deeply, it is found that age between 30-45 years are the employees who are least satisfied about their whole life, free time utilization and family life satisfaction.

Free time satisfaction

Family Life Satisfaction
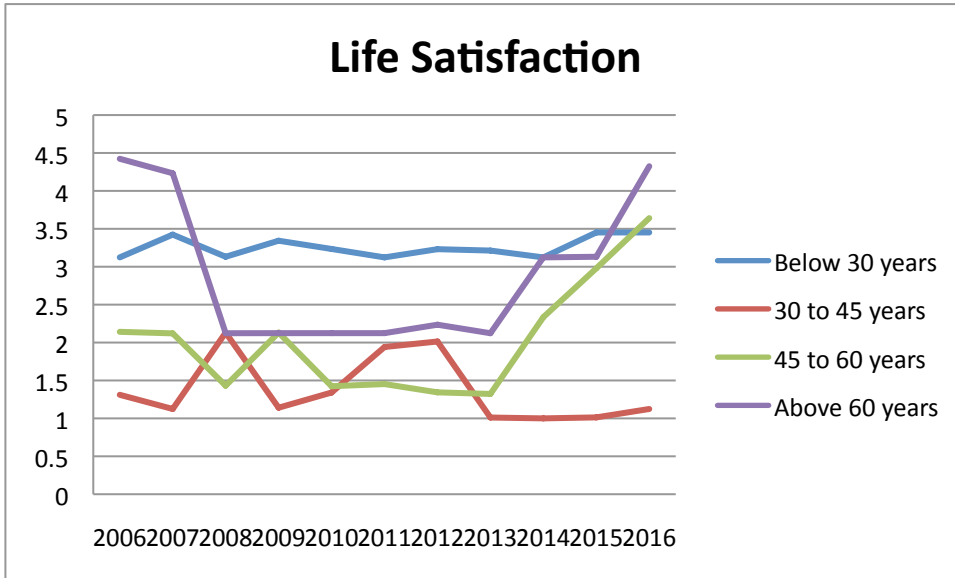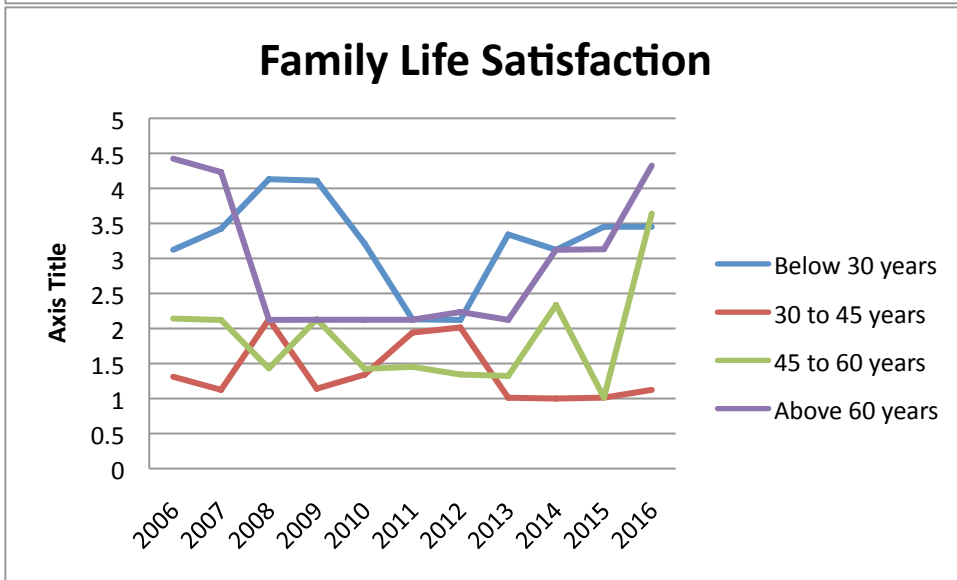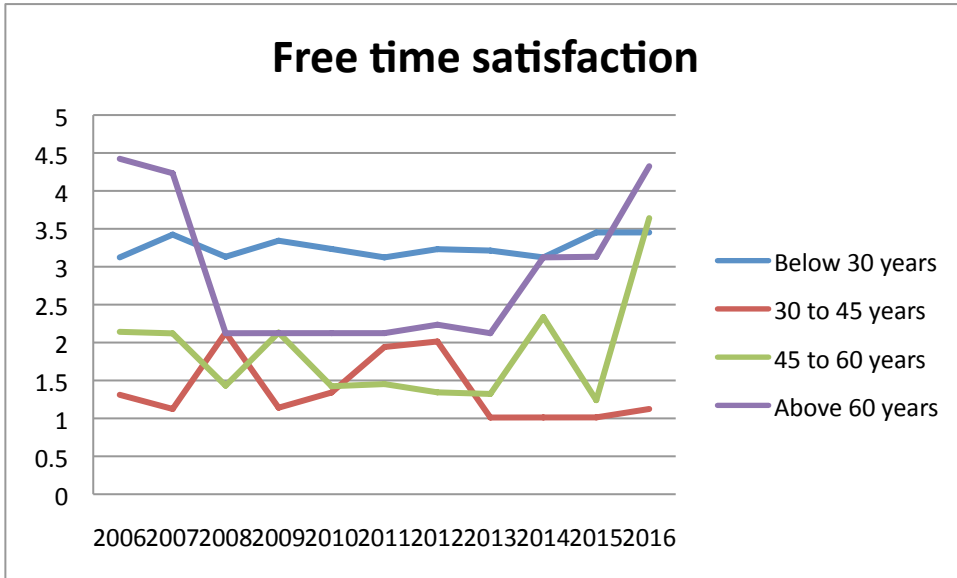
Gender-Wise Satisfaction

If gender wise satisfaction levels are considered, it is seen that male full time and part time employees are more satisfied towards job and personal income than female full time and part time employees.

Male full time employees are significantly higher satisfied in their job than female full time employees. Female part time employees are significantly very lower satisfied in their job than male part time employees. Male full time employees are significantly higher satisfied in their personal income than female full time employees. Female part time employees are significantly less satisfied in their personal income than male part time employees. There is no significant difference in free time satisfaction among full time male employees and full time female employees. However, part time female employees are significantly very less satisfied in their free time satisfaction than part time male employees. Full time male employees are significantly very high dissatisfied in their family life satisfaction than full time female employees. However, part time female employees are very less satisfied in their family life than part time male employees. There is no significant difference in free time satisfaction among full time male and female employees. But part time male employees are more satisfied about free time than part time female employees.

In contrast to this, full time male employees are significantly higher dissatisfied than female in their family life. But part time female employees are less satisfied than part time male employees towards their family life.

There is no significant difference in full time male and female employees with regards to their household income satisfaction. However, part time female employees are significantly very less satisfied in their household income satisfaction than part time male employees. There is no significant difference between full time male and female employees with regards to their whole satisfaction. There is no significant difference between part time male and female employees with regards to their whole satisfaction. There is no significant difference among full time male and female employees towards household income satisfaction. However, part time female employees are less satisfied than male for their household income. But there is no significant difference between full time male and part time male to full time female and part time female towards whole life satisfaction.

Other Components in Satisfaction Related to TSO

Age and gender factors are already discussed before. From this study, it is found that employees from rural areas are happier than urban employees, employees having kids less than 17 years are more satisfied than employees without kids or without having kids under17 years. Employees working in agriculture, tourism, education and retail are more satisfied than employees in other industries, and employees in IT/ITES and financial services industries are most stressful people and have higher dissatisfaction rate in their whole life satisfaction than employees from other industries.

Age: Employees below the age 30 and between 45 to 60 years are significantly satisfied in their whole life satisfaction than those with age between 30-45 and above 60 years.

Urban/rural: Rural employees found to be significantly higher satisfied than those living in urban areas.

Kids Under 17: Employees having kids under 17 years are highly satisfied in their whole life as compared to employees without kids or those having children with age above 17 years.

Industries: Employees in agriculture, tourism& hospitality, education and retail industries are highly satisfied than employees working in manufacturing, IT/ITES, chemical, transportation, financial services and other services.

IT/ITES and financial services employees are found to be highly dissatisfied in their whole life as compared to other industries and are the people who want to reduce their TSO to a large extent.

The biggest observation found from this study is that all kinds of promotional gestures like telecommuting including work from home facility make employees' whole life dissatisfaction until the TSO is not controlled by policies inside the organization, especially for employees in IT/ITES industries. However, employees in retail and tourism industry are satisfied with flex time arrangements like rotational shifts.

Flex-time arrangements: Instead of making employees happy, all kind of flex-time arrangements including 'work from home' facility make the employees' whole life satisfaction into a danger, especially for employees in IT/ITES and financial services industry.

However, employees in retail and tourism & hospitality industries found flex time arrangements like rotational shift significantly satisfactory than employees in other industries.

Considering the leadership position, middle management employees are more dissatisfied in their whole life harmony than others and top management is the most satisfied lot. Considering the shifts and holidays, employees in regular, evening and rotational shifts

are more satisfied than others. Regarding occupational status, managerial position employees are much dissatisfied in whole life than others and the second last ones' are new joins and trainees. Regarding commutation; employees from mid-level distance from home to office are the most satisfied employees than with low distant and high distant employees.

Leadership position: Compared to top management, lower management and daily wage workers, middle management employees are highly dissatisfied in their whole life satisfaction. However, top management employees are more satisfied than lower management and daily wage workers.

Shifts & Holidays: Regular, evening and rotational shift employees are more satisfied than night shift, Saturday and Sunday/public holiday working employees.

Occupational status: Trainee and newly joined employees are more stressful and dissatisfied in their whole life satisfaction than the mid position employees. Managerial position employees are significantly much dissatisfied in their life satisfaction than other occupational status employees.

Commutation: On contrast, mid distance commutation employees are highly satisfied than lower and high distance commutation employees on daily and weekly basis.

Discussion and Implications

Equal importance should be given for work life harmony by the employer to the employee by reducing time spent in office premises and strict vacation with family for long term commitment and loyalty to the organization. Introduction of multi-source feedback system with family feedback need to be strictly incorporated in every industry. And need to make sure that those feedbacks not under any purposive influence by the employee. Benefits policy need to check the total time spent before implementing other benefits to the employee. There should be a balance between the benefits utilization as well as the time spent in family. Like working hours, TSO also need to be log based one.

Limitations and Future Studies

These are some of the limitations of this study. It does not look into existing issues with employees' family and cultural background. This study does not look into the issues with family and cultural background of the employee. This study does not look into the style of leadership and informal relationships existing in the organization. The generalization is questionable as it only covered India as a whole. Remote areas are not covered in this study due to the accessibility factor. Future research need to be implemented in larger sample size and in other countries with different culture settings. This study does not look into the existing economic worries before an employee joins the company. Future research need to look into more factors affecting work life conflicts for transgender employees and based on the employees' abilities (mental, physical, emotional and intellectual) as well.

Conclusion

It can now be concluded from this study that equal importance should be given for all employees' work life harmony which needs to be monitored by the employer at regular intervals through multi source feedback system implementation and need to be ensured that there is no bias in rating the same. Also TSO need to be checked instead of working hours for proper understanding the employees' work life harmony.

References

Clark, A. E., Oswald, A., & Warr, P. (1996). Is job satisfaction U-shaped in age? Journal of Occupational and Organizational Psychology, 69, p. 57-81

Stutzer, A., & Frey, B. S. (2008). Stress that doesn't pay: The commuting paradox. *Scandinavian Journal of Economics, 110*, p. 339-366

Taylor, J., Bradley, S., Nguyen, A.N. (2003). Job autonomy and job satisfaction: New evidence. Lancaster University Management School Working Paper No. 2003/050

White, M.R., Hill, S., McGovern, P., Mills, C., & Smeaton, D. (2003). High performance management practices, working hours and work-life balance. *British Journal of Industrial Relations, 41*, p. 175-195

Appendix

Table 1: Fixed effects regressions on the impact of working hours and overtime on job satisfaction (hierarchical models)

	(1) Satisfaction job	(2) Satisfaction job	(3) Satisfaction job	(4) Satisfaction job	(5) Satisfaction job	(6) Satisfaction job
Actual_wh	0.005**	0.006***	0.007***	0.007***	0.001	0.006*
	(2.44)	(2.59)	(3.09)	(3.20)	(0.22)	(1.81)
Reduce_wh	-0.019***	-0.019***	-0.020***	-0.019***	-0.018***	-0.017***
	(-9.83)	(-9.74)	(-9.91)	(-9.82)	(-5.59)	(-5.44)
Extend_wh	-0.007**	-0.006*	-0.006	-0.004	-0.003	0.004
	(-2.06)	(-1.81)	(-1.64)	(-1.11)	(-0.54)	(0.80)
Overtime_dummy	0.072***	0.076***	0.076***	0.071***	0.125***	0.115***
	(3.41)	(3.60)	(3.60)	(3.37)	(3.65)	(3.55)
O_time (base: unpaid)						
O_time_dayoff		0.268***	0.272***	0.248***	0.338***	0.332***
		(7.59)	(7.70)	(7.10)	(6.25)	(6.52)
O_time_partlypaid		0.239***	0.241***	0.209***	0.292***	0.304***
		(6.48)	(6.52)	(5.71)	(5.10)	(5.63)
O_time_paid		0.351***	0.345***	0.289***	0.294***	0.284***
		(7.56)	(7.42)	(6.26)	(4.08)	(4.20)
Commute (base: infrequently)						
Commutefreq_daily		-0.092***	-0.076***	0.007	-0.034	-0.002
		(-4.03)	(-3.29)	(0.24)	(-0.73)	(-0.04)
Commutefreq_weekly		0.073	0.098	0.172**	0.077	0.105
		(1.09)	(1.47)	(2.57)	(0.77)	(1.13)
Work_autonomy		0.180***	0.181***	0.174***	0.805	0.795
		(9.16)	(9.18)	(8.93)	(1.54)	(1.62)
Age (base: above 60)						
Age_below25			0.486***	-0.061	-0.074	-0.079
			(4.76)	(-0.56)	(-0.45)	(-0.50)
Age_25to45			0.276***	-0.101	-0.147	-0.153
			(3.49)	(-1.22)	(-1.14)	(-1.25)
Age_45to60			0.055	-0.117*	-0.149	-0.103
			(0.78)	(-1.65)	(-1.34)	(-0.98)
Married			0.106**	0.191***	0.233***	0.188***
			(2.38)	(4.31)	(3.51)	(3.01)
Kids_u16			0.103***	0.041	0.049	0.086*
			(3.05)	(1.22)	(0.95)	(1.78)
East_germany			0.018	-0.004	-0.015	0.013
			(0.12)	(-0.03)	(-0.08)	(0.07)
Economicworries (base: no)						
High_economicworries				-0.782***	-0.944***	-0.433***
				(-23.10)	(-17.23)	(-8.16)
Few_economicworries				-0.364***	-0.482***	-0.265***
				(-14.31)	(-12.00)	(-6.95)
Parttime					0.019	0.028
					(0.23)	(0.37)
New_job					-0.057*	0.030
					(-1.65)	(0.92)
Limited_job					0.144***	0.146***
					(2.91)	(3.12)
Log_net_income					0.538***	0.304***
					(6.58)	(3.94)
Log_net_income_household					0.145***	-0.142***
					(2.60)	(-2.66)
Tenure					-0.041***	-0.039***
					(-7.40)	(-7.42)
Company_size					0.070***	0.049**
					(2.88)	(2.11)
Satisfaction_life						0.270***
						(23.30)
Satisfaction_household_income						0.249***
						(25.61)
Satisfaction_free_time						0.079***
						(9.50)
Year dummies	No	No	No	Yes	Yes	Yes
Occupational status dummies	No	No	No	No	Yes	Yes
Industry dummies	No	No	No	No	Yes	Yes
Constant	6.818***	6.115***	5.757***	6.590***	0.401	0.100
	(82.08)	(58.83)	(42.72)	(47.10)	(0.46)	(0.12)
Observations	47038	46656	46553	46438	24490	24293
R²-within	0.003	0.008	0.011	0.033	0.066	0.180

* $p < 0.10$. ** $p < 0.05$. *** $p < 0.01$.
Notes: t-statistics are in parentheses. Job satisfaction is measured on an 11-point scale. All regressions are based on the years 2002–2009 and the whole sample.

Source: Own calculations

Table 2: Ordinary least squares regressions on the effect on working time arrangements on satisfaction

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	(1) Satisfaction job	(2) Satisfaction life	(3) Satisfaction family life	(4) Satisfaction free time
Female	0.212***	0.197***	0.040	-0.218***
	(2.88)	(3.54)	(0.55)	(-2.83)
Age	-0.053**	-0.076***	-0.128***	-0.065***
	(-2.42)	(-4.53)	(-5.87)	(-2.81)
Agesq	0.001**	0.001***	0.001***	0.001***
	(2.53)	(4.42)	(5.34)	(2.99)
Married	0.079	0.268***	0.830***	0.066
	(1.18)	(5.30)	(12.59)	(0.94)
Kids_u16	0.153**	0.045	0.218***	-0.341***
	(2.76)	(0.87)	(3.75)	(-4.78)
East_germany	-0.025	-0.225***	-0.079	-0.150**
	(-0.38)	(-4.50)	(-1.21)	(-2.17)
Health_status	-0.604***	-0.689***	-0.443***	-0.571***
	(-17.52)	(-26.48)	(-13.02)	(-15.83)
Partime	0.061	0.140*	0.009	0.208*
	(0.56)	(1.70)	(0.09)	(1.81)
Limited_job	0.169*	0.093	-0.116	-0.017
	(1.65)	(1.20)	(-1.15)	(-0.16)
Log_net_income	0.386***	0.149**	-0.088	0.107
	(4.13)	(2.11)	(-0.95)	(1.09)
Tenure	-0.008**	0.002	0.010***	0.005
	(-2.19)	(0.60)	(2.86)	(1.22)
Company_size	-0.024	0.050**	0.029	0.051*
	(-0.85)	(2.30)	(1.02)	(1.69)
Actual_wh	-0.005	-0.001	0.006	-0.019***
	(-0.85)	(-0.14)	(1.13)	(-3.28)
Reduce_wh	-0.036***	-0.006	-0.003	-0.028***
	(-6.84)	(-1.49)	(-0.53)	(-5.09)
Extend_wh	-0.012	-0.008	0.017*	-0.014
	(-1.27)	(-1.10)	(1.78)	(-1.40)
Overtime_dummy	-0.088	-0.025	-0.085	-0.171***
	(-1.41)	(-0.53)	(-1.38)	(-2.61)
O_time (base: o_time_unpaid)				
O_time_paid	0.212*	0.142	0.008	0.161
	(1.85)	(1.63)	(0.07)	(1.34)
O_time_partlypaid	0.308***	0.093	0.059	0.194*
	(3.25)	(1.30)	(0.64)	(1.96)
O_time_dayoff	0.249***	0.143**	0.090	0.297***
	(2.93)	(2.22)	(1.07)	(3.32)
Wh (base: wh_fixed)				
Wh_employer_directed	-0.170**	-0.064	0.062	-0.024
	(-2.26)	(-1.12)	(0.84)	(-0.30)
Wh_self_directed	0.170*	-0.069	-0.140	0.032
	(1.69)	(-0.91)	(-1.41)	(0.30)
Wh_flexitime	-0.110	-0.191***	-0.264***	-0.158*
	(-1.38)	(-3.16)	(-3.34)	(-1.88)
Evening_work	0.037	0.004	-0.065**	-0.144***
	(1.12)	(0.18)	(-2.00)	(-4.16)
Night_work	-0.029	0.026	0.001	0.105**
	(-0.69)	(0.83)	(0.02)	(2.40)
Saturday_work	0.032	-0.002	-0.032	-0.067**
	(1.08)	(-0.08)	(-1.09)	(-2.17)
Sunday_work	-0.047	-0.058**	-0.061*	-0.046
	(-1.40)	(-2.27)	(-1.83)	(-1.30)
Commute (base: infrequently)				
Commutefreq_daily	-0.024	-0.035	0.071	-0.230***
	(-0.42)	(-0.81)	(1.26)	(-3.86)
Commutefreq_weekly	-0.030	-0.027	-0.137	-0.418***
	(-0.20)	(-0.24)	(-0.92)	(-2.64)
Work_autonomy	0.197**	0.181***	0.002	-0.121
	(2.29)	(2.77)	(0.02)	(-1.34)
Economicworries (base: no)				
High_economicworries	-1.177***	-1.367***	-0.722***	-0.831***
	(-13.29)	(-20.41)	(-8.24)	(-8.94)
Few_economicworries	-0.532***	-0.570***	-0.429***	-0.380***
	(-7.41)	(-10.49)	(-6.05)	(-5.04)
Control variables included[a]	Yes	Yes	Yes	Yes
Constant	6.236***	9.295***	12.169***	10.251***
	(7.94)	(15.18)	(15.25)	(12.42)
Observations	4590	4606	4593	4605
R^2	0.170	0.277	0.118	0.154

* $p < 0.10$. ** $p < 0.05$. *** $p < 0.01$.

Notes: t-statistics are in parentheses. Satisfaction with job, life, free time, and family life is measured on 11-point scales. The models include data from the year 2009.

[a]These variables include industry, occupational status, and leadership position.

Higher Education Challenges: Financing Access, Equity, Efficiency, Quality and Relevance in Pakistan

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Abstract

Financing higher education is a complex subject as it addresses the philosophic as well as the practical aspects that span from the state's thinking and willingness to the student's own interest and potential, capacity and willingness of the family, businesses inclination to fund higher education in various forms, a university's own capacity as well as their reliance on government grants, state's tax structure, philosophies, mechanisms and structuring of student loan schemes - all intertwined in a complex web of decisions. Education is a public good and higher education is no exception. Pakistan spends meager 2.1% of GDP on education; the expense on higher education is a fraction of this. Of 43 million cohorts between the ages of 15-24 only 7% have access to higher education. More than 40 million youthful aspirants, despite having mental faculties, are deprived as $1/3^{rd}$ of the population is below poverty line and another $1/3^{rd}$ at the borderline. The concentration of 158 Universities and 2,318 Colleges in urban centers across the country is a classic example of uneven distribution, under/oversupply of facilities, students and faculty and exorbitantly inefficient facility use. More than money, The Higher Education dilemma is an issue of system design and efficient execution, research revealed. We have proposed a redesigned higher education system based on population density, market concentration, and industry needs, like mobile cell sites with certain degree of overlap to serve communities within 50-mile radius. The case for Pakistan is characteristic quandary of contemporary developing world and has lessons to learn, we hope.

Keywords: Higher Education, Access, Equity, Efficiency, Quality, Relevance

Introduction

There is an established relationship between investment in education and economic development (Aziz, Khan, & Aziz, 2008) and higher education is no exception. It is a key element in national economic performance and as such, requires special attention (Glenda, et al, 2015). Although, Pakistan has made some progress in higher education, it still is far from the acceptable and away from the international norms. The value of Human Development Indicators (HDI) for Pakistan stands at .515 for 2012 which is extremely low and puts the country at 146 in the list of 187 countries and territories (Human Development Report, 2013). Pakistan has one of the lowest investments in terms of education, it spends a meager 1.8% on education and the spending on higher education is further diluted. The country needs to increase this investment in people's capabilities – as this investment is not an addition of the growth process but an integral part of it. The countries which have made significant achievements in human development could be characterized into "strong, proactive and responsible states" as per Human Development Report 2013. The following four features are common to such States (i) Commitment to long-term development and reform, (ii) prioritizing job creation, (iii) enhancing public investment in education and health and (iv)nurturing selected industries. The report gives example of China which pursued a long term vision to build the necessary institutions and capacities for transforming its economy (UNDP, 2013).

Developing the individual young person, both men and women, into a globally beneficial citizen allowing them to pursue the knowledge stream for the advancement of the societies where they dwell is of paramount importance. This can only be done by advancing the state of human knowledge through research, scholarship and transforming Universities into self-governing institutions. Special attention is needed to provide equitable access, improve efficiency, and enhance quality and relevance of the higher education to the national economic development agenda. The state of affairs warrants proactive development agenda for the strategic engagement with national, regional and world economy. It also warrants determined implementation of social policy innovations.

Higher Education in Pakistan

Higher education is fundamental to the economic development of any nation and making this available to all those who can genuinely pursue it is the responsibility of the state. Analytical studies have shown positive co-relation of spending on higher education and research with an increase in GDP. The World Bank Task Force has done pioneering work on Challenges of Higher Education in Developing Countries and analysis equally applicable to Pakistan (The Task Force on Higher Education and Society, 2000). Oliver (Oliver, 2004) while discussing the higher education challenges for Vietnam has also reported that access to higher education is a major problem in almost all developing countries. Peter (2000) has looked at higher education challenges from the globalization perspective. The higher education system is Pakistan is inherently underfunded, continues to be so and this phenomenon has perpetuated into further decreasing the access which already was very low i.e. approximately 7% of the 17-23-year age group cohorts attending the Universities.

Pakistan's Millennium Development Goals, established in 2006, aspired that by 2015 Pakistan would provide access to 15 % of the 17-23-year age group cohorts to University which was missed by a wide margin as we are already in 2017 and access is still around 8 percent. Currently, there are approximately a million plus students in the higher education system of Pakistan in 153 public and private universities combined and almost 40% of the enrollment is in

2 distance learning universities AIOU (450,000) and VU (100,000) and all other combined have 638,000 as per Higher Education Commission statistics. For the nation to provide access to only 10 % of the 17-23-year age group cohorts by 2015, approximately 1.5 million new slots were needed, which did not happen. If the Higher Education Commission continues to work on traditional university model to create new Universities or their sub-campuses, the requirements to accommodate 15% of 17-23-year age group will remain unreachable. The need is to evolve a model that re-organize the whole education system by making each district headquarter locus of higher education provision by creating a general University at every district headquarters and integrating the existing College system into the newly created general University. These challenges are quite different than the higher education challenges faced by western societies (Ryan, 2017). This difference of challenges between Western world and developing countries is further clear and has been further emphasized by Ebersole (John, 2014). This paper presents the analytical thoughts to re-organize higher education with minimum additional resources required.

Problem Statement

Pakistan's higher education system faces 5 major challenges: access, equity, efficiency, quality and relevance. Pakistan has 2351 higher education institutions that include 153 universities, 87 sub campuses, 118 constituent colleges and 1993 affiliate colleges. More detail is presented in table 1. There is serious uneven geographical spread in these institutions as more than 75% of the main university campuses are in 9 major cities. There is a serious progression disconnect. There is a significant drop in student body from high schools to inter and degree colleges and further drop from inter and degree colleges to universities. Majority of the institutions are in urban classification while a majority of the population resides in rural areas. As such, a variety of economic, social barriers and physical limitations prohibit the university age cohorts to actually attend the higher education institutions. How then to address this rural-urban higher education supply disconnect? The economic profile of the population creates an equity issue in the provision of higher education. One-third of the population earns PKR 3030 per month or US$350/annum. Another third of the population is very near to the poverty line. How then would 2/3 of the population pay for even average education expenses for higher education which is around US$ 1000/child/year without the intervention of the State?

Seemingly, large numbers of institutions are unable to cater for the demand for higher education because of efficiency of these institutions to dispense the education. Average number of students per inter college is 308, per degree college 812 and per university is 3932. Further, the subject offering in degree colleges is rather limited. While having lesser facilities, the schools accommodate thousands of students why then, are colleges and universities, having much bigger and better physical facilities, are unable to serve large student populations? How to address this efficiency disconnect? While a PhD is a requirement for the teacher in higher education systems (HEIs) in developed parts of the world, only less than 30% of the faculty in HEIs holds PhD in Pakistan, a serious quality concern. In addition to this very limited interaction exist between HEIs and the relevant employers. Courses delivery is mostly theoretical, internships limited and only towards tail end of the terminal degrees and lacking practical orientation.

Methodology

We have generally relied on public domain data available in federal government's publications, Education Management Information System (EMIS), provincial Higher Education Departments, federal and provincial Higher Education Commissions and University websites. We also approached selected Degree Colleges/Postgraduate Degree Colleges in Punjab for acquiring real time data on the enrollments, faculty statistics and subjects offered. We also acquired enrollment and faculty data of Degree Colleges/Postgraduate Degree Colleges from all 24 districts of Khyber Pakhtunka province. The information gathered was synthesized, limitations identified and conclusions drawn, discussed and documented. Some of the summarized data is presented in analysis and discussion section.

Analysis and Discussion

Access

Researchers have looked at access to higher education from many perspectives. Reisberg and Watson (2011) have explored access and equity principles in detailed philosophical themes. Gallagher, Osborne, & Postle (1996) have compared access policies of Scotland and Australia and consequent impact on economic environment. Access to higher education and consequent low participation rates is one major issue in Pakistan. The enrollment progression in Pakistani Universities is presented in figure 1. Only 7-8% cohorts of 15-23-year age group have access to higher education. The Government of Pakistan had planned in 2005-6 that the access to higher education will be increased from then 7% to 15 % by 2015. The Higher Education Commission (HEC), the apex government regulator of higher education, revised this estimate to 10% by 2015 and 15% by 2020 as shown in the table 2. To meet this requirement, the system was required to create over 1.2 million additional slots. However, the system was not able to create additional placement slots despite very liberal grant of Charters to private institutions, establishment of many new universities, upgrading many degree colleges to universities and liberal creation of sub-campuses of public sector Universities. As shown in table 1 bellow, the HEC's aspiration of reaching 15% access by 2020 will require the creation of over 3 million additional slots in remaining 3 years which is certainly an impossible task.

Area	Main Campus	Sub Campus	Constituent College	Affiliated College	Total
Federal	29	8	6	47	90
Punjab	41	45	45	1054*	1185
Sindh	42	16	35	319	412
K-Pakhtunkhwa	28	11	28	380	447
Balochistan	6	4	-	65-105**	75
Gilgit –Baltistan	1	-	-	1	2
FATA	-	-	4	30	34
AJK	6	-	-	97	103
UAE*	-	3	-	-	3
Total	153	87	118	1993	2351

Table 1: Higher Education Institutions in Pakistan * 770 affiliated with Punjab University, ** All affiliated with University of Balochistan, Source: Compiled from EMIS & University Websites
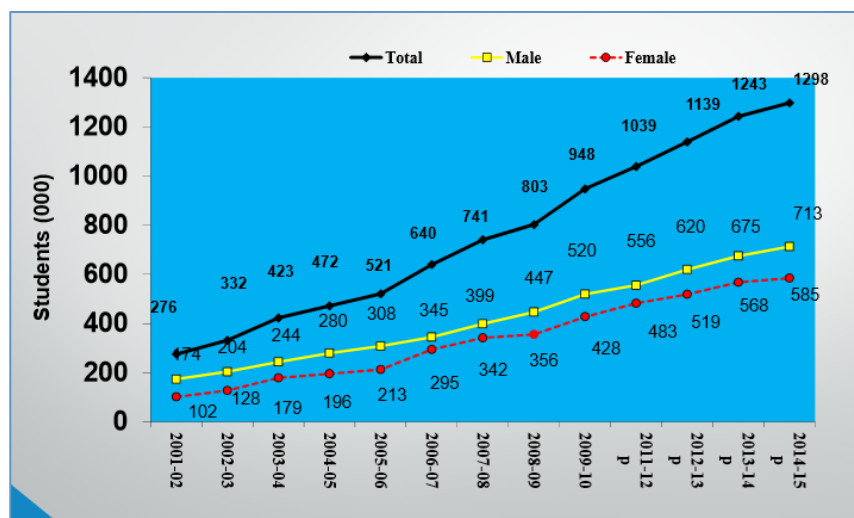
Figure 1: Pakistan University Enrollment by Gender including 457,602 DL Students
Source: Higher Education Commission

Year	Population (mill) Age-group 17-23	Do Nothing	Actual	Required Placement Slots
2011	23.1	7.8 %	7.8 %	1.8 m
2015	25.2	7.1 %	10%	2.52m*
2020	27.7	6.5 %	15%	4.15

Table 2: HEC Vision for Access to Higher Education
*2015 target was missed by wide margin

Theoretically, even if all the public and private sector Universities and Degree Awarding Institutes (DAI) double their enrollment in remaining three years, the system will still be short of over 2 million slots to meet the target. Traditionally, the Degree Colleges, and Postgraduate Degree Colleges, although affiliated with major Universities, has not been categorized as higher education institutions because they are out of the ambit of HECs. The enrollment data for Khyber Pakhtunkha province is presented in table 3.

S.No.	District Name	No. of Colleges	Enrolment at Inter/BA/BSc.	Enrolment MA/MSc	Total Enrollment	Teaching Staff	S:Teachers Ratio
1	Abbottabad	12	9933	1052	10985	429	26
2	Bannu	12	10693	No	10693	323	33
3	Battagram	2	792	No	792	31	26
4	Bunner	5	4897	No	4897	109	45
5	Charsadda	8	7223	19	7242	253	29
6	Chitral	4	4441	No	4441	92	48
7	D.I.Khan	11	10667	No	10667	248	43
8	Dir Lower	7	8583	124	8707	184	47
9	Dir Upper	3	4049	Yes	4049	60	67
10	Hangu	4	1833	No	1833	60	31
11	Haripur	11	8512	143	8655	296	29
12	Karak	8	2338	No	2338	177	13
13	Kohat	6	2806	No	2806	191	15
14	Kohistan	1	593	No	593	11	54
15	Lakki Marwat	7	7178	25	7203	168	43
16	Malakand	10	7440	No	7440	245	30
17	Mansehra	8	5409	No	5409	214	25
18	Mardan	18	17512	No	17512	480	36
19	Nowshera	9	6348	No	6348	255	25
20	Peshawar	17	17583	No	17583	660	27
21	Shangla	3	1712	No	1712	42	41
22	Swabi	15	10049	No	10049	299	34
23	Swat	10	9937	436	10373	343	30
24	Tank	3	1814	No	1814	53	34

Table 3: Enrolment and Faculty Statistics in Degree and Postgraduate Degrees Colleges of KP

The meager access is concentrated in urban areas and particularly in large metropolitan centers which requires the students to travel to these urban centers if they are fortunate to get admission, Because of limited vacancies and tight competition, few also can afford the cost of limited availability university hostels or private accommodations. In Punjab 34 of 49 Universities are located in one city, Lahore. As shown in figure 3, the literacy rates are shown and clearly concentrate in one side of the province. The districts having a University/HEIs or in their close proximity have higher literacy while the districts not having DAI/HEI show much lower literacy. This trend is not limited to literacy but through-out the education matrix, school, college, and university. Further this trend is not limited to Punjab; it is prevalent in all provinces and throughout the country. In Sindh 40 of 54 Universities are located in one city – Karachi, in KP out of 34 universities 14 are concentrated in one city – Peshawar, in Balochistan 4 of 8 universities in one city – Quetta. This geographical disconnect aggravates the access, has cost repercussions, participation rates and perpetuates the underdevelopment cycle. Of 150 universities 26 have less than a thousand students another 23 have between 1001-2000 students, 50 have student body between 2001-5000 while 26 universities have student body between 5001-

10000. Only 17 universities have student body between 10001 and 20,000 while only 8 universities have more than 20,000 students.

Equity

Equity refers to the universal availability of higher education opportunity to every citizen of relevant age group who aspires, is willing and capable, to pursue without any distinction of gender, race, creed, color, and religion, and without consideration to his/her social and economic circumstance or geographical origin. This further refers to merit based blind admissions and determination and/or adjustment of fees, scholarships, freeware, loans and other financial decisions keeping in view of his/her financial circumstances and capacity to pay within the established fee structure of the academic institution. A student admitted on merit to a relevant program must not be denied access to higher education because he/she cannot pay.

According to Ministry of Planning and Development, a third of the population is below official poverty line while an additional third is close to poverty line, Dawn reports (Khan, 2016). Analysis of the fee structure of public universities reveals that average fee charged to students hovers around PKR 100,000/year. The cost of books, supplies, hostel, transport and maintenance is in addition to that. Keeping in view of the geographical spread and dispersion of universities and HEIs and the population close to poverty line, it is reasonable to conclude that achieving 15-20% access to higher education would require a major state intervention in shape of university funding, scholarship scheme, loan scheme and the like. This situation further necessitates that the cost of provisioning be controlled by instituting efficiency measures. The university budgets are worked-out and tuition fees are set based on the cost of provisioning of quality education. The universities should be able to function and provide quality education from the receipts on account of tuition fees. The state shall compensate the university for the students who cannot pay.

Efficiency

The fundamental question in determining the efficiency of investment in higher education is to see if the existing resources are judiciously and fully utilized. The survey of selected facilities of some universities revealed that generally, in public sector universities and HEIs, the facility utilization is very low. The colleges and university facilities are utilized only a part of the day and academic activities are concentrated in the first half of the day when classrooms, laboratories, library resources are effectively in operation. As the day passes the facilities use decline and tapers off. Similarly, the teaching load on the faculty is abnormal, mostly on the lower side. The young faculty is overloaded while senior faculty is involved mostly in general administrative duties.

Another efficiency related issue deals with the deployment of resources. We quote two examples. First, the city of Chakwal has sub-campus of UET Taxila, sub-campus of University of Arid Agriculture, affiliation arrangements of University of Gujrat and Government Degree College Chakwal. The resources spent on all four facilities shall be sufficient to run a good university yet controlled and run by 4 different institutions yield only sub-optimal results and has serious efficiency issues; cost per student is very high compared to the cost per student in main campuses and always have faculty deployment, retention and quality issues. Similar situations exist in many districts where sub-campuses of multiple universities exist to yield sub-optimal and inefficient results. Second example comes from a Degree College in district Mianwali. The college has academic facility of over 50,000 square feet sufficient to cater for 500-600 students.

The college has 12 family residences, 18 family flats and other required infrastructure. However, the college has only 4 teachers and less than 100 students at intermediate level with no degree classes. This is a classic case of politically motivated ill investment and ill deployment of academic facilities and there is no dearth of such cases throughout the country in all provinces. As such, it makes lots of sense that the Colleges offering BA/BS/BSc and MA/MS/MSc degrees shall be categorized as HEIs and integrated with university system to reap practical benefits.

Quality

The quality is a measure of numerous attributes in almost all areas of campus life both academic and non-academic spheres. The low percentage of PhD qualified and properly trained faculty as shown in table 4 and 5 coupled with poor student-teacher ratio is a major quality issue for Pakistani Universities an HEI's. There is a proverb that quality comes at a cost and is a perfect fit on Pakistan's higher education spending. For almost a decade the budgetary grant per student had been on a roller coaster but overall there is decrease of 5% between 2002 and 2012. Although the grant per student has increased from PKR 25,483 in 2002-3 to PKR 70,214 in 2012-13 in nominal terms, the real grant per student has decreased during this period.

	PhD	**Non PhD**	**% PhD**
Federal	1651	4718	26
Punjab	2189	4858	31
Sindh	1030	3946	21
KPK	918	2275	29
Balochistan	135	1011	12

Table 4: Ratio of PhD & Non PhD Faculty in Universities & DAIs

Institutions	**Inter**	**Degree**	**MA/MSc**	**Teachers**	**S:T Ratio**
DC Jahanian	650	175		25	33
DC Chichawatni	1000	300		32	40
DC Mian Chanun	1860	331		31	70
PGDC TT Singh	1516	222	285	38	53
PGDC Kamalia	1200	175	125	50	30
PGDC Khanewal	1384	919	250	79	32
PGDC Sahiwal	2393	1180	515	177	23
Total	10,003	3302	1175	432	33

Table 5: Student-Teacher Ratio in 7 Degree and Postgraduate Degree Colleges of Punjab

Relevance

There is and always have been a concern from the industry that the graduates coming from academic institutions are not well trained to the requirements of the industry. In fact in Universities the students are taught and trained the principals and acumen to apply these principals to the practical situations in whatever industry they join. However, crafting the curriculum and including examples and case studies relevant to major industries in the discipline

certainly has merit. Generally, academia-industry linkage is and inadequate in our institutions of higher learning; research is more theoretical and not per requirements of the industry.

Conclusions and Recommendations

From the foregoing analysis and discussion, it is evident that access to higher education in Pakistan is very low and conventional approaches are not working. It has also been established that the nation has access, equity, efficiency, quality and relevance problems. The situation requires gross system redesign by making District Headquarter (DHQ) as center of gravity for education. We make our recommendations as follows:

Establishing a strategically located District Headquarter University (DHQU)

It is accessible to a catchment of about million people and will enable a good proportion of students, faculty, and staff to commute to the University and return home on a daily basis in a radius of approximately 50 KM. Each new DHQU can be established by blending the Degree Colleges and Post-Graduate Degree Colleges (DC/PGDC) of the district and formally making them Constituent / affiliate Colleges of DHQ University leveraging each other for faculty and physical resources. This will lessen the need for massive capital outlays for brick and mortar. Selected DC/PGDC to be made specialized Colleges like College of Agriculture, College of Engineering, and College of Medicine – the most sought out disciplines by the students. The campuses of multiple universities in one district to be merged and brought under the DHQ University. The colleges in the district to be affiliated with the DHQ University in the area will contain unchecked and directionless grant of affiliations by some of the Universities. Concentration of additional public sector universities in larger cities should be discouraged and the additional investment be broadened than concentration in big cities.
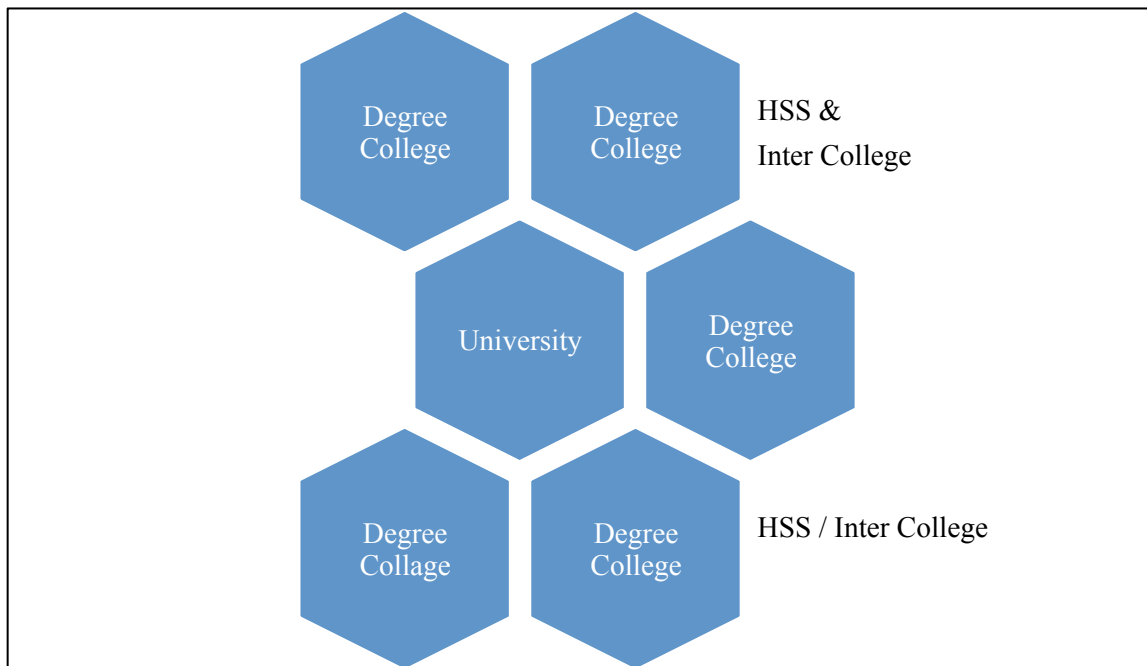

Figure 2: Proposed DHQ University Model

Revitalizing Online DL Programs

Massive distance education program embedding serious quality measures and a carefully crafted campaign for distance education would warrant much broader participation. Degree and skill focused knowledge banks for Online Access (MIT Open Courseware Model) can be developed and Pakistan Education Research Network (PERN) can be used for dissemination of Courseware to masses and intended students. The courses taught at respected universities can be captured for broadcasting through media. Massive higher education development is desired and can be designed and launched by Virtual University, AIOU, and all other Universities with media partners. This will require legal provision for trusting over 100 TV channels to allocate one third of their air time to be devoted to education. All public sector universities may be tasked to maximize their enrollment within 2-3 years with additions in facilities and by efficiency enhancement.

The existing universities can increase their enrollment by more effective resource utilization i.e. classrooms, libraries, laboratories. Our research indicates that the resource utilization stands between 30-35% and can be enhanced to 70-80%.

Developed nations have a very well thought out Student Loan Schemes; HECs must evolve an effective student loan scheme. At all universities, admission shall be competitive but need blind. Higher education must be treated as "Public Good" and State shall be responsible to provide this vital good to all eligible.

Endowment through Land Grants

The best American Universities were created and strengthened through Morrill Land Grant Act of 1862. Pakistan also has sizable public land resources and Universities can benefit from Government's generous land grants by establishing Land Grant Endowments.

Effective Student Loan Scheme

The funding of higher education is a delicate balancing act. Many nations have used, mortgages type student loan or income related repayments. Repayment can be organized via income tax, insurance contribution or graduate tax.

Promoting National Harmony

The students from neighboring districts of other province shall be encouraged to promote national harmony and regional integrity. A workable induction scheme and related financial system falls under the ambit of both Federal and Provincial Higher Education Commissions and DHQU.

Regulating Private Institutions

HECs have hardly addressed this issue in the past and the result is mushrooming institutions providing useless degrees or good institutions charging fees which are simply exorbitant. HECs must evolve a serious strategy to regulate private educational institutions both for cost and quality.

Area Development Strategy and Engagement of Businesses

Under CSR initiatives the development of 25-50-mile radius of the large development projects must be made part of the project regardless of the project being funded by the federal or provincial governments or private corporations. Leveraging education and health facilities, construction or improvement of roads, scholarships to the students of the area, new opportunities for the people and youth can be some of the initiatives that must be on CSR agendas of corporations.

Research - Backbone of Knowledge Economy

We must also organize research funding on American NSF (National Sanitation Foundation) and NIH (National institute of Health) model and evolve the dedicated high quality and high capacity research targeted to our national economic development agenda. The Ministry of IT and Telecom's ICT R&D Fund is a good example which should not be limited to ICT activities only. The funding streams coming from various industries can be pooled to create Industrial R&D Fund applicable to researchers working in all industrial sectors.

Creating Entrepreneurial Mindset

There is a common trait in all great Universities, fostering entrepreneurship mindset among their graduates. Whether they work for government of industry or get into their own start-ups, the entrepreneurial mindset helps them to grow to their fullest potential. It is proposed that rather than a generic scheme, the Prime Ministers Loan Scheme shall be targeted to Universities and Technical Institutions to foster entrepreneurship and partially targeted and channeled to set-up incubation centers.

University and Role of Collaboration in Societal Development

The Universities shall also play their role in Societal Development by instituting required volunteer work by the students and faculty. All students must spend "Mandatory Community Hours" every academic year. There are numerous opportunities where students can perform community service in almost all walks of life, education, health and nutrition, literacy, technology literacy, sports, tree plantation campaigns – the options and opportunities are endless.

References

Aziz, B., Khan, T. & Aziz, S. (2008). Impact of Higher Education on Economic Growth of Pakistan. *Journal of Social Sciences and Humanities*, *6*(2), p. 15-29. Retrieved from https://mpra.ub.uni-muenchen.de/22912/

Gallagher, J., Osborne, M., & Postle, G. (1996). Increasing and widening access to higher education: a comparative study of policy and provision in Scotland and Australia, *International Journal of Lifelong Education, 15*(6).

Glenda, K., McGrath, S., Petersen, I. & Gastrow, M. (2015). Higher education and economic development: The importance of building technological capabilities. *International Journal of Educational Development, 43,* p. 22-31.

Human Development Report. (2013). United Nations Development Program, 1 UN Plaza, New York, NY 10017 USA pp.15.

John, E. (2014). Top Issues Facing Higher Education in 2014. *Forbes Magazine*. Retrieved from https://www.forbes.com/sites/johnebersole/2014/01/13/top-issues-facing-higher-education-in-2014/#10fa9d807489

Khan, M. Z. (2016). New poverty line makes a third Pakistani poor. Retrieved from https://www. dawn.com/news/1250694

Oliver, D. E. (2004). Higher Education Challenges in Developing Countries: The Case of Vietnam Texas Tech University, Available at http://files.eric.ed.gov/fulltext/EJ795179.pdf

Peter, S. (2000). Globalization and Higher Education: Challenges for the 21st Century. *Journal of Studies in International Education, 4*(1). Sage Publications, available at http://journals.sagepub.com/doi/pdf/10.1177/102831530000400102

Reisberg, L. & Watson, D. (2011). Chapter 11, Access and Equity, Leadership for World-Class Universities: Challenges for Developing Countries Philip Altbach (Ed), Chestnut Hill: Boston College.

Ryan, C. (2017). The Top 10 Higher Education Issues We All Agree On, Forbes Magazine, Retrieved from https://www.forbes.com/sites/ryancraig/2017/01/20/the-top-10-higher-education-issues-we-all-agree-on/2/#6a6d793c30d0

The Task Force on Higher Education and Society. (2000). Higher Education in Developing Countries Peril, Promise. Retrieved from

UNDP. (2013). Human Development Report 2013, Retrieved from http://hdr.undp.org/sites/default/files/hdr2013_en_summary.pdf

Effect of Exposure to Media and Materialism among Nigerian Consumers' Purchasing Intentions

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Abstract

In an active competitive marketing environment, information is one of the keys for the consumer decision-making process and products rapidly become known to consumers via the mass media through information obtained from advertisements. When consumers try to memorize product messages via adverts that tend to be materialistic, and this can influence their purchasing intention. Recent studies have shown that consumers' consumption is influenced by the media in relation to their level of materialism. The motive of this particular study was to ascertain the effect of exposure to mass media and materialism on the intention to purchase global brands among Nigerian consumers. A convenience sample of 318 respondents living in Lagos state participated in this study. Questionnaire surveys were designed for collection of data and distributed to respondents. A simple random sampling method was used to measure the effect of exposure to global mass media and materialism among Nigerian consumers. The collected data were analyzed by using regression analysis. The findings showed that exposure to mass media and materialism positively affect the intention to purchase global brands. This indicates that a high level of materialism as a positive value was promoted by the mass media via advertising. Consumers' believe that acquiring material goods brings forth happiness, self-fulfillment and also is a way of achieving success. It is suggested that local companies need to improve on the quality of their products which can attract consumers, and also produce good media adverts that can inspire consumer intentions to purchase local products. Additionally, there may be differences in purchase intention by gender.

Keywords: Exposure to Mass Media, Materialism, Purchasing Intentions, Nigerian consumers

Introduction

The significance of owning goods in one's life, and the value placed on acquiring and using material things are seen as a measure of one's rank in society and accomplishment in one's life which has led to a trend of materialism (Fitzmaurice and Comegys, 2006). According to Richins and Dawson (1992), materialism could be seen as an individual mind-set or attitudes towards the prestige that comes with owning goods in one's life. With this interest, possession of material things is no longer a new thing in the field of consumer research because the theme of materialism has grown popular (Fitzmaurice and Comegys, 2006; Richins 2004).

In recent decades, research on the theme has shown that concern with materialism's relationship to consumption and related factors, such as global brand image and advert appeal strategy is limited. The image of a global brand is usually considered to be the bond that links or influences consumers to purchase that particular global brand (Batra & Homer, 2004), and due to high emotional and quality values, purchasing a global brand or luxury products could be a natural choice for materialists (Wiedmann et al., 2009). Therefore, materialistic people like to purchase brands that exhibit their success and status which can be noticed by the society in general (Richins et al. 1992).

Companies use the image of their global brand to differentiate it from their rivals, allowing them to create global brand equity. In fact, they engage the mass media via advertisements with the intention to create brand awareness, and persuade their existing customers to continue purchasing their product (Smith and Zook, 2011; Weber, 2009; Weinberg, 2009). Along with the relevance of one's feelings and individuality, global brand image as a product is frequently used to construct and convey one's genuine ideal self-concepts (Escalas, 2004).

The construction and protection of a global brand image is done through approaches like media advertisements, endorsements of the product by a well-known celebrity, placement of products etc. For a product to be well known to customers it must depend on advertisements in the media to make consumers learn about the product's efficacy. The evidence proliferates in a large body of unique advertisements seen across all media such as television, Internet, billboards, magazines, and newspapers, and companies' use different kinds of advertisement appeals like humor, sex, fantasy and romance in an attempt to differentiate their brands through expressing the characteristics and ultimately to influence consumers to purchase their products (Huang, 2004).

As a result, consumers may watch a lot of advertisements, but the question is which advertising approach can increasingly motivate consumers to have an interest in purchasing that particular brand. Product advertisement and consumers' preferences are relevant to companies before producing the advert (Kotler & Keller, 2009).

Information is one of the concepts used by consumers to make decisions and the speed with which information spreads through advertisements for example on television, in articles, and on the internet can expose consumers to various brands globally. These can further influence their purchase intention or decision (Yang, 2009). Companies have to create a good advertisement about the services or their products, if such adverts can link well with a product, it can inflate customers' memories of an image of the product and create brand awareness, which can also influence the intention of consumers to purchase the brand.

With this, exposure to mass media and materialism explicates the reasons underlining purchase intention that justify consumer action of making decisions via information obtained from television, the internet etc. As a matter of fact, when a consumer tries to exhibit the information obtained from the media, they become materialistic. Therefore, the aim of this paper is to investigate if materialism and exposure to mass media has an effect on the purchase intention of a global brand among Nigerian consumers.

Review of literature

Materialism and purchase intention

Past studies have shown that the value of materialism differs in terms of the way people interpret it in particular situations because branded products convey different meanings to many individuals and materialism influences people's intention to purchase particular global brands (Cleveland, Laroche & Papadopoulos, 2009). According to Solomon (2009) and Liao and Wang (2009), consumers who are highly materialistic tend to be more extravagant in spending money to enhance their social status. Their desire is to possess expensive material goods in order to avoid losing social prestige, and the symbolic value of luxury goods can satisfy such desires for materialists.

Research has shown that the value of goods stems not only from their ability to indicate status but from their ability to project a desired self-image and recognize one as a member in an imagined perfect life (Kamineni, 2005). Materialism is seen as a part of self-impression due to the fact that people use material goods to construct their identity of a person. According to Peter and Olson (2008) study has shown that materialistic people believe that the number and quality of goods accrued can be used to show their own and others' success, which is why people show so much desire to acquire and keep goods as well as objects in their memories. Today, people who are too materialistic are influenced to like and purchase luxury products that are public and prestigious (Rindfleisch, Burroughs, & Wong, 2008), and materialism has a vital influence on people's intention to purchase global brands.

Nowadays, changes are made in considerations about people's lifestyles on materialism, due to the influence of global brands and for this reasons one needs to search whether materialism directly influences people's intentions to buy global brands, which are viewed as a signs of treasure (Schiffman et al., 2010). In fact, individuals who are money-oriented see brands as having a vital position in their lives. This is because they believe in those goods are the source of personal pleasure, happiness, success, and are symbols of kindness (Peter and Olson, 2008; Schiffman et al., 2010).

Researchers have revealed that material things have a direct positive influence on people's social status or success-oriented intake. This implies that people who really like material things are more likely to value expensive and publicly displayed items, which are signs of success and social status as well. Obviously, when consumers like global brands as status-oriented goods, then material things will have a major influence on their purchasing intention with regards to global brands (Jia Chen, and Soyoung Kim, 2013).

Exposure to Mass Media

Exposure to mass media has an influence on individual intention to purchase global brands as well as connecting individuals all over the world (Kotler, Keller, and Kelvin, 2008). Individual exposure to mass media can broaden views with strong messages, which also influence our society today. For instance, television, radio, and internet have been shown to have

an effect on people's daily lives and routines, and as a result viewers are happy and have time to listen and watch what is happening on television.

Kotler, et al. (2008) have also argued that the media have three vital roles to play: to inform, to educate and to influence opinion. Current studies have shown that the mass media provide consumers and companies with new way to engage with each other. For example, companies pick 'courage' to engage with 'reliable' consumers and influence individuals' perceptions about their products, spreading information that can help them learn about their audience (Brodie, Ilic, Juric, & Hollebeek, 2013).

Exposure to mass media has been known to influence people in terms of their intention to purchase global brands (Kaplan and Haenlein, 2010). This implies, that consumers can get closer to the product if they experience certain feelings or information from watching the product on television via adverts, and this will make them aware of that particular brand name after watching the advert (Teng, 2009). The function of mass media is to offer pictures which support identities and provide images of situations of groups that fit their group characteristics.

In fact, mass media help to advertise products to people with higher status that can change people's intentions to purchase a product. According to Panda (2004) and Cebrzynski (2006), advertising a product on television engages viewers to get exposed to brands and products that look natural in any program. Similarly, a study conducted by Chi, Yeh, and Huang (2009), has shown that advertising advocate's acceptance, knowledge, and desirability that can in turn change consumer preferences and attitudes, and at the same time promote purchase intentions.

Today, television shows issues that exposes people and also shows brands that are being used by people in their natural settings which can influence their purchase intentions (Stephen & Coot, 2005). It is also clear that television helps business and allows them to have a conversation directly with consumers, which in turn engages consumers in their intentions to purchase any brands (Hanlon & Hawkins 2008). Besides that, mass media help consumers to select best movies/or channels on television, as do magazines from overseas that potentially increase their knowledge and develop positive attitudes towards purchasing global brands, or alternatives from outside their local environment (Appadurai, 1990). Generally, marketing can help people accept a new product with a good image that may influence individuals' intentions to purchase global brands (MacInnis, Rao, & Weiss, 2002). In other words, mass media play a vital role in consumers purchasing intentions, but few studies have explored their influence over consumers' purchasing intentions.

Concept of Consumers Purchase Intention towards Global Brands

Intention to purchase is a way that helps consumers consider methods relating to their readiness to buy, and use a particular brand of products they like (Lin and Lin, 2007; Changa etal., 2009; Shah et al., 2012). This implies that consumers' intention of purchasing certain brands of products could be seen as their desire to purchase that brand of products after watching adverts on television. This might also influence or trigger consumers' interest about certain global brand.

Researchers have shown that if consumers' intentions are high, this can persuade consumers to purchase their choice of brands (Lin, Chen & Hung, 2011; Chen & Huang, 2012). According to Turney and Littman (2003), purchasing intentions can be seen as consumers' forecasting which brand of product is more suitable for them to choose or to purchase and also

acknowledges the genuine consumer intention to purchase that brand, the greater the intention, the greater the desire is to purchase the products (Chi, Yeh, & Huang, 2009).

Interestingly, research has also shown that individual intention to purchase a specific brand requires overall assessment of all brands that are available in the market before deciding on a particular product to buy (Teng, Laroche & Huihuang, 2007). However, consumers' decisions to buy a particular product are very complex, and their intention to purchase brands is linked to consumers' behavior, buyer's perception and consumer attitudes. Therefore, a global brand that is strong could be used as an influential tool to attract consumers' attention towards global brands their quality. This is the prime feature that could influence intentions of consumers to purchase global brands.

Effect of Materialism and Mass Media on Nigerian Consumers

In recent times, globalization of world markets has tremendously inflated levels of materialism in many places. In the past decades, Nigeria has successfully developed into a global financial centre. As a multinational country with prominence given to consumption and life style, not a large percentage of Nigerian consumers' orientation towards materialism is based on wealth.

However, many past studies have revealed that material things have a direct positive influence on people's social status. For example, a study by Schiffman et al. (2010) found that consumers who are materialistic view brands as having a vital position in their lives. They believe that those products are the source of personal pleasure, happiness and success (Peter & Olson, 2008). Nigerian consumers are not exempted; they behave like other consumers from less developed countries who prefer to buy products from advanced countries because they rate those products to be of the best quality compared to those ones produced in their own country. Consumers use such products as an avenue to exhibit their prestige and personal importance in relation to other people within the society (Kawabata, 2009).

The influx of adverts in society today, which encourages overconsumption, also leads to an increasing 'vogue' of materialism among Nigerian consumers. Companies use different kinds of advertising strategies to influence consumption. They use famous celebrities to support a brand name which is a common and effective advertising strategy. Chi, Yeh, and Huang (2009) noted that many companies are eager to invest huge amounts of money to link their brands to attractive media celebrities as well as their qualities such as trustworthiness and likeability.

Indeed, consumers are exposed to different kinds of mass media for information and entertainment purposes. Stephen and Coot (2005) argue that they learn consumer behaviors from the media and Nigerian consumers are not exceptional. In line with this, mass media and materialism have a great impact on Nigerian consumers' purchasing intention of global brands, which also explain that substantial media viewers via television, internet, magazine etc learn to purchase global brands or opulent objects with prestige and social status. This implies that they act according to the result of those images' media portrayals and they tend to be more materialistic by purchasing global brand products in order to keep up with the affluent lifestyles exhibited on television (Yang, 2009). However, consumers' consumption of media relates to their level of materialism, and materialistic' people believe that possessing global brand products and opulent objects is a way to achieve success, happiness and well-being.

The Effect of Gender Difference in Purchase Intention

There is evidence indicating that gender can influence purchase intention positively and females are significantly more influenced when it comes to the decision making process or their

intention to purchase global brand products than their fellow male counterparts. This is because females may be easily influenced or affected by families, colleagues and friend they keep (Safiek & Hayatul, 2009).

An understanding of such findings may depend on some factors. For instance, Chiao and Yang's (2010) study indicated that females are less experienced with purchasing online due the level of education and information they acquired. This implies that they rely more on information from their peer groups/ friends and also on other recommendations such as media adverts than their male counterparts when making purchasing decisions. Besides that, some studies show that women and men behave in different ways or variations in terms of their purchasing intentions or decision making. For instance, young males are more pragmatic and practical, whereas young females are more social, and like to spend money on luxury goods (Cathy & Vincent, 2006).

Other studies by Ahasanul, Ali and Sabbir (2006) and Safiek (2009b) have indicated that women care more about those categories of products that are directly related to the house because of their status as housewives, and for them quality of those products is more relevant compared to males. This implies that environment can also affect consumers' purchasing intentions among males and females due to the fact that the knowledge they have could increase consumers' thoughts of benefits and the sense of inspiration for both female and male consumers at that particular time are different (Shao et al., 2004).

Methodology

Quantitative research methods were used in this study and questionnaire surveys were distributed to respondents in their respective local government areas that represent the three senatorial districts. All the respondents were randomly selected and invited to participate in the study. Prior to conducting the formal survey, 41 sample sized surveys were used for a pre-test. Subsequently, 400 surveys were distributed and after eliminating incomplete surveys, valid surveys returned were 318.

Measurement

Purchase Intention towards Global Brand

The measurement for purchasing intention towards global brands was adopted from Zeithaml (1998), and Richardson et al. (1996). The scale consisted of six items, while 4-point Likert scales ranged from 1 ("strongly disagree") to 4 ("strongly agree"). The actual result Cronbach alpha scale had a value of 0.796, indicating that it had a high degree of reliability.

Exposure to Mass Media

Exposure to global mass media was based on Appaduria (1990). The six questions adopted utilized a four Likert scale ranging from 1 ("strongly disagree") to 4 ("strongly agree"). However, the actual result of the Cronbach alpha value scale shows 0.797 and which indicates a high degree of reliability.

Materialism

The five items scale used in this study to measure materialism was adopted from Richins and Dawson (1992). The items were a four Likert scale ranging from 1 ("strongly disagree") to 4 ("strongly agree"). Based on the actual result scale, it showed a Cronbach alpha value of 0.892, and this degree of reliability is also high.

Variables		Pre-test (n=41)		Actual study results (n=318)	
Purchase intention towards global brand	6	.860		6	.796
Exposure to global mass media	6	.742		6	.797
Materialism	5	.735		5	.892

Table1: Cronbach's Alpha Reliability Result

The result in Table 1, shows that the reliability Cronbach alpha scale pre-test and the actual study from the construct had an acceptable level of internal consistency (i.e. more than 0.5, as suggested by (Ling and Piew, 2010). The items exceeded the desirable score of 0.70 indicating that scales of the measurement constructs were stable and consistent, the variables were also found to be of good reliability.

Data Analysis

The Statistical Package for Social Science (SPSS, version 20) program was used to analyze the data collected such as computing the descriptive statistics and performing the reliability test. Additionally, multiple regression analysis was used to analyze the effect of exposure to mass media and materialism on the purchasing intention towards global brands.

Multiple Regression Analysis

Regression analysis was used to decide the relative contributions of each independent variable towards dependent variables to detect how much of the variance on dependent variable can be interpreted by independent variables.

Model	Unstandardized Coefficients b	Standardized Coefficients β	t
(Constant)	9.485		8.132
Exposure to global mass media	.128	.139	2.507*
Materialism	.152	.146	2.669**
F =20.362, p =0.000, R=0.454, R^2 = 0.206, Adjusted R^2 =0.196			

Dependent Variable: Purchasing intentions towards global brands, ** $p \leq 0.05$, * $p \leq 0.01$.

Table 2   Regression analysis for purchasing intentions towards global brands

Regression analysis results used to test the hypothesis are presented in Table 3. This explained the parameter estimates of the regression for purchasing intentions towards global brands, which represents the regression coefficients or slope of each predictor variable. The results show that the F value is significant at (F= 20.362) at p level of .000. This shows that the model was valid.

Subsequently, the results indicate that the two predictors, namely: exposure to mass media and materialism, explained 20.6% of the variance in purchasing intentions towards global brands (R^2 = 0.206). The two predictors have a significantly positive effect on purchasing intentions towards global brands, with exposure to mass media (β =0.139; t=2.507; p≤ 0.05), and materialism (β=0.146; t=2.669; p≤ 0.05). These indicate that an increase in the two predictors would also increase the dependent variable according to the contribution by each independent variable respectively.

The two predictors have a high positive t-value. This implies that exposures to mass media and materialism have a positive impact on consumers' purchasing intentions of global brands, although materialism has a stronger effect than exposure to mass media. The findings corresponded with Chi, Yeh, and Huang's (2009), who proposed that an advertisement that uses consumers' favorite or well-known celebrities could bring attractiveness, and also could change a consumer's liking or taste and their behavior in relation to purchasing intentions.

In the same view, Argan, Velioglu and Argan (2007), Russell and Stern (2006), and Pokrywczynski (2005) found that consumers take their favorite celebrities as references when buying brands. Like marketing, media are relevant because they create room for the conversation between companies and consumers, which directly attracts consumers to company brands (Hanlon & Josh, 2008). To some extent, if consumers choose the kind of mass media they prefer to watch or listen to such as television, movies, and magazines from western countries, they are more likely to adopt western or foreign culture.

Obviously, materialistic people are influenced by information obtained from the media through advertisements or by others, to use products that are highly respected and admired in society (Rindfleisch, Burroughs, & Wong. 2008). Materialistic consumers believe that acquiring material things has a vital position in their lives. They feel that acquiring material things is a source of personal happiness, pleasure and satisfaction and also symbolizes affluence (Peter and Olson 2008; Schiffman et al., 2010).

In addition, gender positively affects purchasing intentions and previous studies have indicated that females are more significantly influenced when they are making decisions about purchasing global brands. According to Chang's (2007) study, information is handled differently among males and females, and it evokes different decision making processes in terms of purchasing intentions.

This implies that the ways information is handled differently among genders are based on their respective behavior objectives. Although men are more ambitious due to their self-esteem, they like to portray a good status, have a need to be identified and praised in society, and at the same time position themselves as rational. Thus, a male's intention to purchase is influenced heavily because they want to be a social identity, while a female's attention is geared towards the pursuit of love, happiness, caring and togetherness of the family. Previous studies found that females easily respond or react to any change and can be influenced more easily than males (Shao et al., 2004).

Conclusion

Owing to the fact that consumers' exposure to mass media has a positive impact on their intention to purchase global brands, this should be of help also for local brand companies to emulate, and it could be carefully based on the importance of making use of a communication channel strategy to improve their products through the use of local channels to promote local programs, which could enhance local brands to be realistic for consumers, as well as having the benefit of placing or positioning local brands as global brands. Another solution would be featuring local celebrities in events such as concerts for advertisements, which can promote more awareness for local products.

Materialism was found to be one of the factors influencing consumer's intention to purchase foreign products, and consumers believe in acquiring material things. Materialism can be a source of personal happiness or pleasure and satisfaction and also symbolizes affluence. Meanwhile, local companies should provide quality products with more interesting packaging that can enhance and be more attractive to consumers, since consumers are persuaded by others to consume products that are public and prestigious, thus can enhance self-esteem.

Additionally, separation of market differences has always been a main issue in marketing, and gender is a vital element of segmentation used to access the market. However, men and women behave in different variations in terms of their purchasing intentions. For instance, environment and atmosphere influence consumers' purchasing intentions among males and females. Some research shows that when music is being played in a restaurant it could have more effect on women than men, and men are more risk bearers than women. This implies that men are more confident when deciding on their purchasing intentions than women. In spite of that a well- known marketing product can inflate consumers' purchasing intentions and marketers should make sure that divergent plans have been used among different genders.

The regression analysis result shows that exposure to mass media and materialism have a positive impact on intentions of consumers to purchase global brands. This may be because consumers' attraction to their favorite celebrities' via media advertisements has motivated them to purchase global brands for them to exhibit their success and status, and they tend to be more materialistic. This implies that media celebrities exhibited glamorous clothing and expensive possessions during the advert in media. Affluent spending and purchasing of opulent goods as suggested by advertising with media celebrities is strategy to promote consumption.

Meanwhile, consumers who are more concerned with their favorite icons trend to be easily influenced by the glorified picture of media celebrities depicted in adverts. Consumers are inspired to purchase and use the advertised product messages for self-enhancement. More especially, in developing countries like Nigeria, there is no alternative for consumers to make a choice rather than relying on information they get from brand adverts (Reardon, Miller, Vida & Kim 2005). The results indicate that there is a positive impact created by the media that suggested that for consumers who are more materialistic, their intention to purchase increases.

This previous study has found that sensitivity and related experiences can influence consumers' purchasing intentions. Furthermore, gender can influence purchasing intentions. Female consumers were more easily persuaded to become conscious of the atmosphere and good lighting, and this positively strengthened their appraisal of a product and affected their intention to purchase. Meanwhile, well known marketing products can bring new values for consumers and at the same time create room for consumers to be conscious of the product benefits which can facilitate their purchasing intentions.

References

Ahasanul, H., Ali, K., & Sabbir, R. (2006). Factors influencing buying behavior of piracy products and its impact to Malaysian market. *International Review of Business Research Papers, 5(2),* 383-401.

Appadurai, A. (1990). Disjuncture and Difference in the Global Cultural Economy. *Theory, Culture and Society. 7 (2/3),* 295-310.

Argan, M., Velioglu, M.N. & Argan, M.T. (2007). Audience Attitudes Towards Production Placement in Movies: A Case from Turkey. *Journal of American Academy of Business Cambridge, 11*(1), 161-168.

Batra, R., & Homer, P. M. (2004). The Situational Impact of Brand Image Beliefs. *Journal of Consumer Psychology, 14* (3), 318-330.

Cathy, B., and Vincent, W. M. (2006). Male versus female consumer decision making styles. *Journal of Business Research, (59),* 1297-1300.

Cebrzynski, G. (2006). Lights! Camera! Product Placement! Nation's Restaurant News. *New York, December 4, 40(49),* 1-5.

Changa, H. H., and Liub, Y. M. (2009). The impact of brand equity on brand preference and purchase intentions in the service industries. *The Service Industries Journal, 9*(12), 1687–1706.

Chang, C. (2007). The relative effectiveness of comparative and non-comparative advertising: Evidence for gender differences in information- processing strategies. *Journal of Advertising, 36*(1), 21-35.

Chen, C. C., Chen, P. K., and Huang, C.E. (2012). Brands and consumer behavior. Social Behavior and Personality. *International journal, 40*(1), 105-114.

Chi, H. K., Yeh, H. R., and Huang, M. W. (2009). The Influences of advertising endorser, brand image, brand equity, price promotion on purchase intention: The mediating effect of advertising endorser. *The Journal of Global Business Management, 5*(1), 224-233.

Chiao, C. C., and Yang, C. C. (2010). The impact of recommendation sources on online purchase intentions: The moderating effects of gender and perceived risk. *World Academy of Science, Engineering and Technology, (6),* 111-114.

Cleveland, Mark, Michel, Laroche, and Nicolas Papadopoulos. (2009). Cosmopolitanism, Consumer Ethnocentrism, and Materialism: An Eight- Country Study of Antecedents and Outcomes. *Journal of International Marketing, 17 (1),* 116–46.

Escalas, Jennifer E. (2004). Narrative Processing: Building Consumer Connections to Brands. *Journal of Consumer Psychology, 14 (1 and 2),* 168-180.

Fitzmaurice, Julie, and Charles Comegys. (2006). Materialism and Social Consumption. *Journal of Marketing Theory and Practice, 14 (4),* 287-299.

Hanlon, P., and Hawkins, J. (2008). Expand you brand community online. *Advertising Age, 79*(1), 14-15.

Huang, Ming-Hui (2004). Romantic Love and Sex: Their Relationship and Impacts on Ad Attitudes. *Psychology and Marketing, 21 (1),* 53-73.

Jia Chen and Soyoung kim. (2013). A Comparison of Chinese Consumers' Intention to Purchase Luxury Fashion Brands for Self – Use and for Gifts. *Journal of International Consumer Marketing.*

Kamineni, R. (2005). Influence of materialism, gender and nationality on consumer brand perceptions. *Journal of Targeting, Measurement and Analysis for Marketing, 14(1),* 25- 32.

Kaplan A.M. and M. Haenlein. (2010). Users of the world, unite! The challenges and opportunities of social media, *Business Horizons, vol. 53 (1),* 59-68.

Kawabata, M. (2009). Ajia shijo no kontekisuto higashihen. Tokyo: Shinhyoron.

Kotler, P., and Keller, K. L. (2009). Marketing management. Upper Saddle River, N.J: Pearson Prentice Hall.

Kotler, P., Keller., and Kelvin., L. (2008). *Marketing Management,* (12th ed), 568.

Liao, J., and Wang, L. (2009). Face as a mediators of the relationship between material value and brand consciousness. *Psychology and Marketing, 26*(11), 987-1001.

Lin, Y. T., Chen, S. C., and Hung, C. S. (2011). The impacts of brand equity, brand attachment, product involvement and repurchase intention on bicycle users. *African Journal of Business Management, 5(14),* 5910-5919.

Ling, Chai and Piew. (2010). The effect of shopping orientation, online trust and prior online purchase experience towards customer's online purchase intention. *International business research 3(3),* 63-76.

Lin, N.H., and Lin, B.S. (2007). The Effect of Brand Image and Product Knowledge on Purchase Intention Moderated by Price Discount. *Journal of International Management Studies,* 121-132.

MacInnis, D. J., Rao, A. G., and Weiss, A. M. (2002). Assessing when increased media weight of real-world advertisements helps sales. *Journal of Marketing Research, 39(4),* 391-407.

Panda, T.K. (2004). Consumer Response to Brand Placements in Films Role of Brand, Congruity and Modality of Presentation in Bringing Attitudinal Change Among Consumers with Special Reference to Brand Placements in Hindi Films. *South Asian Journal of Management, New Delhi.*

Peter, J. P., and Olson, J. C. (2008). Consumer behavior and marketing strategy (8th ed). New York, NY: *McGraw-Hill, Inc.*

Pokrywczynski, J. (2005). Product Placement in Movies: A Preliminary Test of an Argument for Involvement. *American Academy of Advertising Conference Proceedings, Lubbock,* 40-48.

Reardon J., Miller C., Vida I., and Kim., I. (2005). The effects of ethnocentrism and economic development on the formation of brand and ad attitudes in transitional economies. *European Journal of Marketing, 39 (7/8),* 737-754.

Richins, Marsha L. (2004). The Material Values Scale: Measurement Properties and Development of a Short Form. *Journal of Consumer Research, 31 (June),* 209-219.

Richins, M., and Dawson, S. (1992). A consumer values orientation for materialism and its measurement: Scale development and validation. *Journal of Consumer Research, 19 (3),* 303-316.

Richardson, P., Jain, A.K. and Dick, A.S. (1996). Household store brand proneness: A framework, *Journal of Retailing, 72(2),*159–185.

Rindfleisch, A., Burroughs, J., and Wong, N. (2008). The safety of objects: Materialism existential.

Roderick J. B., Ilic, A., Juric, B., & Hollebeek, L. (2013). Consumer Engagement in a Virtual Brand Community: An Exploratory Analysis. *Journal of Business Research, 66 (1),* 105-114.

Russell, C.A., and Stern, B.B. (2006). Consumers, Characters, and Products: A Balance Model of Sitcom Product Placement Effects. *Journal of Advertising, Provo, 35(1),* 7-22.

Safiek, M. (2009b). Malaysian Chinese consumers: Their ethnic attitudes and shopping orientations. *International Journal of Business and Management, 4(11),* 53-62.

Safiek, M., and Hayatul, S. S. (2009). Consumer decision-making styles in Malaysia: An exploratory study of gender differences. *European Journal of Social Sciences, 10(4),* 574-584

Schiffman, L. G., Kanuk, L. L., and Wisenblit, J. (2010). Consumer behavior (10th ed). Upper Saddle River, NJ: *Pearson Education, Inc.*

Shah, S. S. H., Aziz, J., Jaffari, A. R., Waris, S., Ejaz, W., Fatima, M., and Sherazi, S. K. (2012). The Impact of Brands on Consumer Purchase Intentions. *Asian Journal of Business Management, 4(2),* 105-110.

Shao, Y. S., Baker, J. A., and Wagner, J. (2004). The effects of appropriateness of service contact personnel dress on customer expectations of service quality and purchase intention: The moderating influences of involvement and gender. *Journal of Business Research, 57(10),* 1164-1176.

Smith, P.R., and Zook, Z. (2011). Marketing Communications: Integrating Offline and Online with Social Media. (5th ed). London, U.K: *Kogan Page Ltd.*

Solomon, M. R. (2009). Consumer behavior, Buying, having, and being (8th ed). Upper Saddle River, NJ: Pearson Education International.

Stephen, A.T. and Coote, L.V. (2005). Brands in Action: The Role of Brand Placements in Building Consumer-Brand Identification. *American Marketing Association Conference Proceedings, Chicago, 16,* 28.

Teng, L. (2009). A comparison of two types of price discounts in shifting consumers' attitudes and purchase intentions. *Journal of Business Research, 62(1),* 14.

Teng, Laroche, and Huihuang. (2007). The effects of multiple-ads and multiple-brands on consumer attitude and purchase behavior. *Journal of Consumer Marketing, 24 (1),* 27-35.

Turney, P. D., and Littman, M. L. (2003). Measuring praise and criticism: Inference of semantic orientation from association. *ACM Transportation Information System, 21(4),* 315-346.

Weber, L. (2009). Marketing to the Social Web: How digital customer communities build your business. (2nd ed). N.J, USA: *John Wiley and Sons.*

Wiedmann, K.-P., Hennigs, N., and Siebels, A. (2009). Value-based segmentation of luxury

Weinberg, T. (2009). The New Community Rules: Marketing on the Social Web. Sebastopol, CA: O'Reilly Media Inc.

Yang, Y. T. (2009). A study of purchase intention behavior to consumers on innovation technology smart phone in technology acceptance model and theory of reason action. Nan Hua University, Taiwan.

Zeithaml, V. A. (1988). Consumer perceptions of price, quality and value: a means-end model and synthesis of evidence. *Journal of Marketing, 52,* 2-22.

Holistic Education Necessary for Harmonizing Human Consciousness and Economic Development

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Abstract

The duality in this world has brought us to a level where whatever it is we are doing; we are not content. Economic cut-throat competition has led to gross inequality in income opportunities and ways of living. "The richest 1% now have more wealth than the rest of the world combined. Power and privilege is being used to skew the economic system to increase the gap between the richest and the rest" as reported by Oxfam (Global Research,2016). This is causing serious conflicts in society, families, and individual lives. This paper points out that even the highest economic growth rates of the most developed nations are not sufficient to bring happiness and wholesomeness in our lives (World Happiness Report of the UN,2016). India has always illuminated the world with many dynamic concepts like the Theory of Karma (deeds), Reincarnation (Soul's Immortal Journey) and Universal Brotherhood "VasudhaivaKutumbakam" (the world is one family), as well as holistic education based on high moral values and character building. The researcher in this paper places an emphasis on revamping global education on the basis of the ancient "Gurukul" education system of India that has taught multiple disciplines fused with high moral values and higher consciousness of living in the form of Yoga, Meditation, and Healing in a holistic manner, so that human mind to bring harmony at all levels. This is the utmost need of the hour for the sustainable development of our Planet Mother Earth.

Keywords: Economic development, Human Consciousness, Happiness Index, Pranic Healing.

Introduction

The world is observing the two contradictory phenomena of ruthless economic growth and the awakening of human consciousness. The duality in this world has brought us to that level that whatever we are doing we are not content. Economic cut-throat competition has led to gross inequality in income opportunities and ways of living. "The richest 1% now have more wealth than the rest of the world combined. Power and privilege is being used to skew the economic system to increase the gap between the richest and the rest" as reported by Oxfam (2016). Thisis causing serious conflicts in society, families and individual lives. This paper points out that even the highest economic growth rates of the most developed nations are not sufficient to bring happiness and wholesomeness in our lives (World Happiness Report Update,2016). India has always illuminated the world with many dynamic concepts like the Theory of Karma (deeds), Reincarnation (Soul's Immortal Journey) and Universal Brotherhood "Vasudhaiva Kutumbakam" (the world is one family), as well as holistic education based on high moral values and character building.

Methods of Research

The method of research is exploratory in nature where an attempt has been made to emphasize the revamping of global education on the basis of the ancient "Gurukul" education system of India that has taught multiple disciplines fused with high moral values and higher consciousness of living in the form of Yoga, Meditation, and Healing in a holistic manner, so that the human mind understands a new consciousness of awakening, freedom of thought, words and actions required to bring harmony at all levels. This paper draws on various references from ancient Vedic texts like *RigVeda*, *Upanishad* and the politico-economic treatise *Arthashastra*, which focuses on holistic education based on high moral values that can bring a balance between material and spiritual development. It also throws light unto modern research being conducted around the world on integrative skills and energy healing modules, in order to realize our true self and potential.

Discussion

The latest Global Disparity Indexes and Global Happiness Report clearly depict that the highest economic growth rates of the most developed states in the world are not sufficient to bring happiness and wholesomeness in the lives of humanity. There is a contradiction in the basic definition of growth and attainment of happiness, as both are different dimensions of life. One works at the physical level and the other at the emotional and mental level, thus affecting the human consciousness in general. But the Western concept of watertight development of each aspect of human life, i.e. political, social, economic, and spiritual, has caused serious challenges and conflicts worldwide.

Today the whole world is going through a paradigm shift in terms of how we define our growth. Governments around the world are recognizing the importance of measuring subjective well-being as an indicator of progress (Huppert,2011). Classical Economists like Adam Smith, J. BSay and others equaled happiness with only material things. That's when the economic development began to be measured only in terms of income, employment, savings, capital formation, and so on. The classical concept of a free market economy was challenged by J.M. Keynes and this led to the growth of a new dimension of state intervention in Keynesian economics, which brought the concept of maximum social welfare centre stage. Most countries

post-world war II had been engaged in either developing their macro-economic variables, such as national income per capita, capital formation, savings and investments, or they focused on shifting their growth strategies on the development of human welfare through the social sector, i.e. health education, housing etc., as well as increasing the standard of living of people directly. However, more recently it has become accepted that neither of these two approaches have been accurate because they did not bring happiness to people, but rather created more consumerism, which then led to greed for more power, and high levels of exploitation of natural and man-made resources, resulting in emptiness inside many human beings. After the rise of globalization in the late eighties, the world started shifting from measuring economic development through pure monetary transactions to social sector development, and the new concept of a Human Development Index came into being, which focused on social aspects but to a very limited degree. It has been validated by the global financial crisis of 2008 that we have never adopted a holistic system of development. It was realized, at the end of the Keynesian and Neo-Liberal phases, that economic growth had led to gross inequalities in allocation of resources, distribution of goods and services, income and assets, and that it had created a wide gap between the haves and have-nots. Thus, the whole global village became the playground for a segregated class of conflicts arising at every corner. This has made the proponents of globalization rethink different models of economic development in which quality of life was also given importance alongside quantitative development. We see that the countries that give due importance to quality of life of its people, and not just to infrastructural and industrial growth, have become predominantly better off, e.g. the Scandinavian nations like Sweden, Denmark, and Finland, which have all ranked much higher in terms of their HDI. This was reinforced by the UN accepting the Global Happiness Index of Bhutan in 2012, based on the happiness of its people, as a better benchmark for comparing models of economic sustainable development.

India, being one of the oldest living civilizations, has always illuminated the world with many dynamic concepts like Theory of Karma (deeds), Reincarnation (Soul's Immortal Journey), and Universal Brotherhood "Vasudhaiva Kutumbakam" (the world is one family), and holistic education taught in a 'Gurukul' format is based on high moral values and character building with equal importance being placed on building reasoning and knowledge. The new parameter of measuring growth through the holistic model of Bhutan's Global Happiness Index is exactly what India has been practicing since time immemorial. Most of the Asian nations focus on bringing a balance between modern Economic Development Indexes and a Happiness Index, thus focusing on inner growth of soul consciousness, with a right balance between material and spiritual life, and based on abundance, prosperity, self-sufficiency, skill development, and knowledge based on an empowered society enjoying the richness of human life in its totality.

Relevance of Indian Vedantic Philosophy of Life in the Current Global Context
Today's New Economic World Order is talking of raising mass human consciousness for holistic socio-economic development in which political, social, economic, and environmental aspects of humanity will be integrated, which would be only way of sustaining our lives on this planet. This is the exact philosophy of our ancient Indian holistic system of living. We never segregated our lives in watertight compartments of making the economy different from the socio-cultural lives of its people. We never had any models of education separated from the economic growth of its people because this is a very westernized way of thinking. Rather, we had wholesome families(Kul), villages(Jana), and political dynasties (Rashtra), which were self-

sustaining systems in which people had divisions of labour even within the first urban civilization, i.e. the Indus Valley Civilization of India dating back to2800-2350 B.C. The written scriptures are yet to be deciphered but they show the highest form of educated civilization, which existed in a pre-historic age in India. Later the Rig Vedic Aryans (1500-1000 B.E.) named it the "Varna "system in which class division was based on performing different tasks in the society but no caste rigidity existed. The present form of caste and class conflicts came much later, namely in the 5th and 6th centuries A.D.

The ancient education was free and equitable for all in Gurukul's ashrams where students from all walks of society, irrespective of their caste, colour, or income status, resided with their Gurus and learnt not only subject knowledge but mastered every discipline of physical, medicinal and life sciences whilst acquiring skills to harmonize the environment and society. The role of the teacher was to enlighten their human consciousness to the highest level so that every act of theirs became a lesson for future generations. The vast treasures of knowledge were passed on verbally through the disciples chosen by masters since time immemorial.

We had great seats of learning like Taxila, Nalanda,Vikramshila, Kashi in the third and second centuries B.C., when the so called developed western world was not even born. Those great seats of learning were so popular that students from all different nations came to study and acquire not only subject-based knowledge but also learnt how to become champions in life by creating a proper balance between learning different subjects like philosophy on the one hand, and Vedic physics or Vedic maths on the other. The whole purpose of education was to develop an inner consciousness towards nature, families, societies, and the whole universe, of which we are a nano- particle. The Pareto optimality conditions of being better off without making anyone worse off was at its core. The concept of Vasudev Kutumbakam, i.e. Universal Brotherhood, which has been known to us for millennia, was aptly depicted in our philosophy of cosmology, which believed that everything in this world is interconnected and every particle of energy has an effect on others. This has since been well-proven by the modern physics experiment of the Double Slit of Quantum Mechanics.

One such holistic educational institution is Banaras Hindu University in Varanasi, India, which is Asia's largest residential University with 156 different departments teaching anything from Sanskrit to Science to Engineering to Medical Sciences on one architectural campus, and the researcher is truly proud to be an alumnus of this great seat of learning. Mark Twain, the American author, who was enthralled by the legend and sanctity of Benaras, once wrote that Benaras is older than history, older than tradition, older even than legend and looks twice as old as all of them put together.

The Indian people lived their lives in a most scientific manner by dividing the average life span of 100 years into four different phases of 25 years called the Ashram system. The first 25years were dedicated to pure attainment of knowledge and wisdom by following "Brahmacharya" (Chastity), followed by 25 years dedicated to "Grihastha" Ashram (25-50 years)during which marriage was the most sacred ritual and formed the basis of our joint family life based on love, compassion and sacrifice, whereby every family member adjusted to the needs of others, not because they were compelled to do so but because they loved each other unconditionally. The next 25 years of "Vanprashtha" Ashram (50-75 years) were meant to fulfill all worldly responsibilities and to prepare oneself to become free from worldly desires and begin one's journey towards spiritual growth. The last 25 years of Indians' (75-100 years)lives were spent in "Sanyas" Ashram in which they denounced their families and worldly pleasures and went to the mountains and caves in the deepest search for their inner self and to find ways to

attain salvation(Moksha).Such high values and ethics were rooted in our ancient cultures because of which, even after 1200 years of subjugation, approximately 1000 years by Muslims and 200 years by the British, even now India stands high spiritually and ethically.

One of the most advanced politico-economic treatises of all times is Chanakya's*Arthas hastra*, written in the third century B.C. during the Mauryan Empire. The code of conduct mentioned in *Arthashstra* for all civilized people of the society was very high and depicted a clear picture of high moral values being practiced by ancient Indians. It was the sole responsibility of the King to treat all his subjects as his own children, therefore the Raja was the custodian and guardian of his people. The state had to take care of the livelihoods of all its subjects, which would have been the basis of the welfare economics of modern times. The Pareto Optimality Theorem depicts the true nature of egalitarian societies of India.

However, the deformation in our culture began by the mid sixth and seventh centuries, when the dominance of few classes became the basis of caste rigidity, and thus, exploitation and subjugation began as a result of the coming of Arabs and Turks who started to practice Islam in the Sind and Kutch areas extensively. The colonial rule by the British in India broke the very basis of our society by strategically replacing our Gurukul education system with English education and by breaking the rich self-sustaining villages to slums of poverty by commercialization of agriculture and de-industrialization of village-based small-scale industries. This was strategically established by the British Governors after the First War of Independence in 1857.

Lord Macaulay's speech in the British parliament, on February the 2nd, 1835 is testimony to why the British wanted to replace our ancient models of education. "I have traveled across the length and breadth of India and I have not seen one person who is a beggar, who is a thief. Such wealth I have seen in this country, such high moral values, people of such caliber , that I do not think we would ever conquer this country, unless we break the very backbone of this nation, which is her spiritual and cultural heritage, and, therefore, I propose that we replace her old and ancient education system, her culture, for if the Indians think that all that is foreign and English is good and greater than their own, they will lose their self-esteem, their native self-culture and they will become what we want them, a truly dominated nation. " This he said when already India had witnessed 1100 years of dominance by Muslims and the British. They had distorted the very structure of our culture and tried to reshape the society according to their own vested needs. The Drain Theory of DadabhiaNaoroji, and *Economic History of India*byR.C. Dutta very clearly establish these facts but unfortunately historians like Max Mueller and Alexander Cunningham have misread and misinterpreted the ancient history and culture of India, and they are still being followed by the West.

We were intentionally partitioned into three halves (East and West Pakistan and India), which tore us apart in 1947, and we were left at the mercy of the international community to help us with our basic needs. The slow economic development, which was tagged as the Hindu rate of growth at 3.5 percent of GDP, was also due to the fact that no nation in the world has faced such atrocities as we did in terms of facing five wars (1947 partition, 1962 China, 1965 Pakistan, 1971 Pakistan, and the 1998 Kargil war Pakistan) just in a span of fifty years. In spite of all such odds India today stands high and strong and is one of the fastest developing economies in the world because of its internal strength and higher consciousness.

Findings

In order to attain this new paradigm of development, alternative approaches are becoming increasingly popular. People are resorting to various therapies for healing, meditation and Yoga, and they are resorting more towards awakening their inner consciousness. India has always been a champion of introducing various scientific spiritual practices like Yoga and meditation and it has reached out to the global masses, which helps in de-stressing body, mind and soul.

Relevance of Holistic Education in Creating Happiness

The highest function of education is to bring about an integrated individual who is capable of dealing with life as a whole (Krishnamurti)

This is a philosophy of education based on the premise that each person finds identity, meaning, and purpose in life through connections to the community, to the natural world, and to humanitarian values such as compassion and global peace.

Therefore, the purpose of Holistic Education is to prepare students to meet the challenges of living as well as academics, to be able to know about self, to have connectedness with self and maintain healthy relationships and pro-social behavior, for social, emotional and mental development, to be able to recognize wholeness and resilience in life, and to see beauty, have awe, experience transcendence, and appreciate some sense of truths (Krishnamurti,1980).

Why do we need to replace the global education system with holistic education?

Today's global education is promoting market consumerism but there is no urge to gain knowledge. There is a complete breakdown of value systems everywhere and man (sic) is behaving in bounded rationality quite like robots without any human compassion and sensitivity. The whole of Western natural philosophy is undergoing a sea change again, forced upon us by the experimental findings of quantum theory (Lanza, 2017).

The desire to know his own self is dying fast in the cut-throat competitive edge and it is needless to mention that most humans end up in wrong relations, depression, anxiety, frustrations, and suicidal tendencies, due to rampant isolation, feeling unwanted and dejected towards the self and society. Working parents, school, colleges, and universities all are running a race against time in this age of technology-driven development, which is causing big emotional, social and financial challenges for youth globally. It is time now to have integrative skills incorporated in our education system like ancient Gurukuls of India, where Music, Martial Arts, Ayurveda, Natropathy, Yoga, Meditation and various energy healing modalities were part of the curricula. Deep foundations of character building and right attitude were laid down in such Ashrams and a deeper understanding of universal laws were the order of the day. Einstein, Leonardo da Vinci, Aryabhatt, Varahmihir were all great masters who knew these ancient secrets of the universe.

Many energy healing spiritual schools, various branches of Yoga, Reiki, Magnet Therapy, Theta Healing, Angelic Healing, Art of Living etc. are still practiced in India and worldwide. One of the advanced energy healing technologies are Pranic Healing and Arhatic Yoga, based on the universal law of energy. Bio-energy is the life sustaining energy of the universe. There are close to 50 cultures around the world that have been identified as understanding the concept of 'life energy' in one form or another, e.g., Ki (Japanese), Chi (Chinese), Prana (Sanskrit), Neyatoneyah (Lakota Sioux), Num (Kalahari Kung), Ruach or Roohah (Hebrew), Rooh

(Persian), Lung (Tibetan), and so forth. All of these cultures have their energy healing modalities.

Pranic Healing is a highly evolved and tested system of energy medicine developed by GrandMaster ChoaKok Sui who utilized prana to balance, harmonize and transform the body's energy processes. Its 'no touch' energy modality can be used as a complementary method to modern medical science for the successful treatment of various chronic and psychosomatic diseases like blood pressure, depression, diabetes, anxiety, fear and phobia, and stress to name a few(World Pranic Healing).It is based on the fundamental principles that the body is a self-repairing living entity that possesses the ability to heal itself, and that the healing process is accelerated by increasing this life force that is readily available from the sun, air and ground to address physical and emotional imbalances. The therapy essentially involves the treatment of energy — called 'chi' or 'ki' — as the basis of all existence. "All bodies in the Universe possess an energy field around them and exude energy that is their own into a vast medium where it mingles with energy released by other bodies" (Mahapatra,2006).

The founder of Modern Pranic Healing and Arhatic Yoga, Master ChoaKok Sui, was a chemical engineer and businessman of Chinese descent who grew up in the Philippines and researched extensively on oriental forms of therapy to come up with the concept of advanced healing techniques. For seekers on the spiritual path, he developed Arhatic Yoga, which is an advanced meditational technique that proportionally balances three aspects of Universal Love, Intelligence and Will. This powerful energy modality uses ancient spiritual technology in order to activate and align the chakras and to awaken the Kundalini energy or the "sacred fire" (US Pranic Healing). One of the most unique feature of Pranic healing is scanning of energy body taught at the basic level for diagnosis of the root problem in the etheric and physical body. The affected body part, along with the Chakras of the patient, is then treated energetically and gradually the problem is healed (Global Pranic Healing).

Meditation is the Key to Balancing Body, Mind and Soul and Awakening Human Consciousness

Meditation is very important for those who want to achieve calmness and stillness, or to have a healthier body, purer mind, or soul, and Master Choa's Meditation on Twin Hearts (MTH) is such an advanced technique for stress management. It brings peace, illumination, and self-awareness.

Research and scientific studies have been completed on the neurophysiological, psychological, sociological and psycho-spiritual effects of Meditation on Twin Hearts. These studies have been conducted in the most part by Glenn Mendoza, M.D. in New York City, USA, and by Dr. Vrunda and Supriya Ghorpadkar and Mr. Sundaram in Bangalore, India (Pranic Solutions, 2017). Other such research, conducted by senior practitioner Dr. Anna Graziano, a pure lifestyle trainer and coach, brought to light that Twin Heart Meditation has a very positive effect on psychological functioning of the brain. Meditation on Twin Hearts showed measurable changes on the pattern of electrical activity through the brain by electroencephalograph (EEG). Comparing EEG studies before and after meditation, there was a dramatic transition from beta waves to alpha waves and delta-theta waves in 14 meditators and non-meditators.

This advanced mode of healing may seem to challenge Faculties of Science, but the successful applications of Pranic healing over the last twenty-five years, with various patients done by the doctors themselves, have brought a drastic change in the perception of the medical

fraternity. This advanced scientific energy system intends to bring permanent change in our different levels of the body namely emotional, mental and spiritual, or causal, as mentioned by Maharishi Patanjali in *Yogasutra* and all the books of Theosophy.

Human beings cannot see much of the visible light spectrum, and there is a whole world of unseen energy that can be difficult for the mind to grasp without scientific measurements for verification. One method to bridge this gap is bio-electrophotography. The goal of this is to capture energy fields, seen as a light around the body. Several doctors also testify to Kirlian photography and aura imaging, which has proven the presence of an energy field around entities, and the fact that living beings exist within an energy field has been given the nod by science, according to R.K. Tuli, a qualified doctor, and currently head of the department of holistic medicine at Indraprastha Apollo Hospital, Delhi. "Modern medicine has its limitations, in that it can only heal the physique, but falls flat when it comes to emotional healing. It is only with alternative therapy that a complete cure can be arrived at" adds Tuli, who has been dabbling in alternative therapy for more than three decades.

It was to unite the conventional with the alternative and get the best out of both practices that the Apollo group of hospitals founded a holistic medicine department at its Chennai unit ten years ago, after the successful cure of Dr. Pratap Reddy, the chairman of the Apollo Hospital Group Chennai by Pranic Healing. Subsequently, they opened similar departments in Delhi and Hyderabad, to offer patients a complete wellness package. Apollo Hospital's Wellness Centre in Chennai witnessed a demonstration of Pranic Healing by Grandmaster ChoaKok Sui on August 18, 2004. Dr. Pratap C. Reddy, Apollo Hospital's Chairman, provided the audience with a background to the Wellness Centre and said the "millennium vision was to move away from illness to wellness. The Wellness Centre provides alternative healing systems such as Aroma Therapy, Pranic Healing, Ayurveda and a dietetics programme.

Another such example is Dr. Swarna Das MBBS, MD, working at Apollo hospital Chennai, who has much experience in using Pranic Healing with IHD Patients, as documented by Gas Discharge Visualization and Cardiovascular Cartography at the International Symposium on Yoga and Lifestyle, Dharan, Nepal. She has authored a curriculum book for an AICTE certified course on Pranic Healing Health Management (Apollo hospital).Various clinical applications fused with Pranic Healing have been recorded by Dr. Ramesh and Sir Cliff Saldana.

The World Pranic Healing Foundation Research Center was established in 2012 in Mysore and in the USA it does extensive research on the application of Pranic energy on various aspects of the biosphere of planet Earth and higher consciousness. One such controlled group survey was conducted on 150 people by the Pranic Healing Research Institute in collaboration with the Aayush Department, which brought out the amazing experiences of different people on emotional levels like happiness, stress, and anxiety. Karnataka Open State University has accepted Pranic Healing as a part of the Yoga curriculum.

Modern quantum physics has already shed some light on the role of consciousness and reality. There are multitudes of studies and phenomena that also show how they are intertwined. One example includes human aura and intentions. A Russian scientist and Princeton Biophysics Professor, Dr. Konstantin Korotkov, demonstrated that the human energy field called Aura is responsible for changing the physical material world. It is the action of the mind on matter. They are developing the idea that our consciousness is part of the material world and that with our consciousness we can directly influence our world. With our emotions, with our intentions, we can directly influence our world (Viva,1999).

Another such experiment is the "Global Consciousness Experiment" initiated by Nelson Roger in the Institute of Noetic Sciences in Princeton University. The detection of bio-electric activity is old, and many contemporary ideas of it were actually developed years ago. Bio-electric and bio-magnetic fields, formed by the body, have a direct effect on the physical material world. This is one example of known science within the mainstream, which could have tremendous implications for health care and more (The Global Consciousness Project).

Conclusion

It can be concluded that modern medical science has now started accepting the existence of bio-energetic force called life energy, which has a tremendous effect on our every level of existence. We Indians should be very proud that our ancient Vedas and Upanishads knew these long ago but now the world is looking upon us to take the lead in bringing spirituality and science together. In this respect, the alternative therapies like Pranic Healing and Arhatic Yoga play a significant role in harmonizing it in our day to day life for a healthy, wealthy, wiser, holistic life and motivating us to inculcate a balance between material and spiritual life.

Furthermore, the global world's basic issues of inequality, poverty, and unemployment can only be addressed if the human race understands that the mutual harmony is the most essential condition for our all-round development and it cannot be achieved by ignoring any one aspect of our existence, be that nature or modern scientific technological development. The balance between both is an essential condition for our sustainable development on this planet. As rightly pointed out by Einstein, spirituality without science is blind, and science without spirituality is lame. Hence, for shifting the vibrations of our planet to higher dimensions and reaching the point of critical mass, it is imperative for all of us to move ahead of our vested caste, creed, colour, and monetary conflicts, and bring in a new paradigm of development where every country would share the Happiness Index equally and every member of the civil society would have equal rights to live with dignity, peace and abundance so that each person advances to self-realization and human consciousness.

References

Choa Kok Sui. (n. d.). Retrieved from https://pranichealing.com

Das, S. Apollo Hospital. Retrieved from http://www.apollohospitalsbangalore.com/index.php/general-medicine-clinical-team/dr-swarna-das

De, A. (2006). Healing Breath, Hindu Business Line – India. Retrieved from http://www.thehindubusinessline.com/todays-paper/tp-life/healing-breath/article1759076.ece

GNH Centre Bhutan. Mission of Gross National Happiness Retrieved from http://www.gnhcentrebhutan.org/?page_id=8

Huppert, F.A. & So, T.T.C. (2011). Flourishing Across Europe: Application of a New Conceptual Framework for Defining Well-Being, *Social Indicators Research*, doi:10.1007/s11205-011-9966-7

Krishnamurti, J. (1980). The core of the Teachings. Retrieved from http://www.jkrishnamurti.org/about-krishnamurti/the-core-of-the-teachings.php

Lanza, R. & Berman, B. (2016). Biocentrism: How Life and Consciousness Are the Keys to Understanding the Nature of the Universe. Retrieved from http://www.robertlanza.com/biocentrism-how-life-and-consciousness-are-the-keys-to-understanding-the-true-nature-of-the-universe

Mahapatra, A. D. (2006, October 2). How to Heal Yourself. *The Telegraph*. Retrieved from http://www.telegraphindia.com/1061002/asp/atleisure/story_6785552.asp

Nelson, R. (1998). Global Consciousness Project, Program Areas: Extended Human Capacities, Retrieved from http://noetic.org/research/project/global-consciousness-project

Pranic Healing Solutions (2017). Retrieved from http://www.pranicsolutions.com/index.php/meditation/meditation-research

Sachs, J. D. (2012) World Happiness Report: The Earth Institute, Columbia University. http://www.earth.columbia.edu/articles/view/2960

The Global Consciousness Project. Retrieved from http://noosphere.princeton.edu

Viva, L. (1999). Documental GDV, Kirlian Digitalization. Retrieved from http://www.korotkov.eu/la-luz-viva-documental-gdv-sistema-kirlian-digitalizado/

Vivekanand, S. (2012). Vedic Ambassador. Retrieved from vedicambassador.wordpress.com/2012/09/29/vasudhaiva-kutumbakam

World Pranic Healing (n. d.) Retrieved from http://www.globalpranichealing.com/en/pranic-healing/master-choa-kok-sui